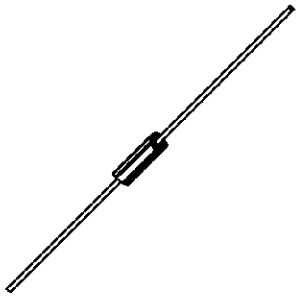
SGS-THOMSON MICROELECTRONICS

# BYT 01-200 →400

## FAST RECOVERY RECTIFIER DIODES

**FAST RECOVERY RECTIFIER**

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING



**F 126**
(Plastic)

**SUITABLE APPLICATION**

- FREE WHEELING DIODE IN CONVERTERS AND MOTORS CIRCUITS
- RECTIFIER IN S.M.P.S.

**ABSOLUTE RATINGS** (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{FRM}$ | Repetive Peak Forward Current | $t_p \leq 10\mu s$ | 30 | A |
| $I_{F(AV)}$ | Average Forward Current* | $T_a = 70°C$ $\delta = 0.5$ | 1 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 30 | A |
| P | Power Dissipation* | Ta = 70°C | 1.33 | W |
| $T_{stg}$ $T_j$ | Storage and Junction Temperature Range | | - 40 to +150 - 40 to + 150 | °C |

| Symbol | Parameter | BYT 01- | | | Unit |
|---|---|---|---|---|---|
| | | 200 | 300 | 400 | |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 200 | 300 | 400 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | 220 | 330 | 440 | V |

**THERMAL RESISTANCE**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction-ambient* | 60 | °C/W |

* On infinite heatsink with 10mm lead length.

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| | $T_j$ = 100°C | | | | 0.5 | mA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 1A | | | 1.5 | V |
| | $T_j$ = 100°C | | | | 1.4 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C | $I_F$ = 1A | $dI_F/dt$ = - 15A/µs | $V_R$ = 30V | | | 55 | ns |
| | $T_j$ = 25°C | $I_F$ = 0.5A | $I_R$ = 1A | $I_{rr}$ = 0.25A | | | 25 | |

TURN-OFF SWITCHING CHARACTERISTICS (Without Series inductance)

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = - 50A/µs | $T_j$ = 100°C | $V_{CC}$ = 200 V | $I_F$ = 1A | | 35 | 50 | ns |
| $I_{RM}$ | $dI_F/dt$ = - 50A/µs | $L_p \leq$ 0.05 µA | See figure 12 | | | 1.5 | 2 | A |

To evaluate the conduction losses use the following equations:

$V_F = 1.05 + 0.145\ I_F$ $\qquad$ $P = 1.05 \times I_{F(AV)} + 0.145\ I_F{}^2{}_{(RMS)}$

**Figure 1. Maximum average power dissipation versus average forward current.**

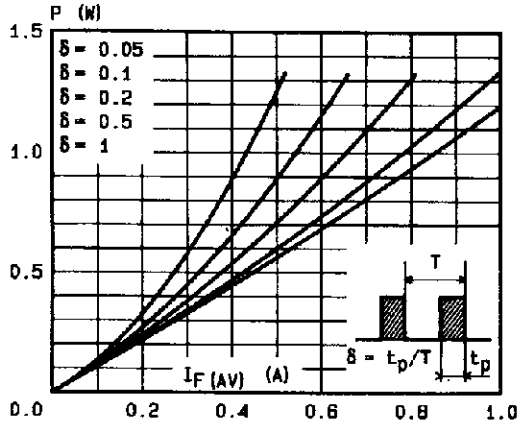



**Figure 2. Average forward current versus ambient temperature.**

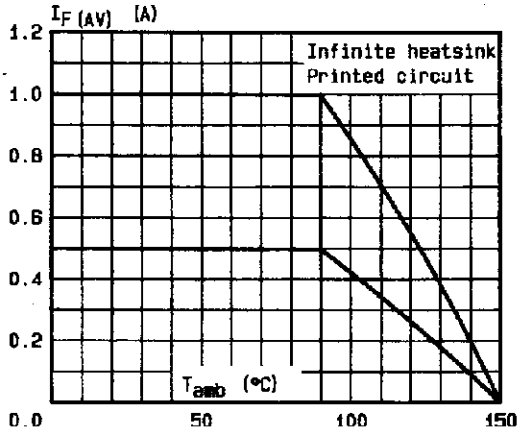
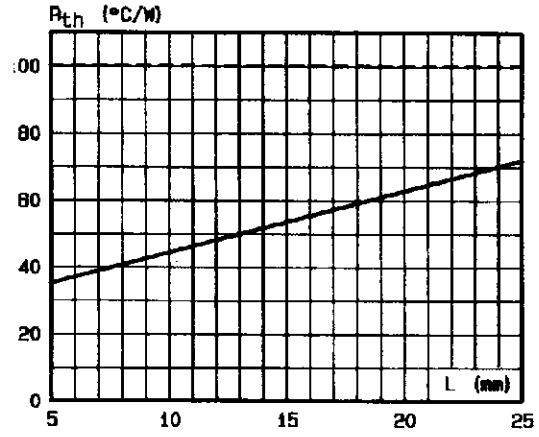



**Figure 3. Thermal resistance versus lead length.**




**Mounting n°1**
**INFINITE HEATSINK**

**Mounting n°2**
**PRINTED CIRCUIT**

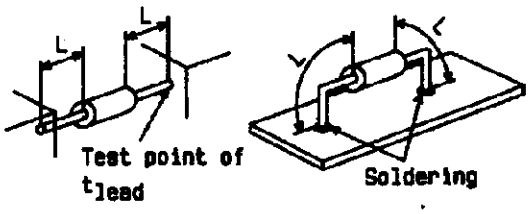



**Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).**

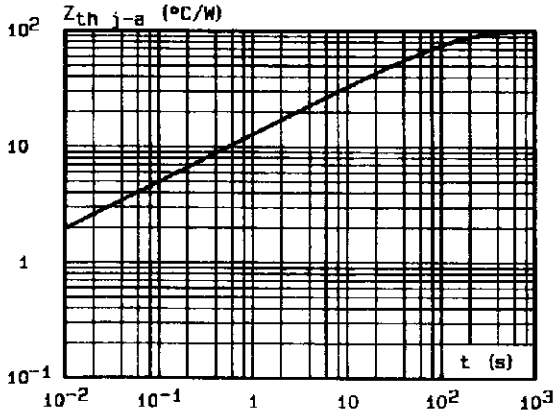



**Figure 5. Peak forward current versus peak forward voltage drop (maximum values).**

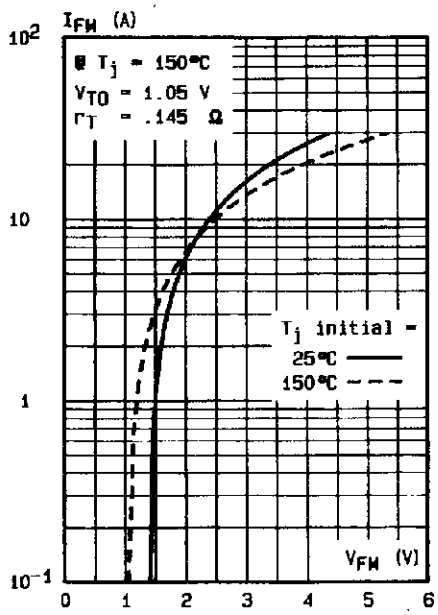


**Figure 7. Recovery time versus $di_F/dt$.**

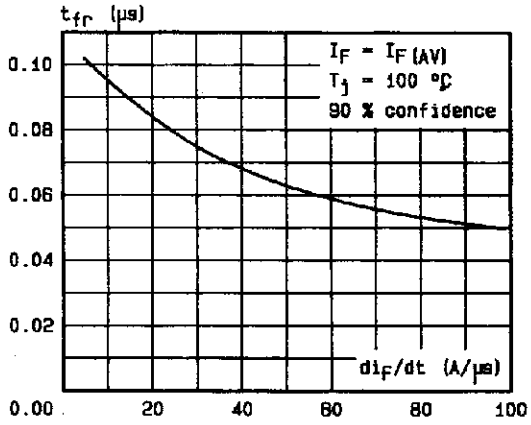



**Figure 8. Peak forward voltage versus $di_F/dt$.**

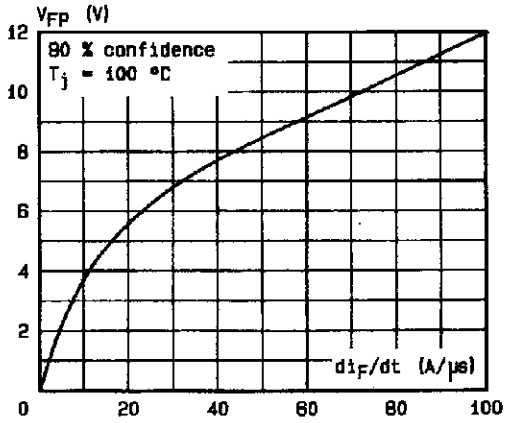



**Figure 9. Peak reverse current versus $di_F/dt$.**

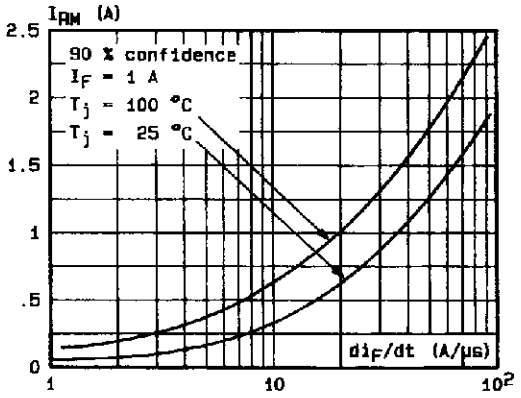



**Figure 10. Recovered charge versus $di_F/dt$ (typical values).**

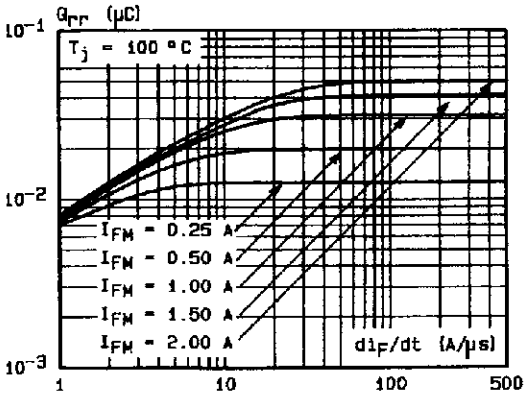



**Figure 11. Dynamic parameters versus junction temperature.**

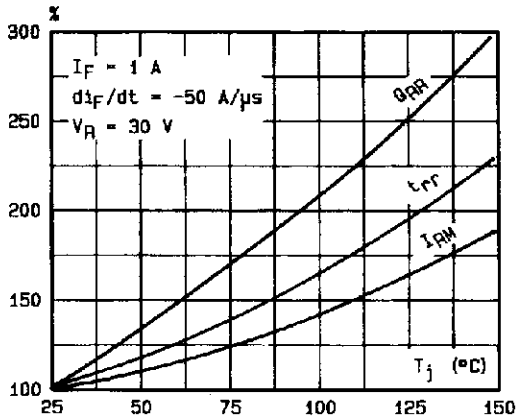
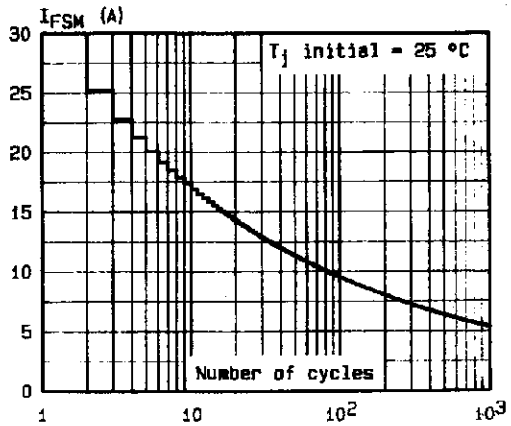
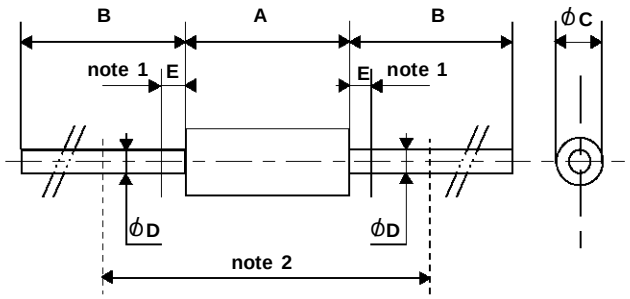



**Figure 12. Non repetitive surge peak current versus number of cycles.**



## PACKAGE MECHANICAL DATA

F 126 (Plastic)




| REF. | DIMENSIONS | | | | NOTES |
|---|---|---|---|---|---|
| | Millimeters | | Inches | | |
| | Min. | Max. | Min. | Max. | |
| A | 6.05 | 6.35 | 0.238 | 0.250 | 1 - The lead diameter ∅ D is not controlled over zone E<br>2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59”(15 mm) |
| B | 26 | | 1.024 | | |
| ∅ C | 2.95 | 3.05 | 0.116 | 0.120 | |
| ∅ D | 0.76 | 0.86 | 0.029 | 0.034 | |
| E | | 1.27 | | 0.050 | |

Cooling method: by convection (method A)
Marking: type number
Weight: 0.4g

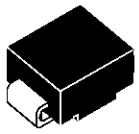
SGS-THOMSON MICROELECTRONICS

# SMBYT01

## FAST RECOVERY RECTIFIER DIODES

### FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- SURFACE MOUNT DEVICE



**SOD6**
(Plastic)

### DESCRIPTION

Single high voltage rectifier ranging from 200V to 400 V suited for Switch Mode Power Supplies and other power converters.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | 10 | A |
| $I_{F(AV)}$ | Average forward current | Tl=110°C $\delta$ = 0.5 | 1 | A |
| $I_{FSM}$ | Non repetitive surge peak forward current | tp=10ms sinusoidal | 30 | A |
| Tstg<br>Tj | Storage and junction temperature range | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | SMBYT01- | | | Unit |
|---|---|---|---|---|---|
| | | 200 | 300 | 400 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 200 | 300 | 400 | V |

### THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| Rth (j-l) | Junction-leads | 25 | °C/W |

## ELECTRICAL CHARACTERISTICS
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_F$ * | Tj = 25°C | $I_F$ = 1 A | | | 1.5 | V |
| | $T_j$ = 100°C | | | | 1.4 | |
| $I_R$ ** | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| | $T_j$ = 100°C | | | | 0.5 | mA |

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A<br>$I_R$ = 1A | | | 25 | ns |
| | | $I_F$ = 1A $dI_F/dt$ = -15A/µs<br>$V_R$ = 30V | | | 60 | |

## TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| $t_{IRM}$ | $V_{CC}$ = 200V $I_F$ = 1A Lp ≤ 0.05µH<br>$T_j$ = 100°C $dI_F/dt$ = -50A/µs | | 35 | 50 | ns |
| $I_{RM}$ | | | 1.5 | 2 | A |

To evaluate the conduction losses use the following equation :
$P = 1.1 \times I_{F(AV)} + 0.25 \times I_F{}^2{}_{(RMS)}$

| Voltage (V) | 200 | 300 | 400 |
|---|---|---|---|
| Marking | B2 | B3 | B4 |

Laser marking
Logo indicates cathode

**Fig.1 :** Low frequency power losses versus average current.

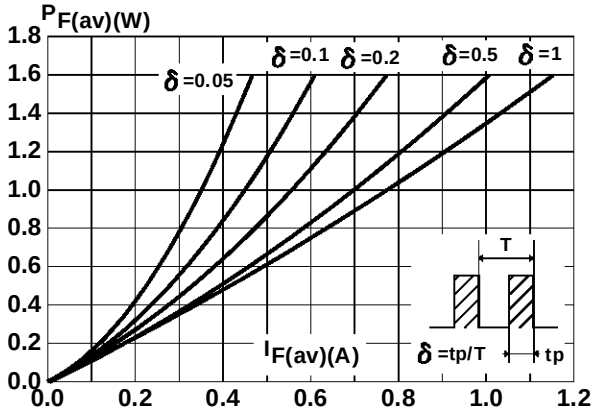



**Fig.2 :** Peak current versus form factor.

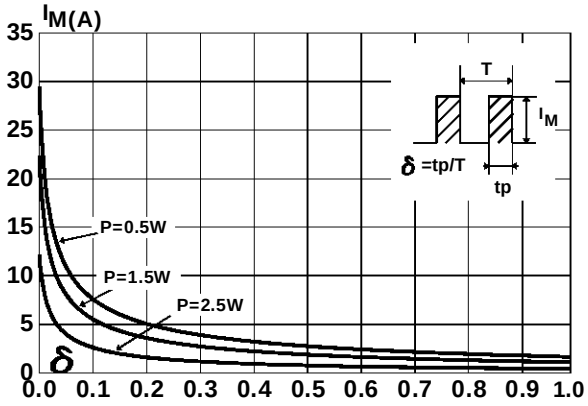



**Fig.3 :** Non repetitive surge peak forward current versus overload duration.

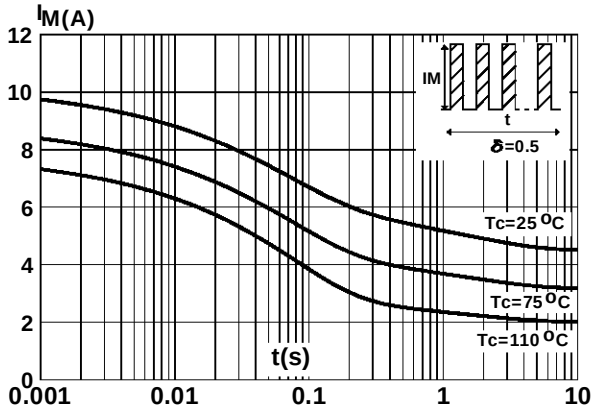



**Fig.4 :** Relative variation of thermal impedance junction to lead versus pulse duration.

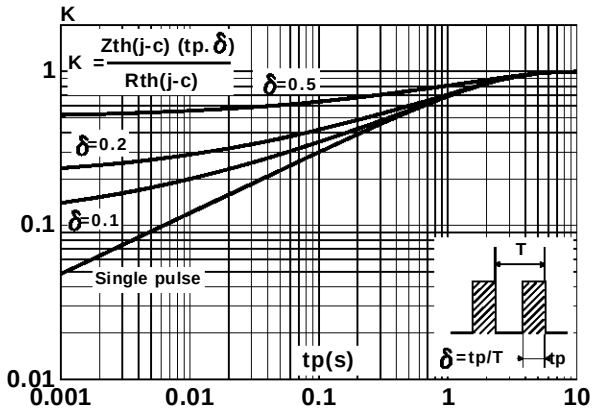



**Fig.5 :** Voltage drop versus forward current. (Maximum values)

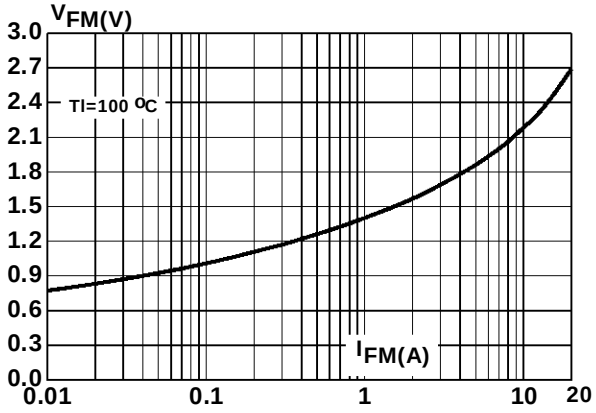



**Fig.6 :** Average current versus ambient temperature. (duty cycle : 0.5)

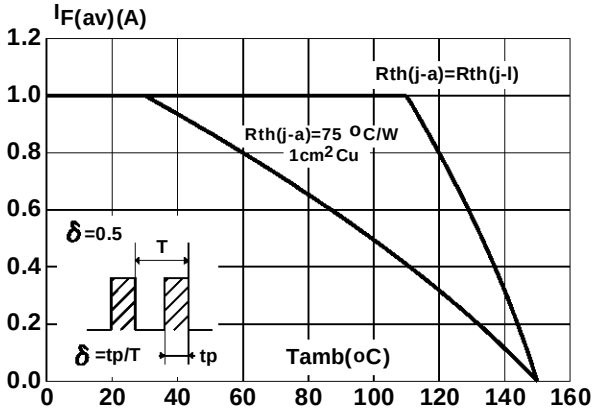


**Fig.7 :** Recovery time versus $dI_F/dt$.

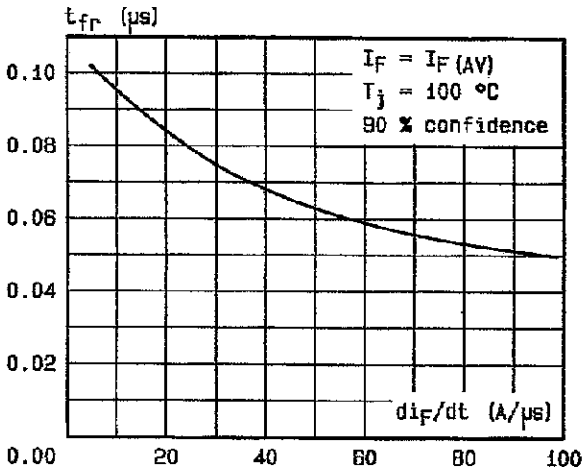



**Fig.8 :** Peak forward voltage versus $dI_F/dt$.

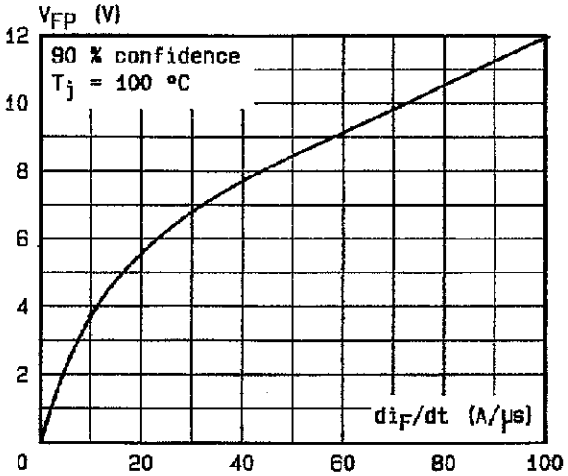



**Fig.9 :** Peak reverse current versus dIF/dt.

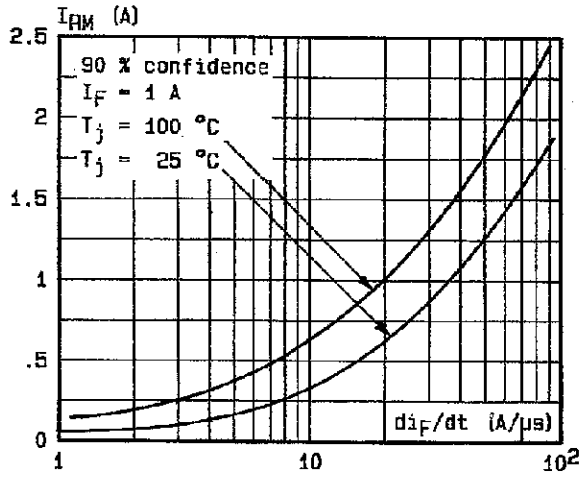



**Fig.10 :** Recovery charge versus dIF/dt. (typical values)

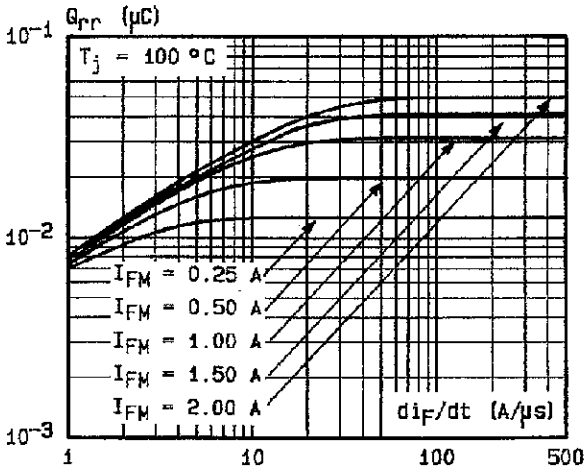



**Fig.11 :** Dynamic parameters versus junction temperature.

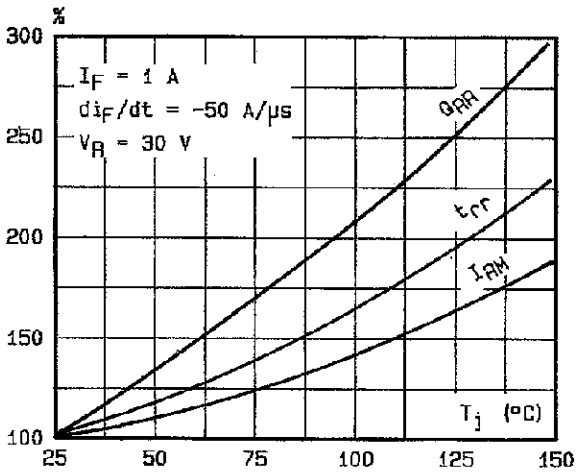
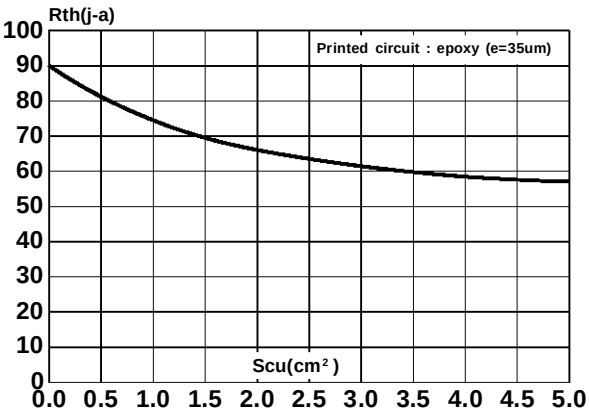
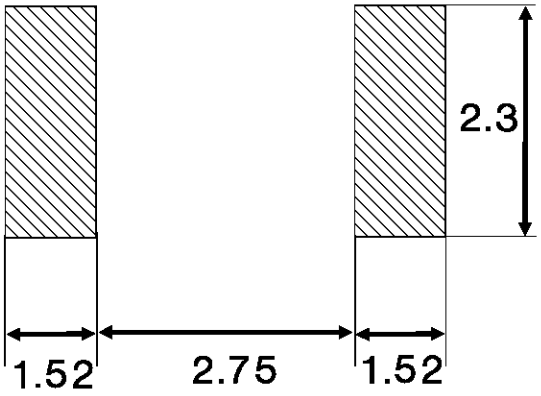


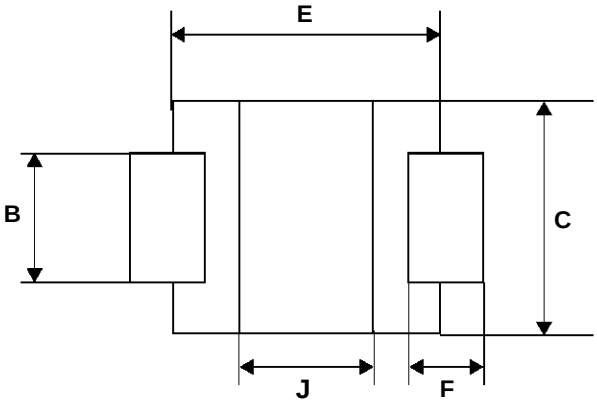

**Fig.12 :** Thermal resistance junction to ambient versus copper surface under each lead.

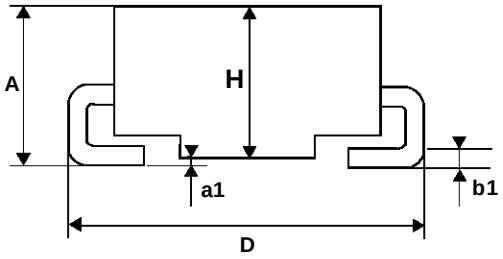


**PACKAGE MECHANICAL DATA**
SOD6




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 2.44 | 2.62 | 0.096 | 0.103 |
| a1 | 0.10 | 0.20 | 0.004 | 0.008 |
| B | 1.96 | 2.11 | 0.077 | 0.083 |
| b1 | 0.25 | 0.35 | 0.010 | 0.014 |
| C | 3.65 | 3.93 | 0.143 | 0.155 |
| D | 5.39 | 5.59 | 0.212 | 0.220 |
| E | 4.15 | 4.30 | 0.163 | 0.170 |
| F | 1.00 | 1.27 | 0.039 | 0.050 |
| H | 2.33 | 2.41 | 0.092 | 0.095 |
| J | 2.05 | 2.13 | 0.080 | 0.084 |



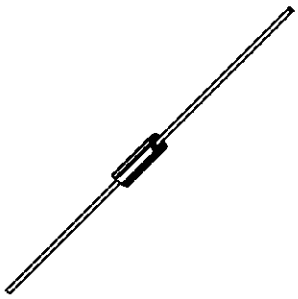

Laser Marking
Logo indicated cathode

SGS-THOMSON MICROELECTRONICS

# BYT 11-600 →1000

## FAST RECOVERY RECTIFIER DIODES

- SOFT RECOVERY
- VERY HIGH VOLTAGE
- SMALL RECOVERY CHARGE



**F 126**
(Plastic)

**APPLICATIONS**

- ANTISATURATION DIODES FOR TRANSISTOR BASE DRIVE
- SNUBBER DIODES

**ABSOLUTE RATINGS** (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{FRM}$ | Repetive Peak Forward Current | $t_p \leq 20\mu s$ | 20 | A |
| $I_{F(AV)}$ | Average Forward Current * | $T_a = 75°C$ $\delta = 0.5$ | 1 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 35 | A |
| $P_{tot}$ | Power Dissipation * | $T_a = 55°C$ | 1.25 | W |
| $T_{stg}$ $T_j$ | Storage and Junction Temperature Range | | - 55 to + 150 - 55 to + 150 | °C |
| $T_L$ | Maximum Lead Temperature for Soldering during 10s at 4mm from Case | | 230 | °C |

| Symbol | Parameter | BYT 11- | | | Unit |
|---|---|---|---|---|---|
| | | 600 | 800 | 1000 | |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 600 | 800 | 1000 | V |

**THERMAL RESISTANCE**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction-ambient* | 60 | °C/W |

* On infinite heatsink with 10mm lead length.

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 1A | | | 1.3 | V |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C | $I_F$ = 0.5A | $I_R$ = 1A | $I_{rr}$ = 0.25A | | | 100 | ns |

To evaluate the conduction losses use the following equations:

$V_F = 1.1 + 0.075\ I_F$ $\quad P = 1.1 \times I_{F(AV)} + 0.075\ I_F{}^2{}_{(RMS)}$

**Figure 1. Maximum average power dissipation versus average forward current.**

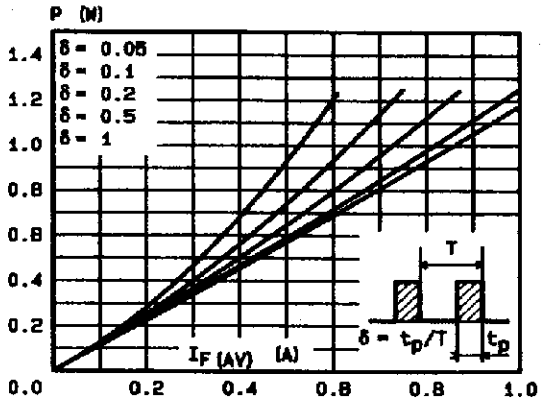



**Figure 2. Average forward current versus ambient temperature.**

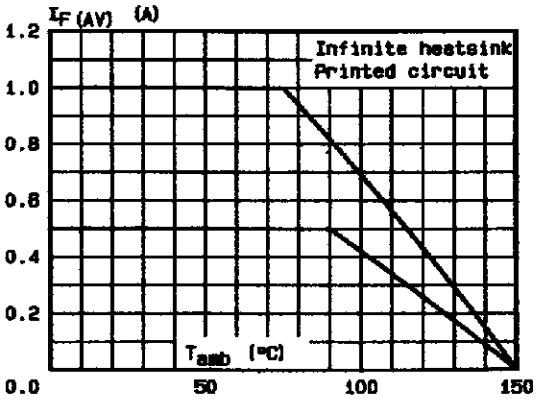
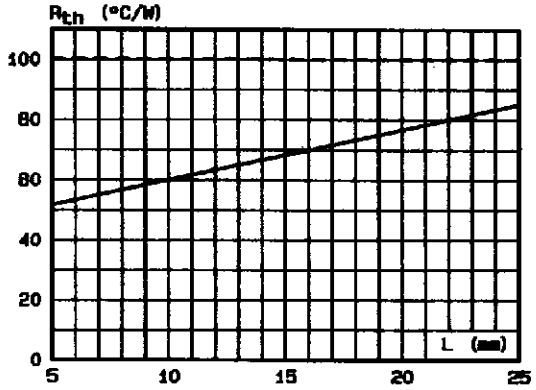
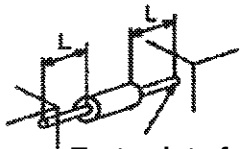



**Figure 3. Thermal resistance versus lead length.**




**Mounting n°1**
**INFINITE HEATSINK**




**Test point of $t_{lead}$**

**Mounting n°2**
**PRINTED CIRCUIT**


**Soldering**

Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

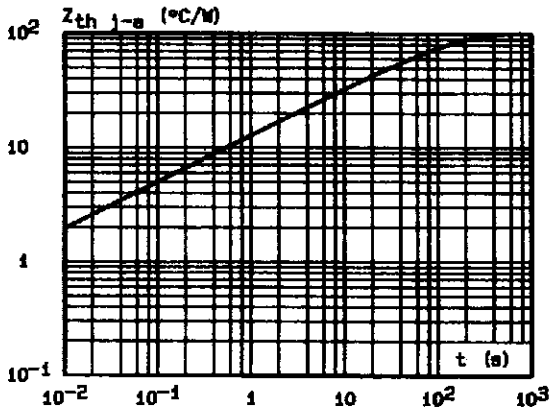



Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

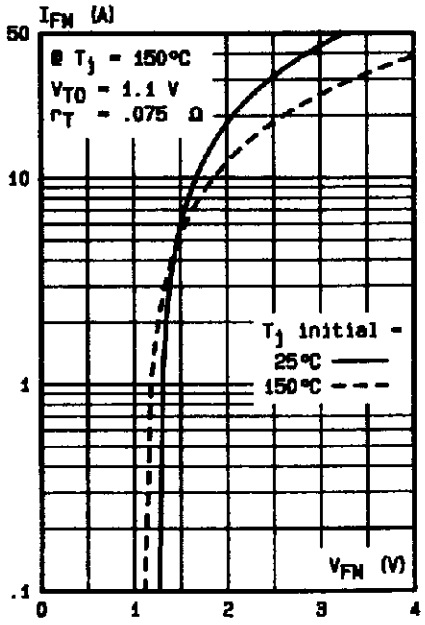



Figure 6. Capacitance versus reverse applied voltage

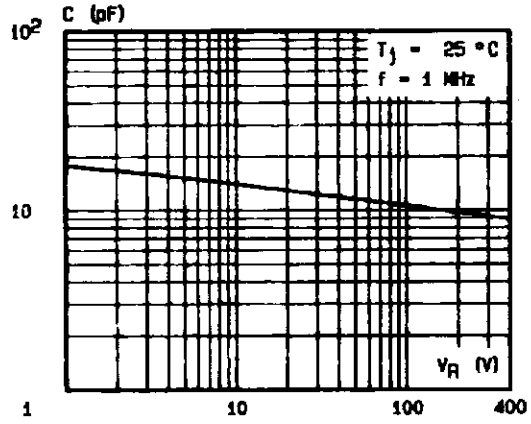
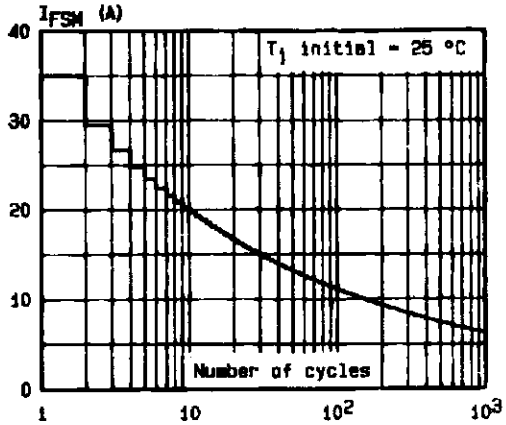
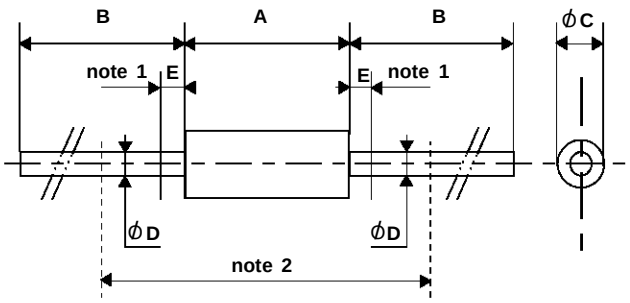



Figure 7. Non repetitive surge peak current versus number of cycles



## PACKAGE MECHANICAL DATA

F 126 (Plastic)




| REF. | DIMENSIONS | | | | NOTES |
|---|---|---|---|---|---|
| | Millimeters | | Inches | | |
| | Min. | Max. | Min. | Max. | |
| A | 6.05 | 6.35 | 0.238 | 0.250 | 1 - The lead diameter ∅ D is not controlled over zone E<br>2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59”(15 mm) |
| B | 26 | | 1.024 | | |
| ∅ C | 2.95 | 3.05 | 0.116 | 0.120 | |
| ∅ D | 0.76 | 0.86 | 0.029 | 0.034 | |
| E | | 1.27 | | 0.050 | |

Cooling method: by convection (method A)
Marking: type number ring at cathode end
Weight: 0.4g

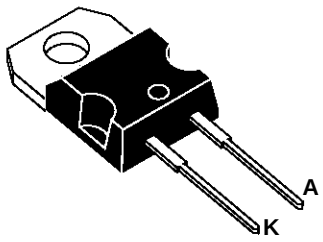
SGS-THOMSON MICROELECTRONICS

# BYT 12P-1000

## FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

Cathode connected to case




**TO220AC**
(Plastic)

### SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | | 1000 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | | 1000 | V |
| $I_{FRM}$ | Repetitive Peak Forward Current | $t_p \leq 10\mu s$ | 150 | A |
| $I_{F\ (RMS)}$ | RMS Forward Current | | 25 | A |
| $I_{F\ (AV)}$ | Average Forward Current | $T_{case} = 100°C$<br>$\delta = 0.5$ | 12 | A |
| $I_{FSM}$ | Surge Non Repetitive Forward Current | $t_p = 10ms$<br>Sinusoidal | 75 | A |
| P | Power Dissipation | $T_{case} = 100°C$ | 25 | W |
| $T_{stg}$<br>$T_j$ | Storage and Junction Temperature Range | | - 40 to + 150<br>- 40 to + 150 | °C |

### THERMAL RESISTANCE

| Symbol | Test Conditions | Value | Unit |
|---|---|---|---|
| $R_{th\ (j-c)}$ | Junction-case | 2 | °C/W |

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 50 | µA |
| | $T_j$ = 100°C | | | | 2.5 | mA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 12A | | | 1.9 | V |
| | $T_j$ = 100°C | | | | 1.8 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C | $I_F$ = 1A | $dI_F/dt$ = - 15A/µs | $V_R$ = 30V | | | 155 | ns |
| | | $I_F$ = 0.5A | $I_R$ = 1A | $I_{rr}$ = 0.25A | | | 65 | |

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = - 50A/µs | $V_{CC}$ = 200 V $I_F$ = 12A<br>$L_p \leq 0.05\mu H$ $T_j$ = 100°C<br>See figure 11 | | | 200 | ns |
| | $dI_F/dt$ = - 100A/µs | | | 120 | | |
| $I_{RM}$ | $dI_F/dt$ = -50A/µs | | | | 7.8 | A |
| | $dI_F/dt$ = - 100A/µs | | | 9 | | |

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C<br>$dI_F/dt$ = - 12A/µs | $V_{CC}$ = 200V<br>$L_p$ = 12µH | $I_F = I_{F(AV)}$<br>See figure 12 | | | 4.5 | |

To evaluate the conduction losses use the following equations:

$V_F = 1.47 + 0.026\ I_F$ $\qquad P = 1.47 \times I_{F(AV)} + 0.026\ I_{F^2(RMS)}$

**Figure 1. Low frequency power losses versus average current**

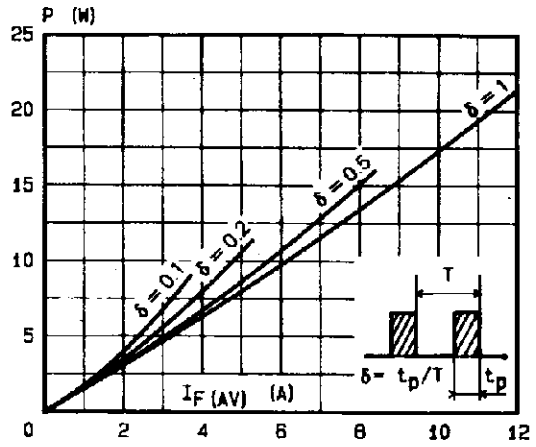



**Figure 2. Peak current versus form factor**

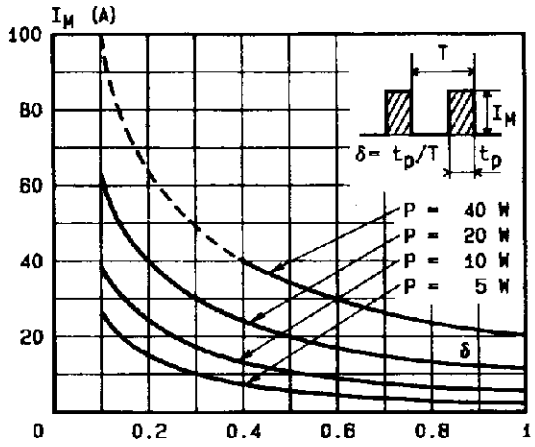


**Figure 3. Non repetitive peak surge current versus overload duration**

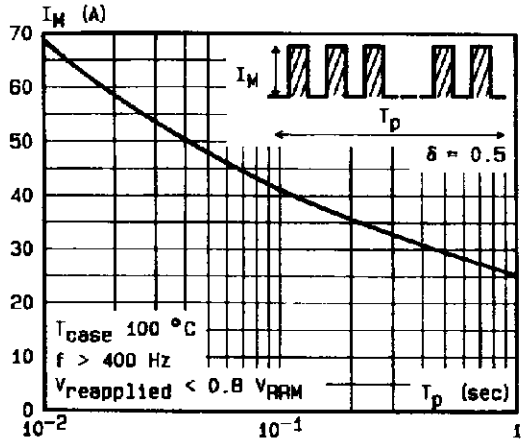



**Figure 4. Thermal impedance versus pulse width**

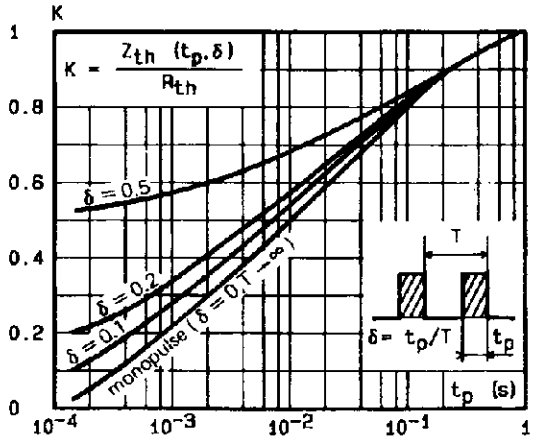



**Figure 5. Voltage drop versus forward current**

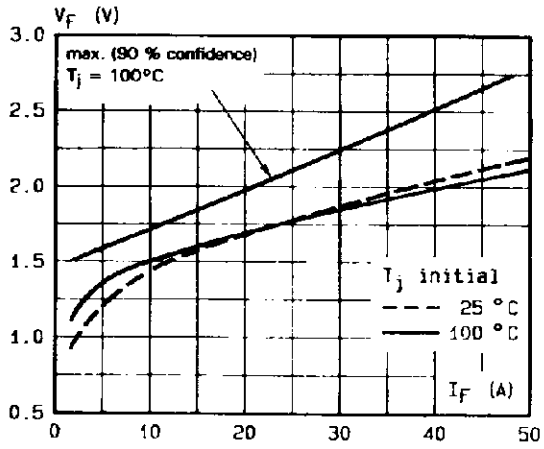



**Figure 6. Recovery charge versus $di_F/dt$**

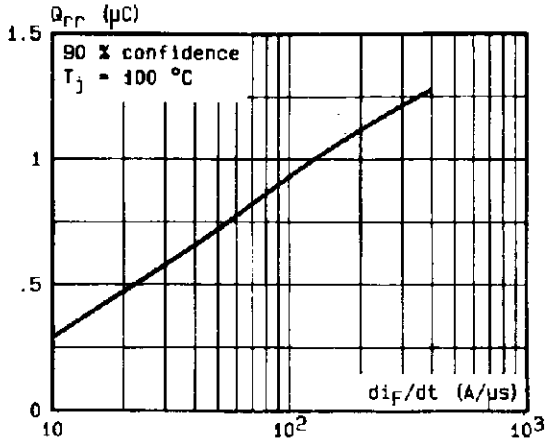



**Figure 7. Recovery time versus $di_F/d_t$-**

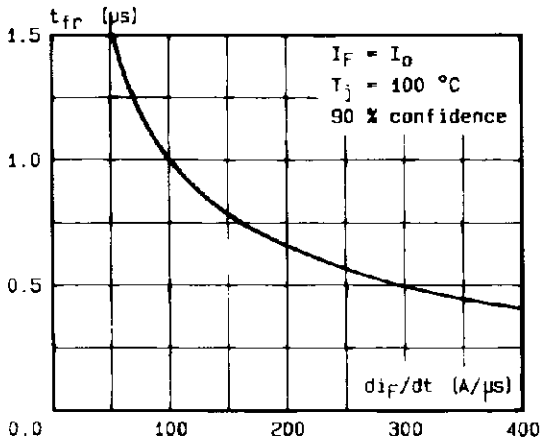



**Figure 8. Peak reverse current versus $di_F/d_t$-**

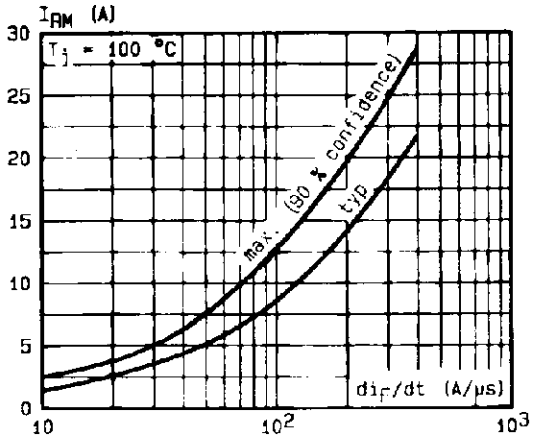


**Figure 9. Peak forward voltage versus $di_F/dt$**

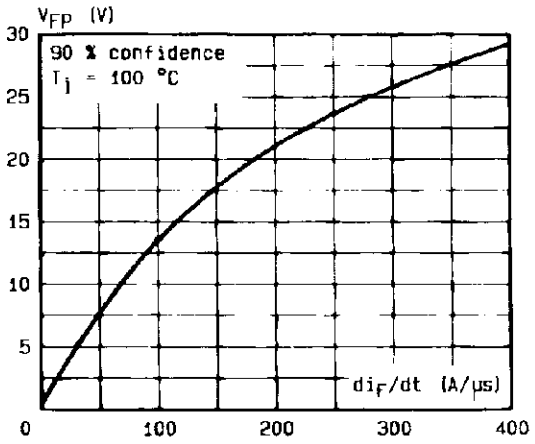



**Figure 10. Dynamic parameters versus junction temperature.**

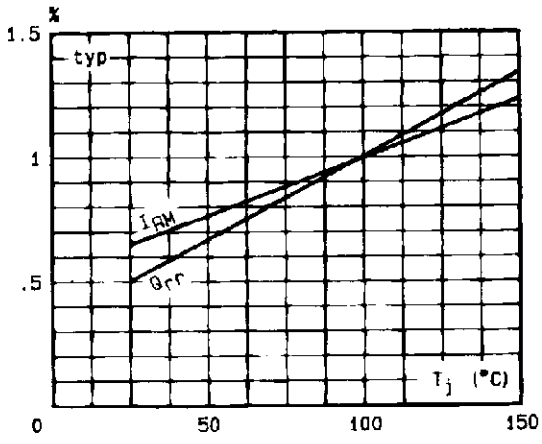



**Figure 11. Turn-off switching characteristics (without series inductance).**

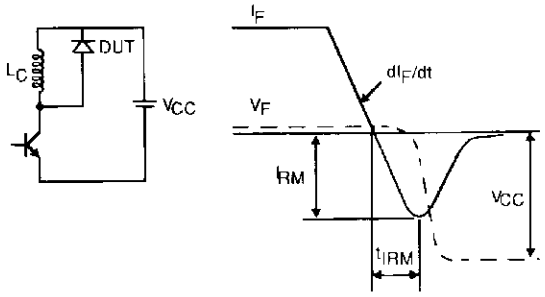
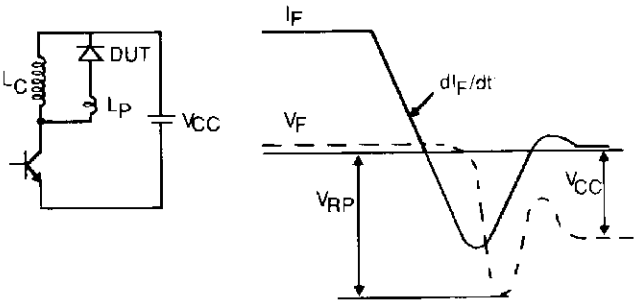
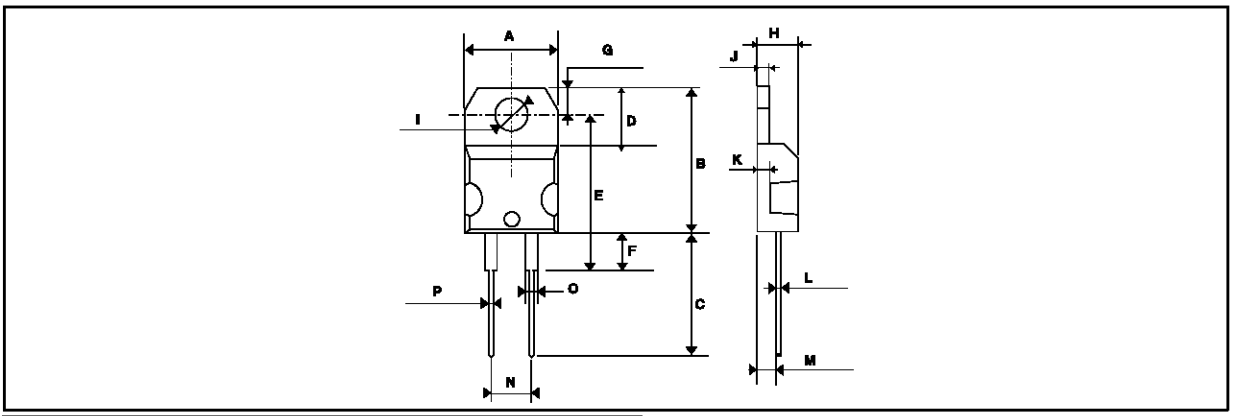



**Figure 12. Turn-off switching characteristics (with series inductance)**



**PACKAGE MECHANICAL DATA :**
TO220AC Plastic




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10.0 | 10.4 | 0.393 | 0.409 |
| B | 15.2 | 15.9 | 0.598 | 0.626 |
| C | 13 | 14 | 0.511 | 0.551 |
| D | 6.2 | 6.6 | 0.244 | 0.260 |
| E | 16.4 typ. | | 0.645 typ. | |
| F | 3.5 | 4.2 | 0.137 | 0.165 |
| G | 2.65 | 2.95 | 0.104 | 0.116 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3.75 | 3.85 | 0.147 | 0.151 |
| J | 1.23 | 1.32 | 0.048 | 0.051 |
| K | 1.27 typ. | | 0.050 typ. | |
| L | 0.49 | 0.70 | 0.019 | 0.027 |
| M | 2.4 | 2.72 | 0.094 | 0.107 |
| N | 4.95 | 5.15 | 0.194 | 0.203 |
| O | 1.14 | 1.70 | 0.044 | 0.067 |
| P | 0.61 | 0.88 | 0.024 | 0.034 |

Cooling method: by conduction (method C)
Marking: type number
Weight : 2.42g
Recommended torque value : 80cm. N
Maximum torque value : 100cm. N

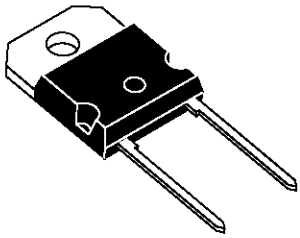
SGS-THOMSON MICROELECTRONICS

# BYT 30P-1000

## FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

Cathode connected to case



**SOD93**
(Plastic)

### SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | | 1000 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | | 1000 | V |
| $I_{FRM}$ | Repetive Peak Forward Current | $t_p \leq 10\mu s$ | 375 | A |
| $I_{F\ (RMS)}$ | RMS Forward Current | | 70 | A |
| $I_{F\ (AV)}$ | Average Forward Current | $T_c = 85°C$<br>$\delta = 0.5$ | 30 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$<br>Sinusoidal | 200 | A |
| P | Power Dissipation | $T_c = 85°C$ | 60 | W |
| $T_{stg}$<br>$T_j$ | Storage and Junction Temperature Range | | - 40 to +150<br>- 40 to +150 | °C |

### THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th\ (j-c)}$ | Junction-case | 1 | °C/W |

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 100 | µA |
| | $T_j$ = 100°C | | | | 5 | mA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 30A | | | 1.9 | V |
| | $T_j$ = 100°C | | | | 1.8 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C | $I_F$ = 1A | $dI_F/dt$ = - 15A/µs | $V_R$ = 30V | | | 165 | ns |
| | | $I_F$ = 0.5A | $I_R$ = 1A | $I_{rr}$ = 0.25A | | | 70 | |

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = - 120A/µs | $V_{CC}$ = 200 V $I_F$ = 30A<br>$L_p \leq 0.05\mu H$ $T_j$ = 100°C<br>See figure 11 | | | 200 | ns |
| | $dI_F/dt$ = - 240A/µs | | | 120 | | |
| $I_{RM}$ | $dI_F/dt$ = -120A/µs | | | | 19.5 | A |
| | $dI_F/dt$ = - 240A/µs | | | 22 | | |

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C<br>$dI_F/dt$ = - 30A/µs | $V_{CC}$ = 200V<br>$L_p$ = 5µH | $I_F = I_{F(AV)}$<br>See figure 12 | | | 4.5 | |

To evaluate the conduction losses use the following equation:

$V_F = 1.47 + 0.010\ I_F$ $\qquad P = 1.47 \times I_{F(AV)} + 0.010\ I_F{}^2{}_{(RMS)}$

**Figure 1. Low frequency power losses versus average current**

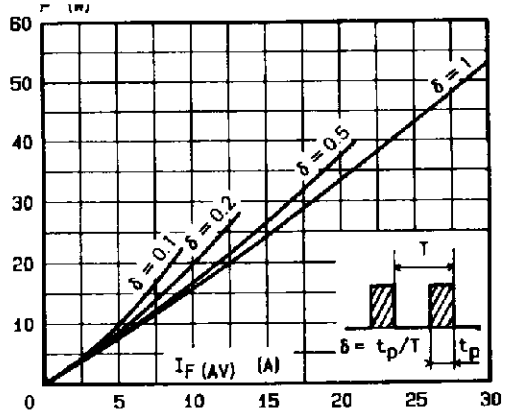



**Figure 2. Peak current versus form factor**

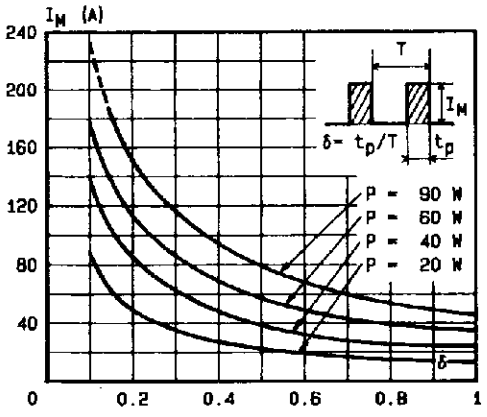


**Figure 3. Non repetitive peak surge current versus overload duration**

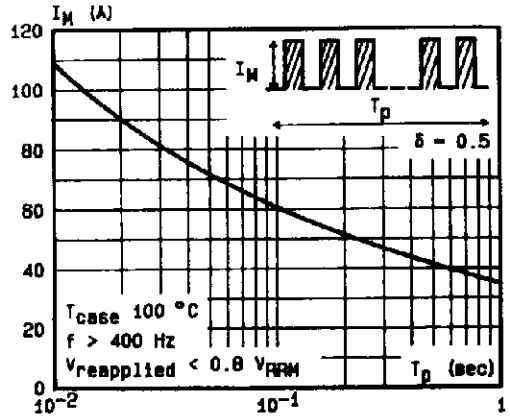



**Figure 4. Thermal impedance versus pulse width**

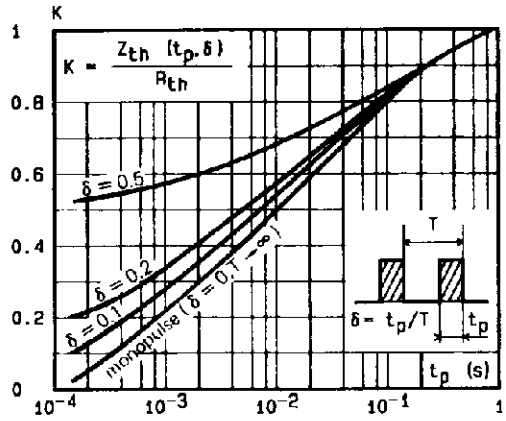



**Figure 5. Voltage drop versus forward current**

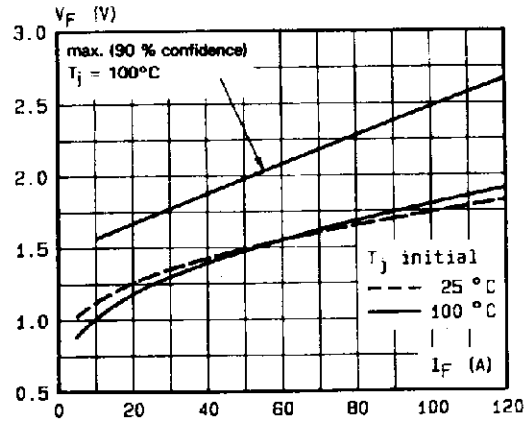



**Figure 6. Recovery charge versus $di_F/dt$**

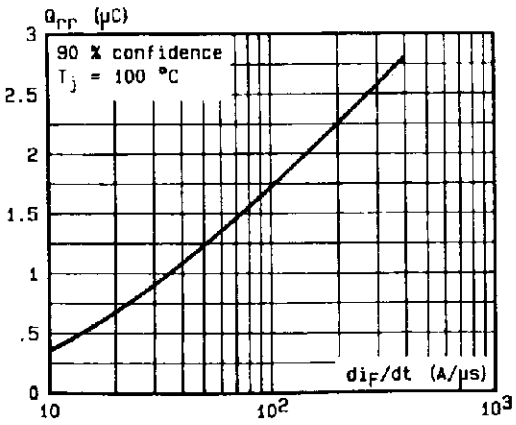



**Figure 7. Recovery time versus $di_F/dt$**

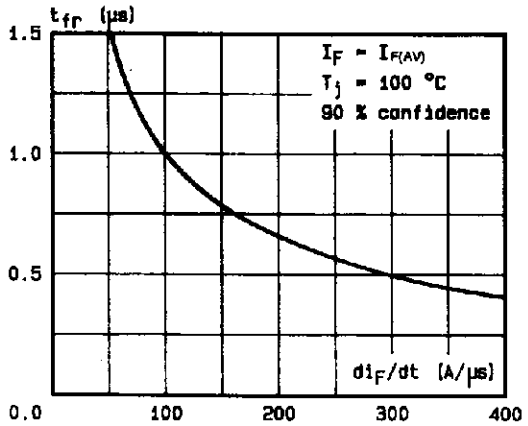



**Figure 8. Peak reverse current versus $di_F/dt$**

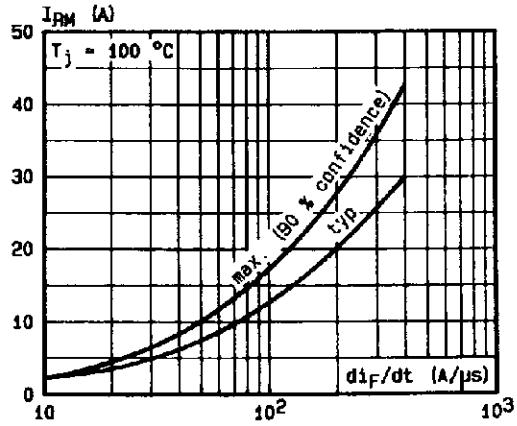


**Figure 9. Peak forward voltage versus $di_F/dt$.**

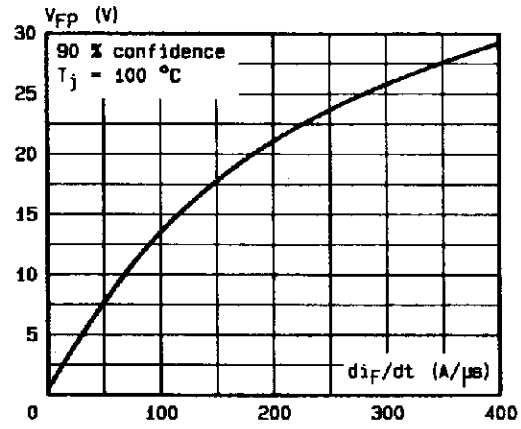



**Figure 10. Dynamic parameters versus junction temperature.**

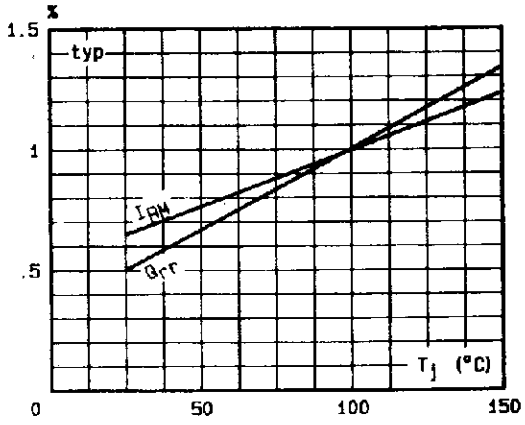



**Figure 11. Turn-off switching characteristics (without series inductance).**

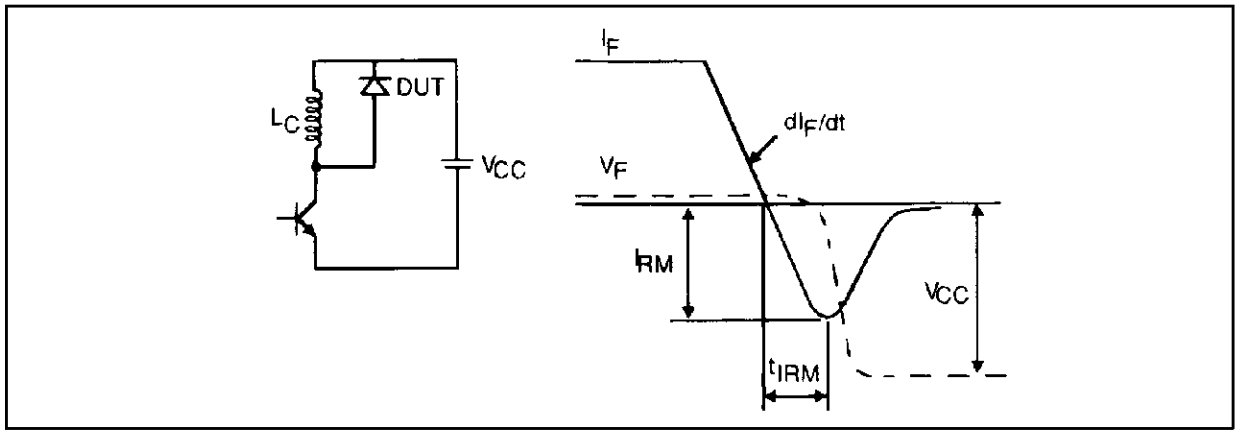
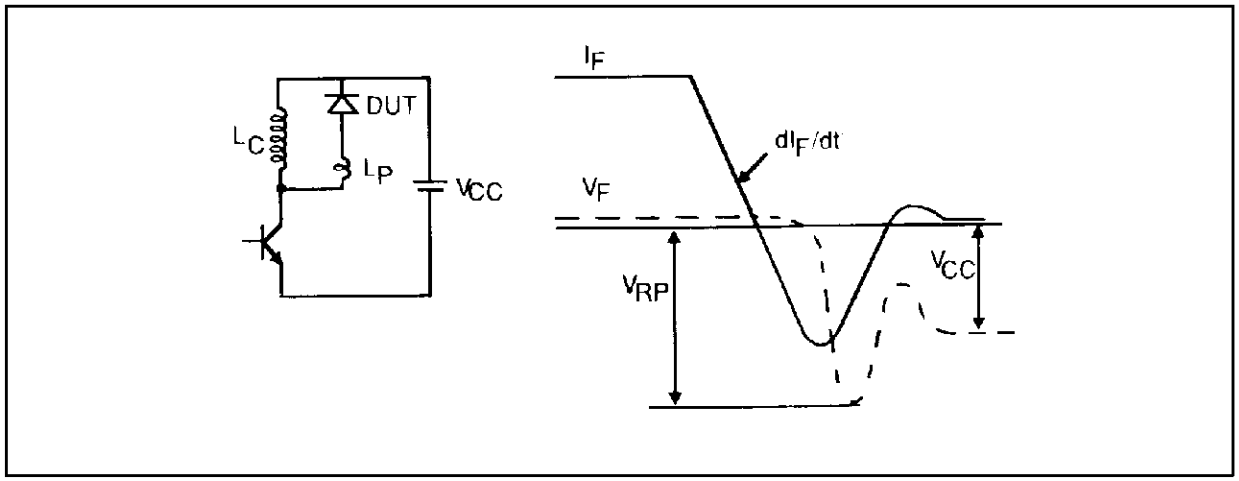
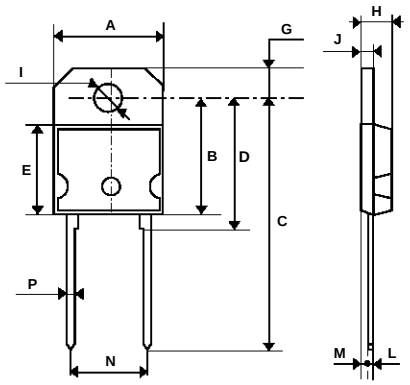



**Figure 12. Turn-off switching characteristics (with series inductance)**



## PACKAGE MECHANICAL DATA

SOD93 Plastic




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 14.7 | 15.2 | 0.578 | 0.596 |
| B | | 16.2 | | 0.637 |
| C | 31 typ | | 1.220 typ | |
| D | 18 typ | | 0.708 typ | |
| E | | 12.2 | | 0.480 |
| G | 3.95 | 4.15 | 0.155 | 0.163 |
| H | 4.7 | 4.9 | 0.185 | 0.193 |
| I | 4 | 4.1 | 0.157 | 0.161 |
| J | 1.17 | 1.37 | 0.046 | 0.054 |
| L | 0.5 | 0.78 | 0.019 | 0.030 |
| M | 2.5 typ | | 0.098 typ | |
| N | 10.8 | 11.1 | 0.425 | 0.437 |
| P | 1.1 | 1.3 | 0.043 | 0.051 |

Cooling method: by conduction (method C)
Marking: type number
Weight: 4.3g
Recommended torque value: 80cm. N
Maximum torque value: 100cm. N

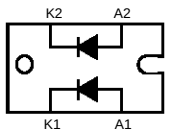
SGS-THOMSON MICROELECTRONICS

# BYT230PIV-1000
# BYT231PIV-1000

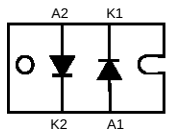
## FAST RECOVERY RECTIFIER DIODES

### FEATURES

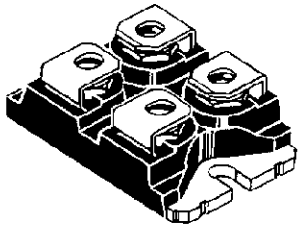
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 45 pF




**BYT231PIV-1000**




**BYT230PIV-1000**



**ISOTOP**™
(Plastic)

### DESCRIPTION

Dual high voltage rectifiers suited for Switch Mode Power Supplies and other power converters.
The devices are packaged in ISOTOP.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 1000 | V |
| $I_{FRM}$ | Repetitive peak forward current | tp ≤ 10µs | | 375 | A |
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 70 | A |
| $I_{F(AV)}$ | Average forward current | Tc=55°C δ = 0.5 | Per diode | 30 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 200 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

TM : ISOTOP is a trademark of **SGS-THOMSON Microelectronics**.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 1.5 | °C/W |
| | | Total | 0.8 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_F$ * | $T_j$ = 25°C | $I_F$ = 30 A | | | 1.9 | V |
| | $T_j$ = 100°C | | | | 1.8 | |
| $I_R$ ** | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 100 | µA |
| | $T_j$ = 100°C | | | | 5 | mA |

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A $I_R$ = 1A | | | 70 | ns |
| | | $I_F$ = 1A $dI_F/dt$ = -15A/µs $V_R$ = 30V | | | 165 | |

## TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = -120A/µs | $V_{CC}$ = 200V $I_F$ = 30A Lp ≤ 0.05µH $T_j$ = 100°C see fig. 11 | | | 200 | ns |
| | $dI_F/dt$ = -240A/µs | | | 120 | | |
| $I_{RM}$ | $dI_F/dt$ = -120A/µs | | | | 19.5 | A |
| | $dI_F/dt$ = -240A/µs | | | 22 | | |

## TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

| Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C $V_{CC}$ = 200V $I_F$=$I_{F(AV)}$ $dI_F/dt$ = -30A/µs Lp = 5µH see fig.12 | | | 4.5 | / |

To evaluate the conduction losses use the following equation :
$P = 1.47 \times I_{F(AV)} + 0.010 \times I_F{}^2{}_{(RMS)}$

**Fig.1 :** Low frequency power losses versus average current.

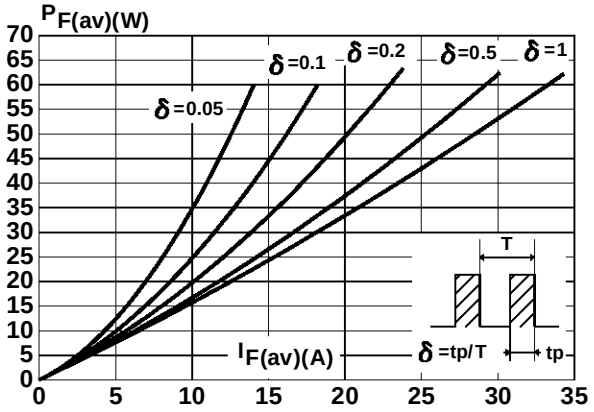



**Fig.2 :** Peak current versus form factor.

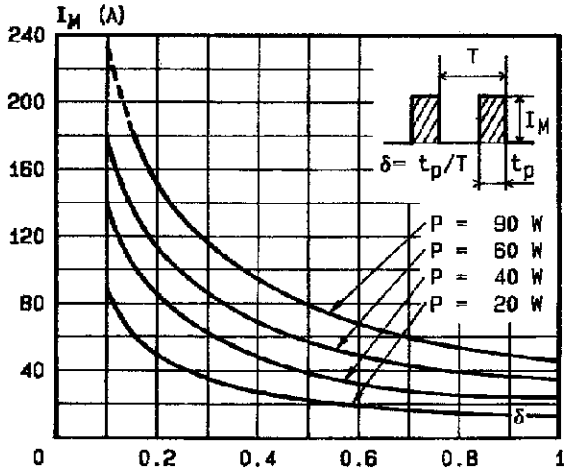



**Fig.3 :** Non repetitive peak surge current versus overload duration.

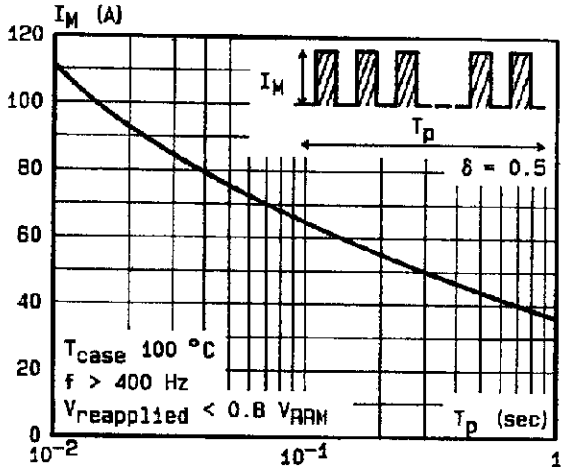



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

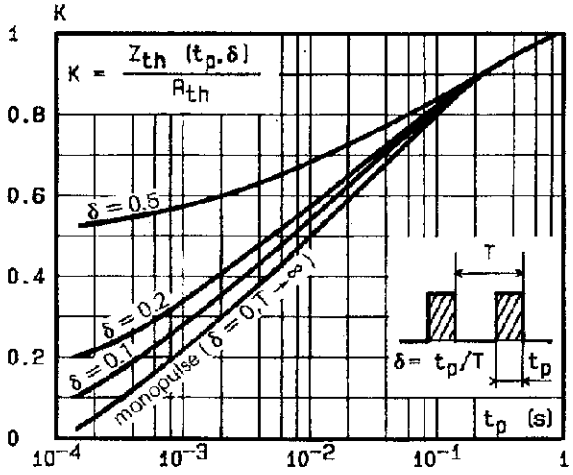



**Fig.5 :** Voltage drop versus forward current.

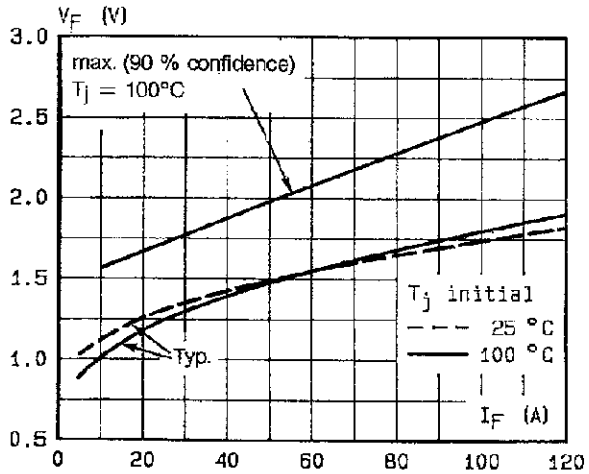



**Fig.6 :** Recovery charge versus $dI_F/dt$.

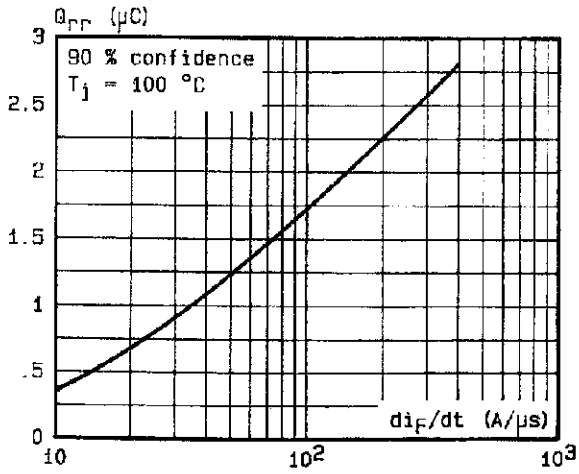


**Fig.7 :** Recovery time versus $dI_F/dt$.

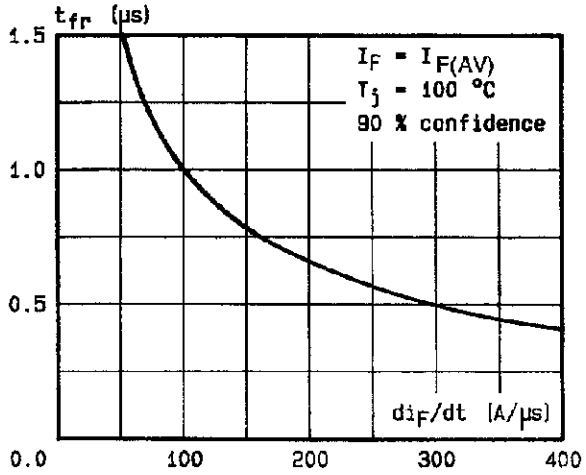



**Fig.8 :** Peak reverse current versus dIF/dt.

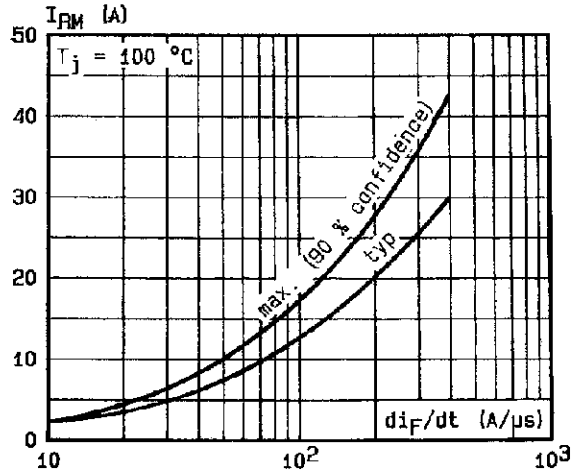



**Fig.9 :** Peak forward voltage versus $dI_F/dt$.

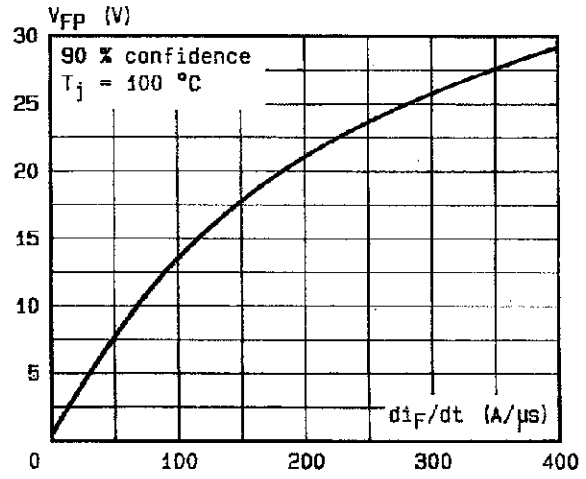



**Fig.10 :** Dynamic parameters versus junction temperature.

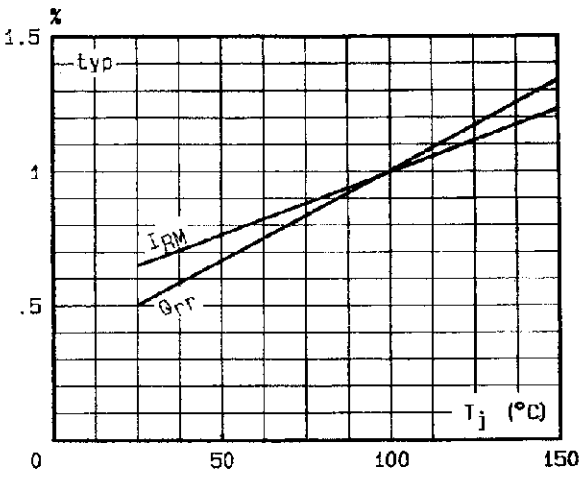



**Fig.11 :** TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

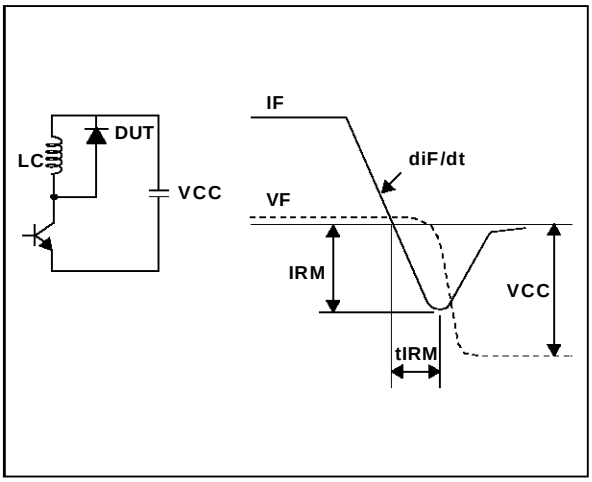
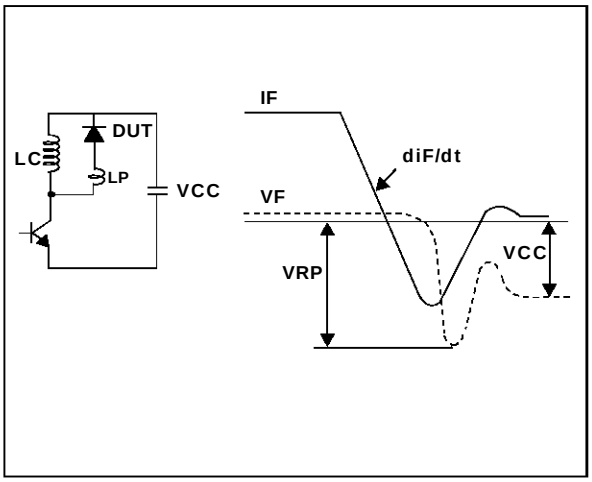
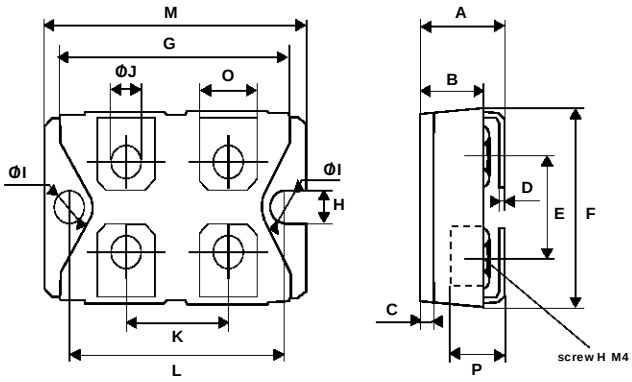



**Fig.12 :** TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



**PACKAGE MECHANICAL DATA**
ISOTOP Screw version




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g (without screws)
Electrical isolation : 2500$V_{(RMS)}$
Capitance : < 45 pF
Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

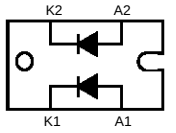
SGS-THOMSON MICROELECTRONICS

# BYT230PIV-400
# BYT231PIV-400

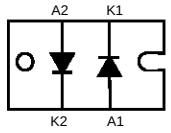
## FAST RECOVERY RECTIFIER DIODES

### FEATURES

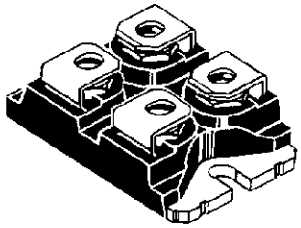
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 45 pF




**BYT231PIV-400**




**BYT230PIV-400**



**ISOTOP**™
(Plastic)

### DESCRIPTION

Dual high voltage rectifiers ranging from 200V to 400V suited for Switch Mode Power Supplies and other power converters.
The devices are packaged in ISOTOP.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{FRM}$ | Repetitive peak forward current | tp ≤ 10µs | | 500 | A |
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 50 | A |
| $I_{F(AV)}$ | Average forward current | Tc=75°C δ = 0.5 | Per diode | 30 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 350 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYT230PIV- / BYT231PIV- | | | Unit |
|---|---|---|---|---|---|
| | | 200 | 300 | 400 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 200 | 300 | 400 | V |

TM : ISOTOP is a trademark of **SGS-THOMSON Microelectronics**.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 1.5 | °C/W |
| | | Total | 0.8 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_F$ * | $T_j$ = 25°C | $I_F$ = 30 A | | | 1.5 | V |
| | $T_j$ = 100°C | | | | 1.4 | |
| $I_R$ ** | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 35 | µA |
| | $T_j$ = 100°C | | | | 6 | mA |

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A<br>$I_R$ = 1A | | | 50 | ns |
| | | $I_F$ = 1A $dI_F/dt$ = -15A/µs<br>$V_R$ = 30V | | | 100 | |

## TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = -120A/µs | $V_{CC}$ = 200V $I_F$ = 30A<br>Lp ≤ 0.05µH $T_j$ = 100°C<br>see fig. 11 | | | 75 | ns |
| | $dI_F/dt$ = -240A/µs | | | 50 | | |
| $I_{RM}$ | $dI_F/dt$ = -120A/µs | | | | 9 | A |
| | $dI_F/dt$ = -240A/µs | | | 12 | | |

## TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C $V_{CC}$ = 60V $I_F = I_{F(AV)}$<br>$dI_F/dt$ = -30A/µs Lp = 1µH | see note<br>see fig.12 | | 3.3 | | / |

Note : Applicable to BYT230PIV-400 / BYT231PIV-400 only

To evaluate the conduction losses use the following equation :
$P = 1.1 \times I_{F(AV)} + 0.0095 \times I_F{}^2{}_{(RMS)}$

**Fig.1 :** Low frequency power losses versus average current.

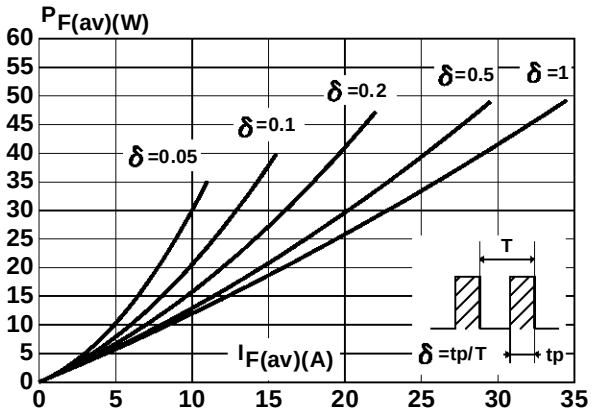



**Fig.2 :** Peak current versus form factor.

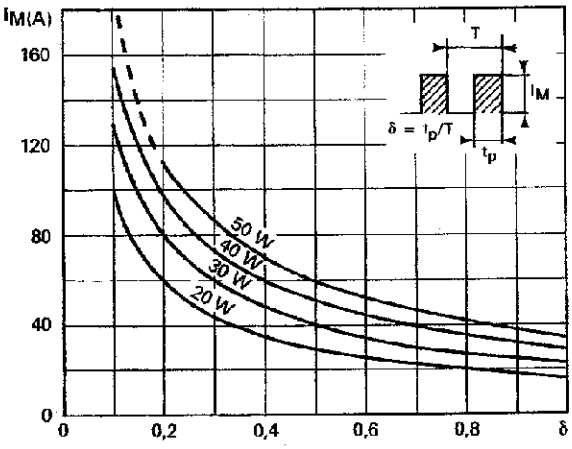



**Fig.3 :** Non repetitive peak surge current versus overload duration.

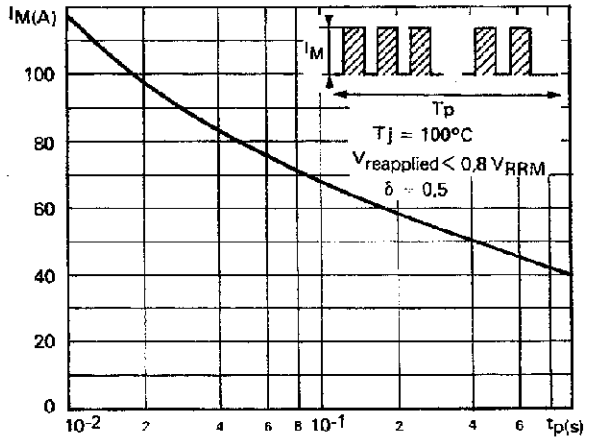



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

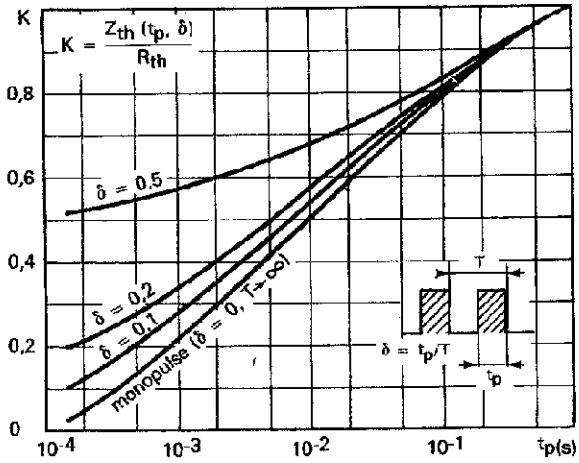



**Fig.5 :** Voltage drop versus forward current.

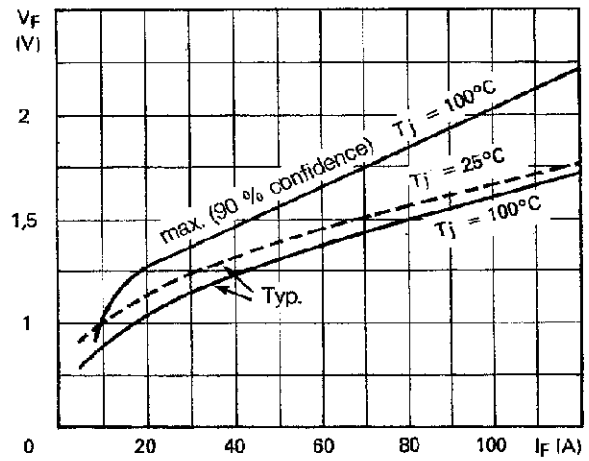



**Fig.6 :** Recovery charge versus $dI_F/dt$.

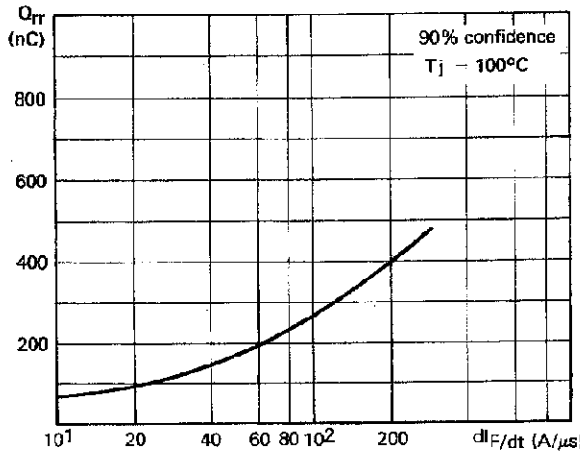


**Fig.7 :** Recovery time versus $dI_F/dt$.

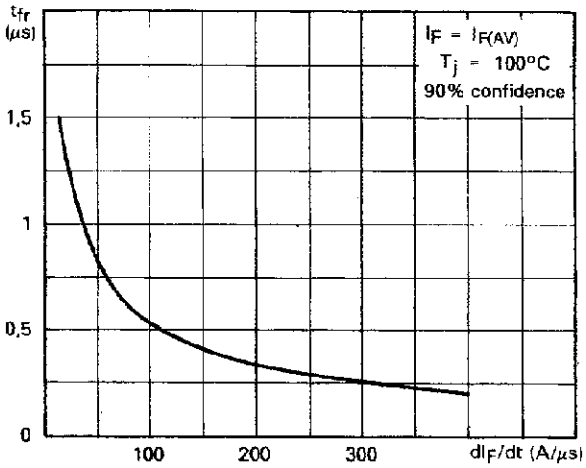



**Fig.8 :** Peak reverse current versus dIF/dt.

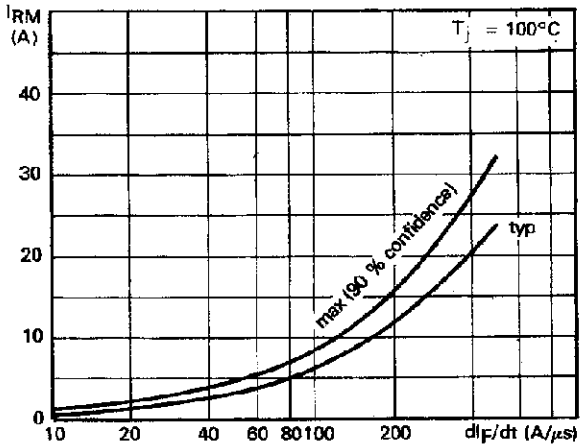



**Fig.9 :** Peak forward voltage versus $dI_F/dt$.

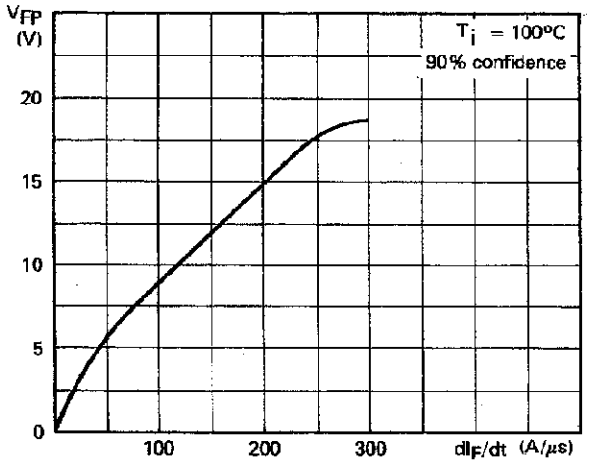



**Fig.10 :** Dynamic parameters versus junction temperature.

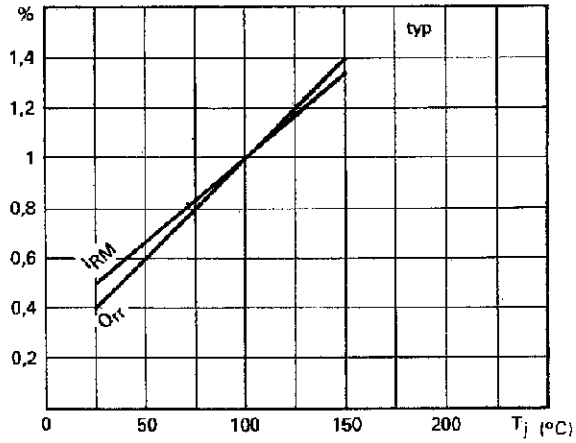



**Fig.11 :** TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

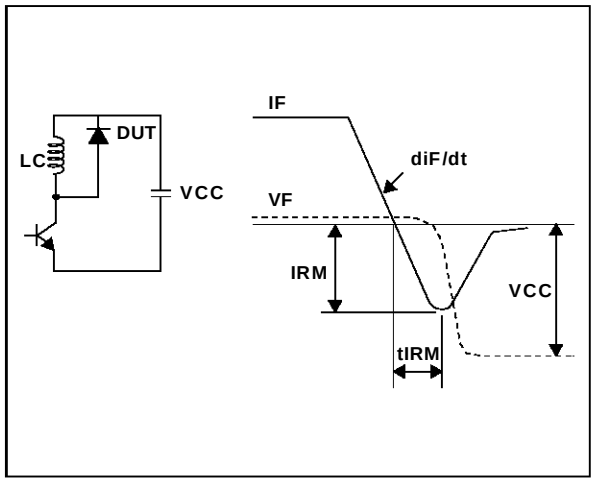
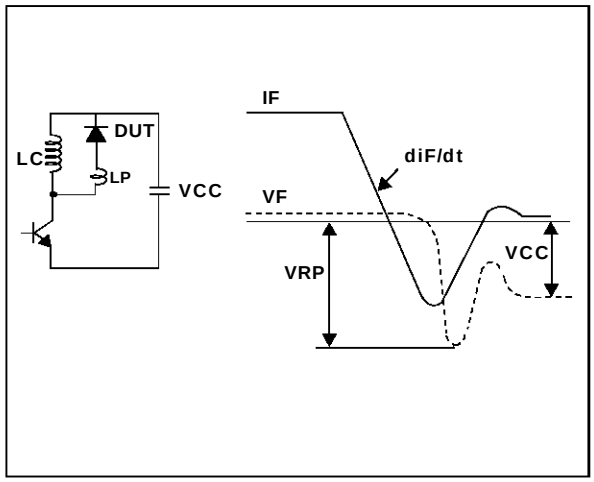
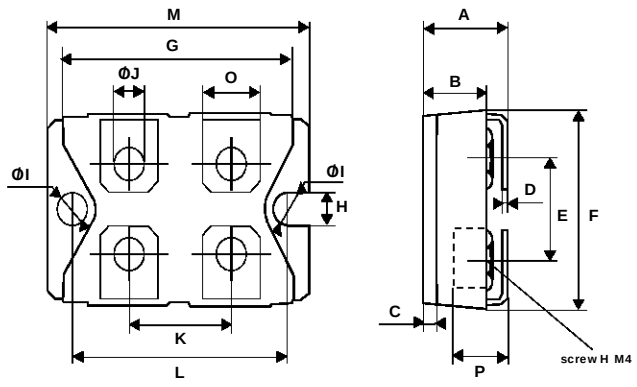



**Fig.12 :** TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



**PACKAGE MECHANICAL DATA**
ISOTOP Screw version




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g (without screws)
Electrical isolation : 2500$V_{(RMS)}$
Capacitance : < 45 pF
Inductance : < 5nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

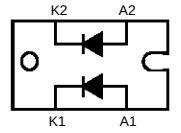
SGS-THOMSON MICROELECTRONICS

# BYT260PIV-1000
# BYT261PIV-1000

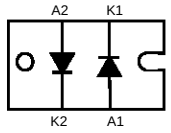
## FAST RECOVERY RECTIFIER DIODES

### FEATURES

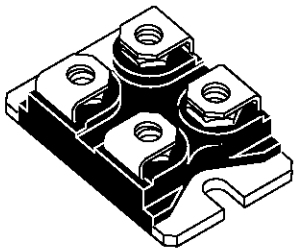
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 45 pF




**BYT261PIV-1000**




**BYT260PIV-1000**



**ISOTOP**™
(Plastic)

### DESCRIPTION

Dual high voltage rectifiers suited for Switch Mode Power Supplies and other power converters.
The devices are packaged in ISOTOP.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 1000 | V |
| $I_{FRM}$ | Repetitive peak forward current | tp ≤ 10µs | | 750 | A |
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 140 | A |
| $I_{F(AV)}$ | Average forward current | Tc=60°C δ = 0.5 | Per diode | 60 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 400 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

TM : ISOTOP is a trademark of **SGS-THOMSON Microelectronics**.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 0.7 | °C/W |
| | | Total | 0.4 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_F$ * | Tj = 25°C | $I_F$ = 60 A | | | 1.9 | V |
| | $T_j$ = 100°C | | | | 1.8 | |
| $I_R$ ** | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 100 | µA |
| | $T_j$ = 100°C | | | | 6 | mA |

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A<br>$I_R$ = 1A | | | 70 | ns |
| | | $I_F$ = 1A $dI_F/dt$ = -15A/µs<br>$V_R$ = 30V | | | 170 | |

## TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = -240A/µs | $V_{CC}$ = 200V $I_F$ = 60A<br>Lp ≤ 0.05µH $T_j$ = 100°C<br>see fig. 11 | | | 200 | ns |
| | $dI_F/dt$ = -480A/µs | | | 120 | | |
| $I_{RM}$ | $dI_F/dt$ = -240A/µs | | | | 40 | A |
| | $dI_F/dt$ = -480A/µs | | | 44 | | |

## TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

| Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C $V_{CC}$ = 200V $I_F = I_{F(AV)}$<br>$dI_F/dt$ = -60A/µs Lp = 2.5µH see fig.12 | | 3.3 | 4.5 | / |

To evaluate the conduction losses use the following equation :
$P = 1.47 \times I_{F(AV)} + 0.005 \times I_F{}^2{}_{(RMS)}$

**Fig.1 :** Low frequency power losses versus average current.

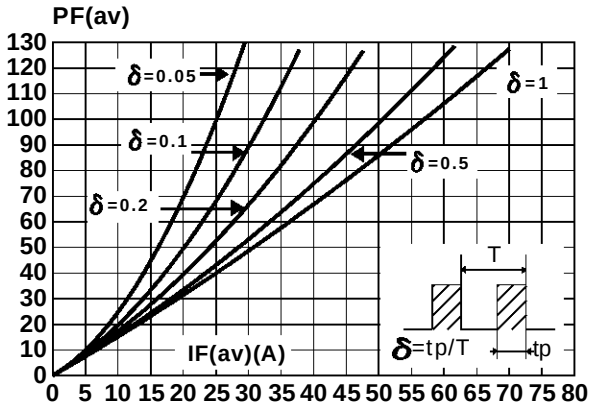



**Fig.2 :** Peak current versus form factor.

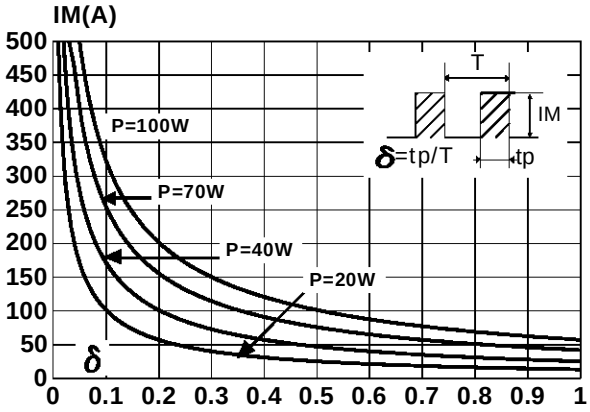



**Fig.3 :** Non repetitive peak surge current versus overload duration.

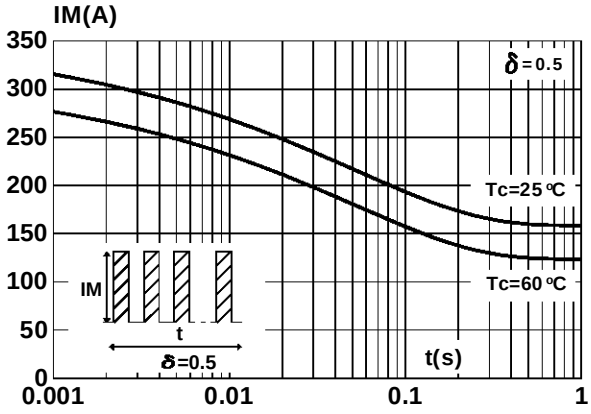



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

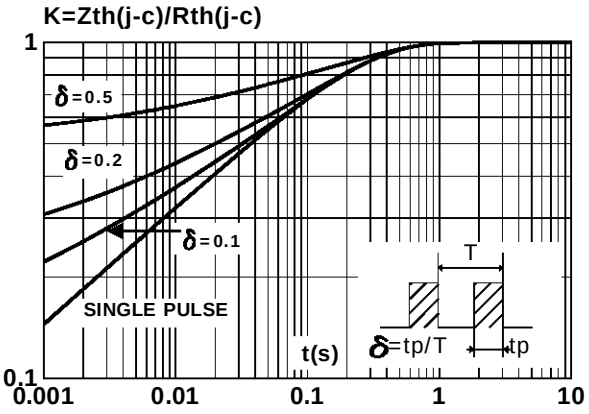



**Fig.5 :** Voltage drop versus forward current.

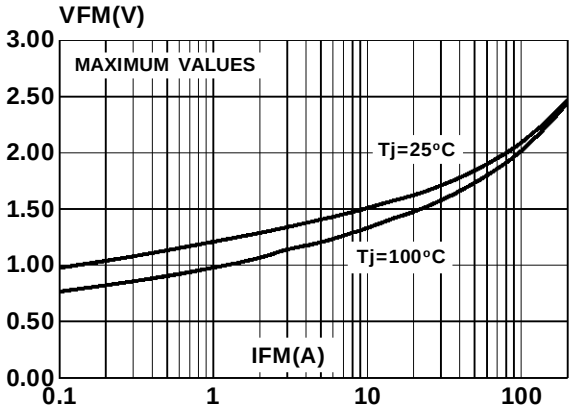



**Fig.6 :** Recovery charge versus $dI_F/dt$.

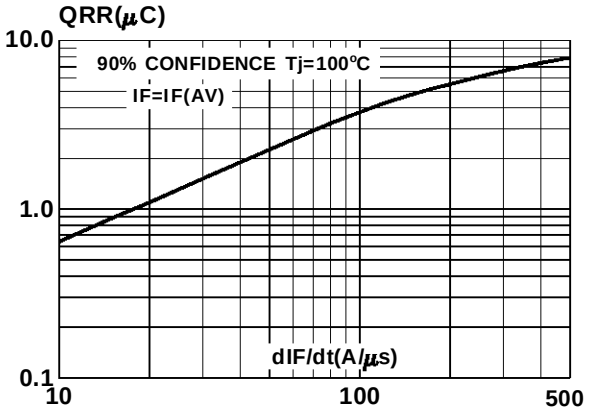


**Fig.7 :** Recovery time versus $dI_F/dt$.

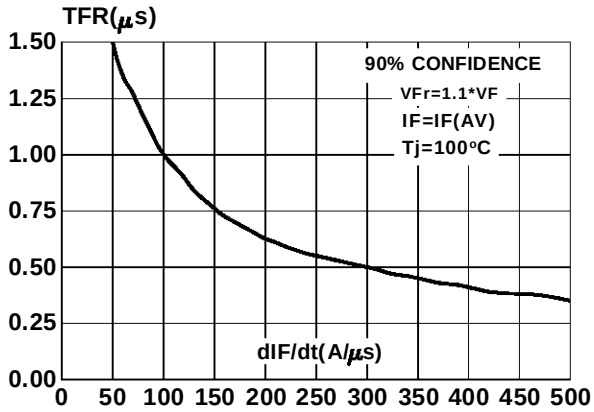



**Fig.8 :** Peak reverse current versus dIF/dt.

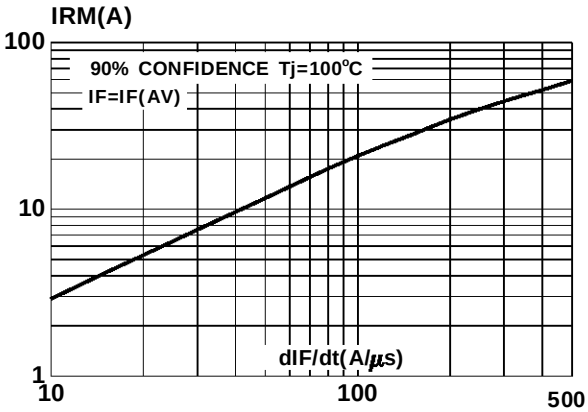



**Fig.9 :** Peak forward voltage versus $dI_F/dt$.

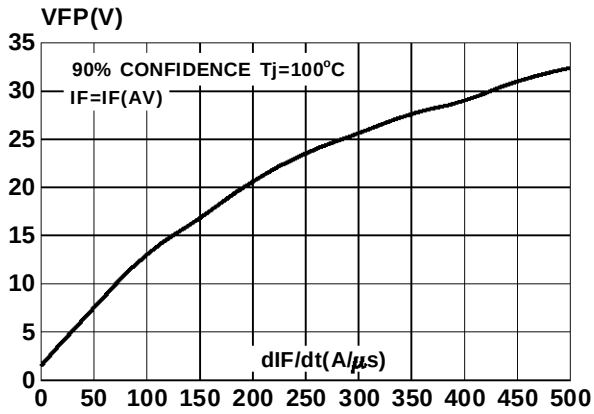



**Fig.10 :** Dynamic parameters versus junction temperature.

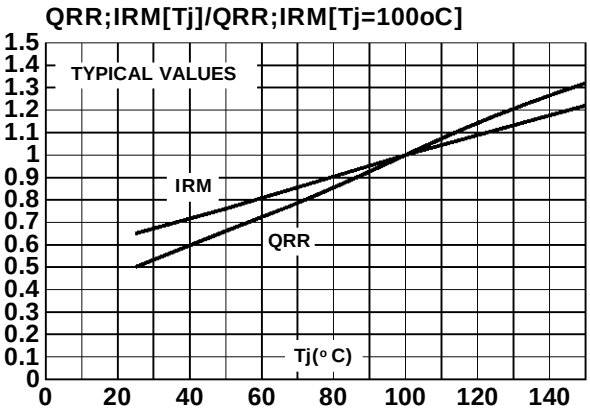



**Fig.11 :** TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

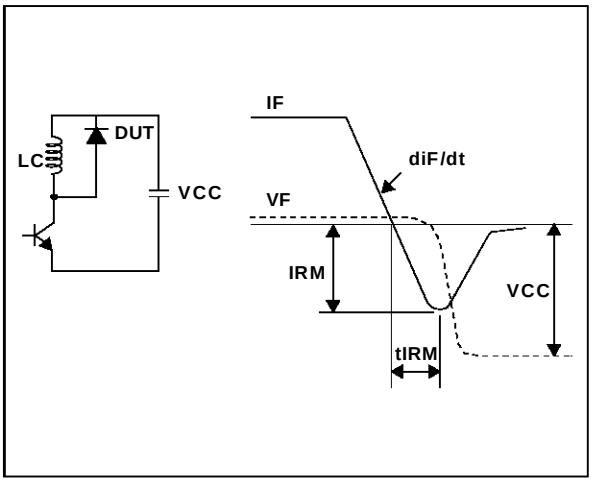
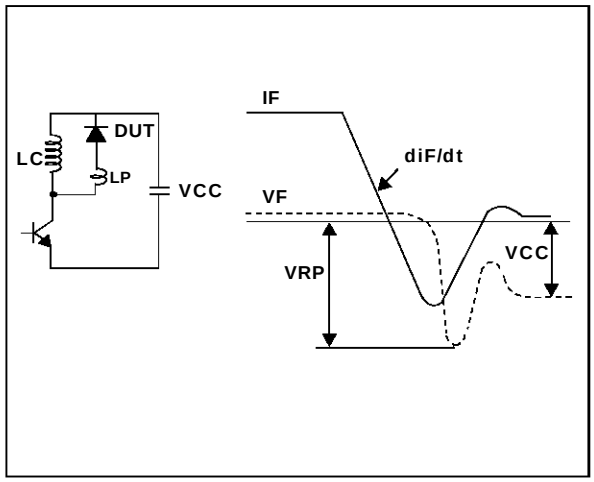
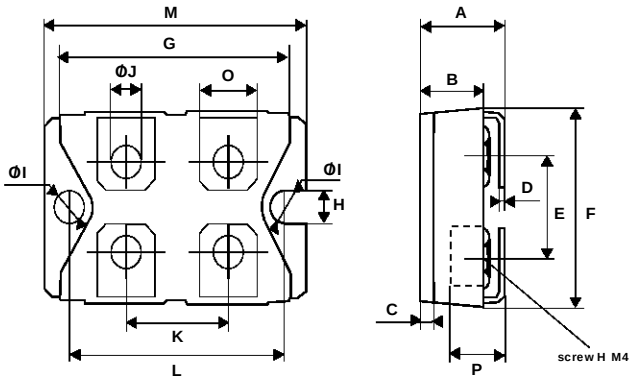



**Fig.12 :** TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



**PACKAGE MECHANICAL DATA**
ISOTOP Screw version




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g (without screws)
Electrical isolation : 2500$V_{(RMS)}$
Capacitance : < 45 pF
Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

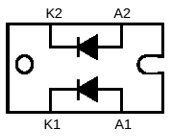
SGS-THOMSON MICROELECTRONICS

# BYT260PIV-400
# BYT261PIV-400

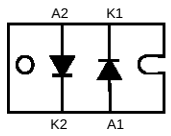
## FAST RECOVERY RECTIFIER DIODES

### FEATURES

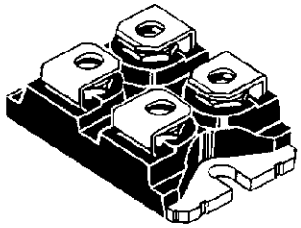
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 45 pF




**BYT261PIV-400**




**BYT260PIV-400**



**ISOTOP**™
(Plastic)

### DESCRIPTION

Dual high voltage rectifiers ranging from 400V to 200V suited for Switch Mode Power Supplies and other power converters.
The devices are packaged in ISOTOP.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{FRM}$ | Repetitive peak forward current | tp ≤ 10µs | | 800 | A |
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 140 | A |
| $I_{F(AV)}$ | Average forward current | Tc=80°C δ = 0.5 | Per diode | 60 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 600 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYT261PIV-/BYT260PIV- | | | Unit |
|---|---|---|---|---|---|
| | | 200 | 300 | 400 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 200 | 300 | 400 | V |

TM : ISOTOP is a trademark of **SGS-THOMSON Microelectronics**.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 0.7 | °C/W |
| | | Total | 0.4 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_F$ * | $T_j$ = 25°C | $I_F$ = 60 A | | | 1.5 | V |
| | $T_j$ = 100°C | | | | 1.4 | |
| $I_R$ ** | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 60 | µA |
| | $T_j$ = 100°C | | | | 6 | mA |

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A $I_R$ = 1A | | | 50 | ns |
| | | $I_F$ = 1A $dI_F/dt$ = -15A/µs $V_R$ = 30V | | | 100 | |

## TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{IRM}$ | $dI_F/dt$ = -240A/µs | $V_{CC}$ = 200V $I_F$ = 60A Lp ≤ 0.05µH $T_j$ = 100°C see fig. 11 | | | 75 | ns |
| | $dI_F/dt$ = -480A/µs | | | 50 | | |
| $I_{RM}$ | $dI_F/dt$ = -240A/µs | | | | 18 | A |
| | $dI_F/dt$ = -480A/µs | | | 24 | | |

## TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j$ = 100°C $V_{CC}$ = 120V $I_F = I_{F(AV)}$ $dI_F/dt$ = -60A/µs Lp = 0.8µH | see note see fig.12 | | 3.3 | 4 | / |

Note : Applicable to BYT261PIV-400 only

To evaluate the conduction losses use the following equation :
$P = 1.1 \times I_{F(AV)} + 0.0045 \times I_F{}^2{}_{(RMS)}$

**Fig.1 :** Low frequency power losses versus average current.

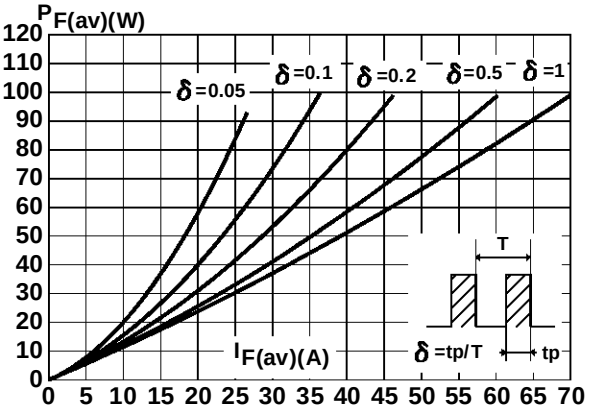



**Fig.2 :** Peak current versus form factor.

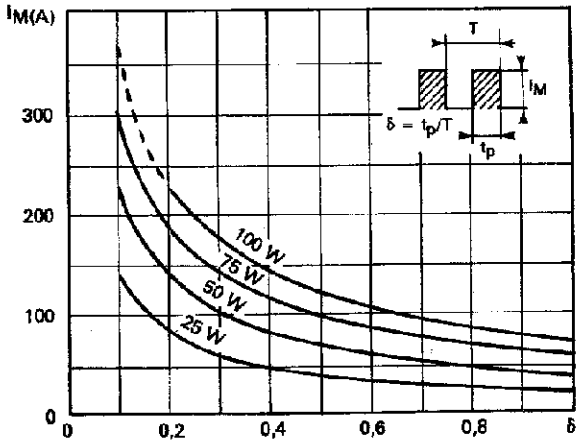



**Fig.3 :** Non repetitive peak surge current versus overload duration.

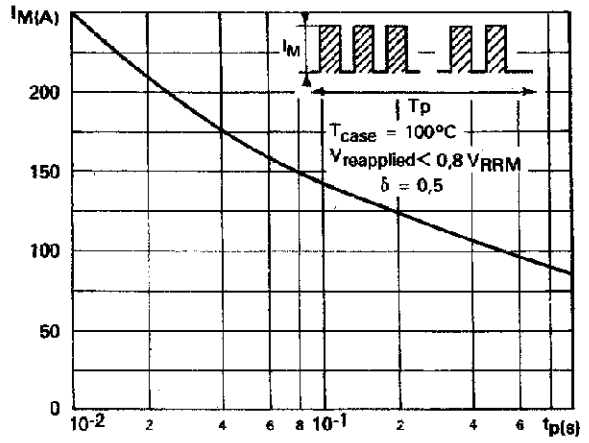



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

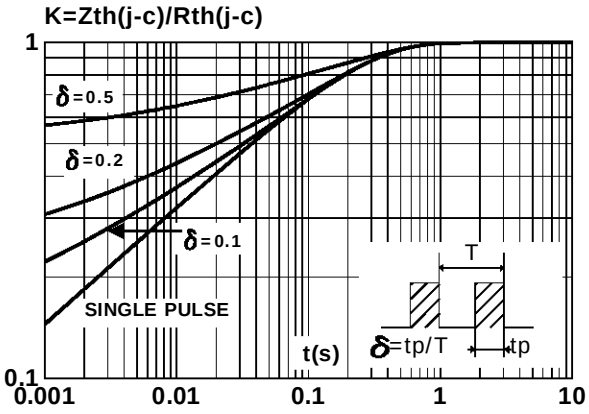



**Fig.5 :** Voltage drop versus forward current.

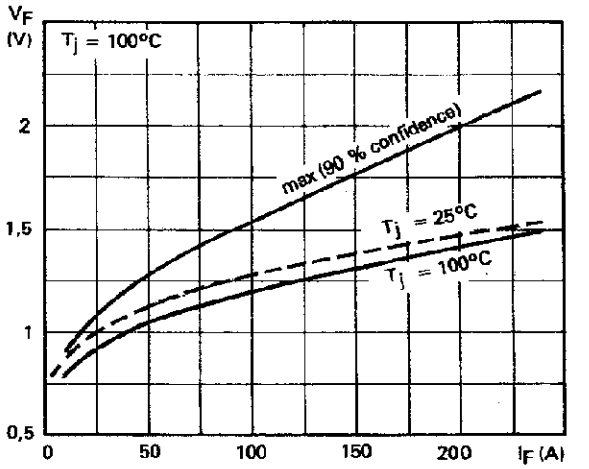



**Fig.6 :** Recovery charge versus $dI_F/dt$.

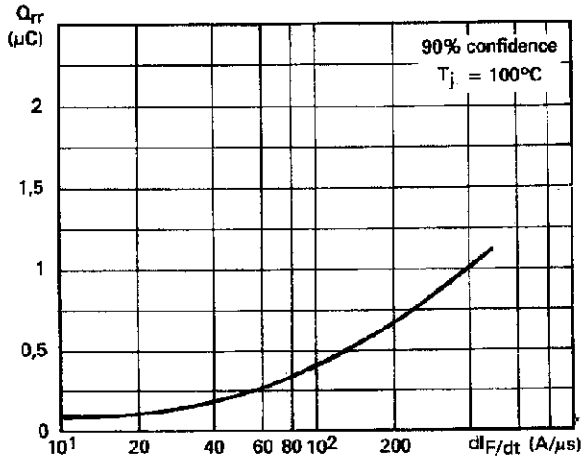


**Fig.7 :** Recovery time versus $dI_F/dt$.

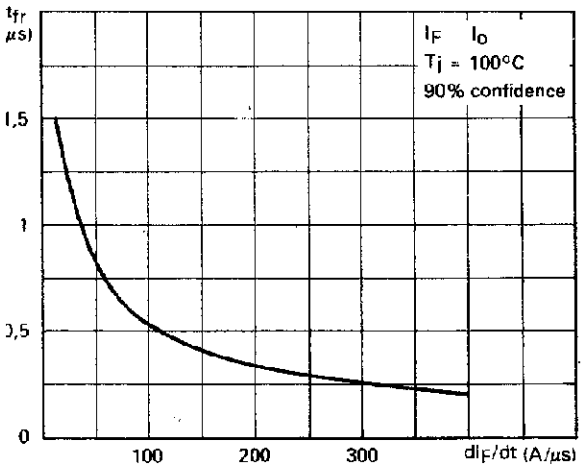



**Fig.8 :** Peak reverse current versus dIF/dt.

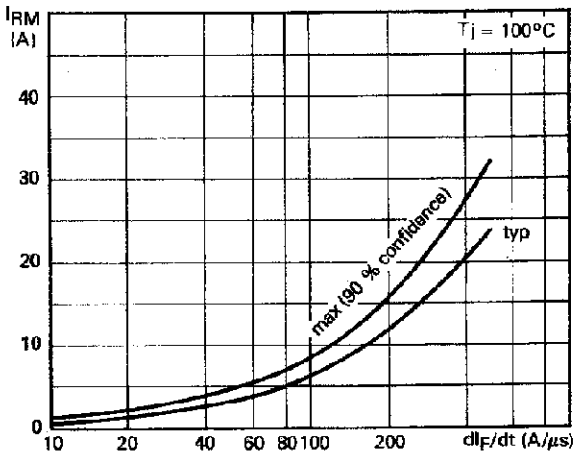



**Fig.9 :** Peak forward voltage versus $dI_F/dt$.

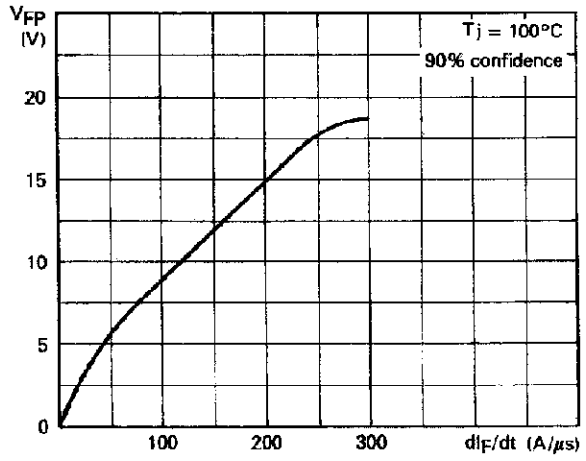



**Fig.10 :** Dynamic parameters versus junction temperature.

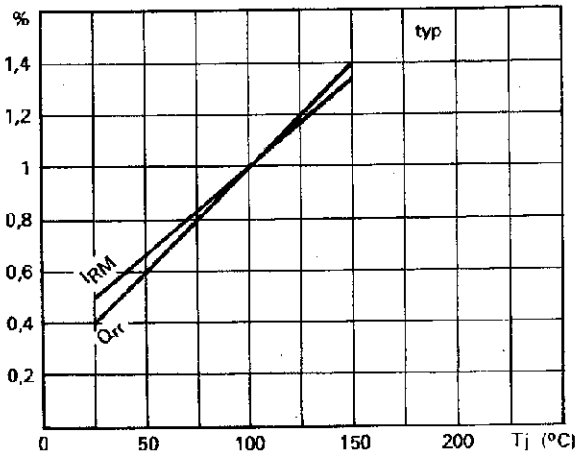



**Fig.11 :** TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

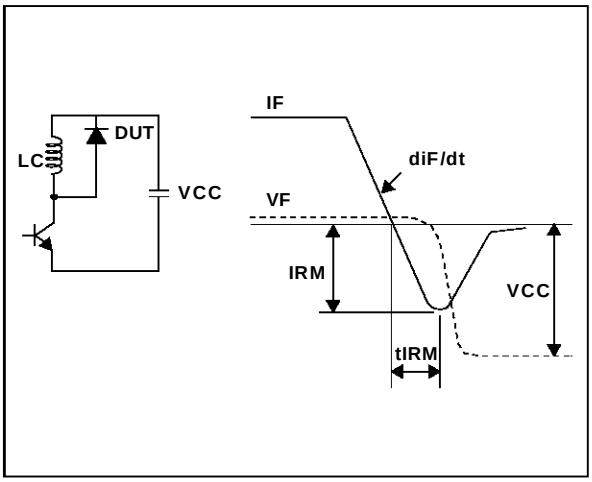
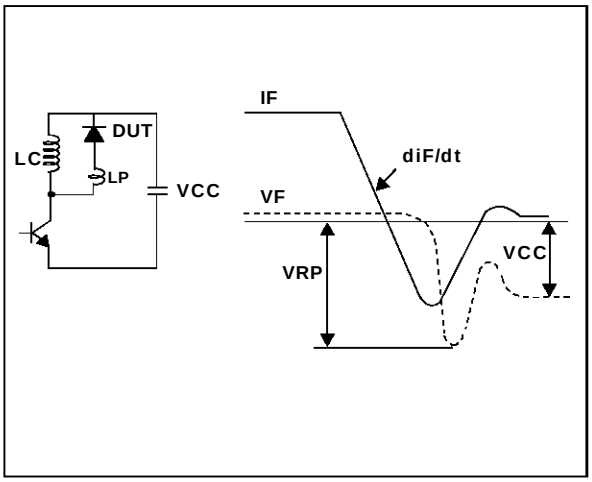
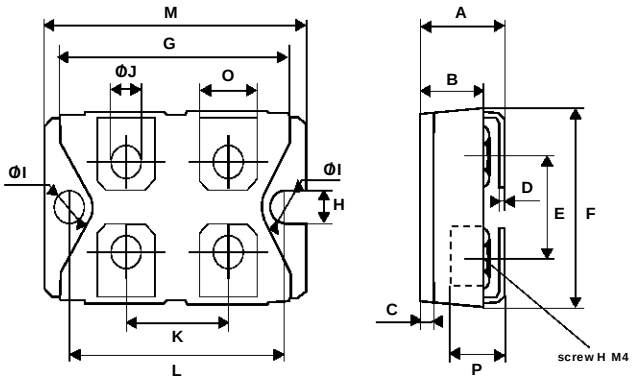



**Fig.12 :** TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



**PACKAGE MECHANICAL DATA**
ISOTOP




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g (without screws)
Electric isolation : 2500$V_{(RMS)}$
Capacitance : < 45 pF
Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

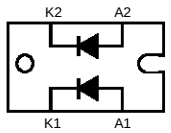
SGS-THOMSON MICROELECTRONICS

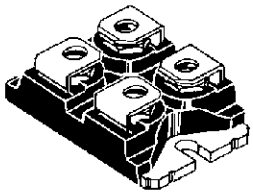
# BYV255V

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 55 pF



**ISOTOP**
(Plastic)

### DESCRIPTION

Dual rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in ISOTOP™ this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 150 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | Tc=110°C | Per diode | 100 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 1600 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYV255-V | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 0.4 | °C/W |
| | | Total | 0.25 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
Tj-Tc (diode 1) = P(diode 1) x Rth(j-c)(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 100 | µA |
| | $T_j$ = 100°C | | | | 10 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 100 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 200 A | | | 1.00 | |
| | $T_j$ = 25°C | $I_F$ = 200 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.7 \times I_{F(AV)} + 0.0015 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 55 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 80 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 5 ns | | 10 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 5 ns | | 1.5 | | V |

## TURN-OFF SWITCHING CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_{RM}$ | $T_j$ = 100°C | $I_F$ = 100A<br>Lp ≤ 0.05µH<br>Vcc ≤ 0.6 $V_{RRM}$ | dIF/dt = -200A/µs | | | 16 | A |
| | | | $dI_F/dt$ = -400A/µs | | 24 | | |

**Fig.1 :** Average forward power dissipation versus average forward current.

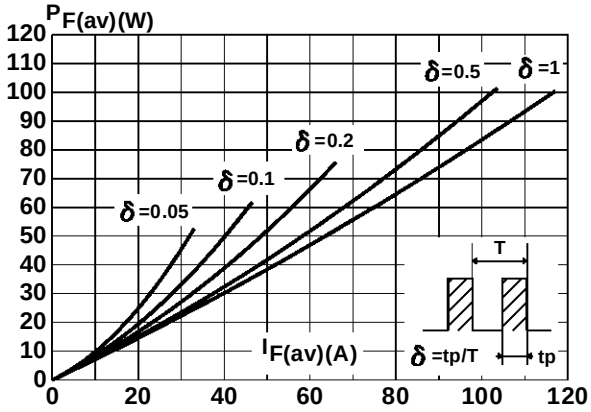



**Fig.2 :** Peak current versus form factor.

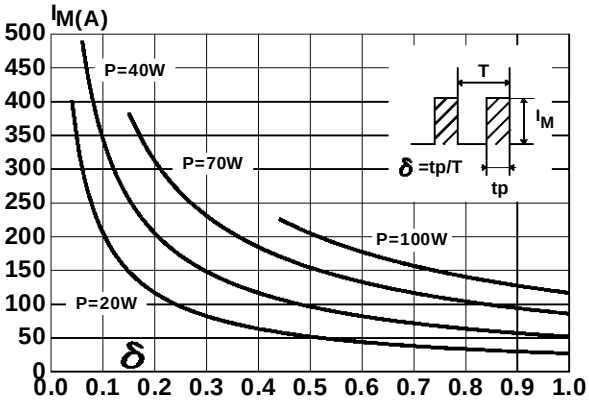



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

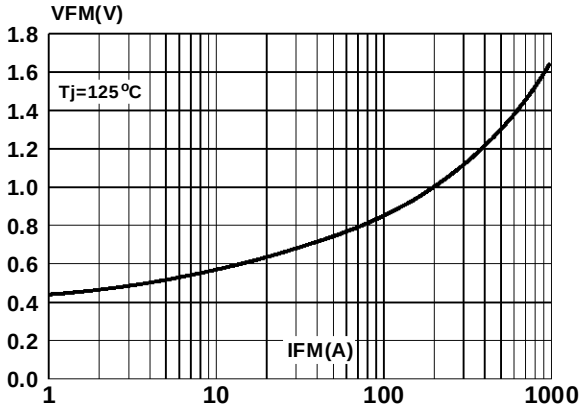



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

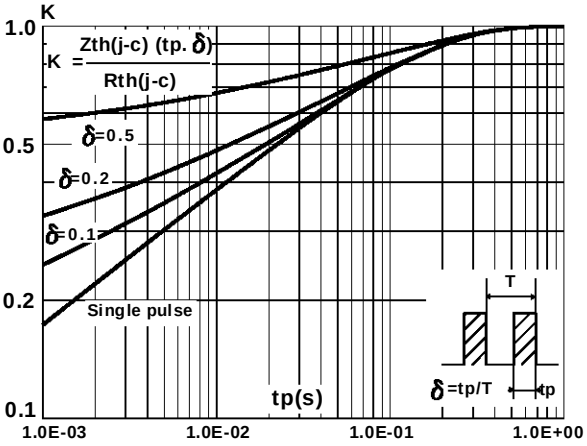



**Fig.5 :** Non repetitive surge peak forward current versus overload duration.

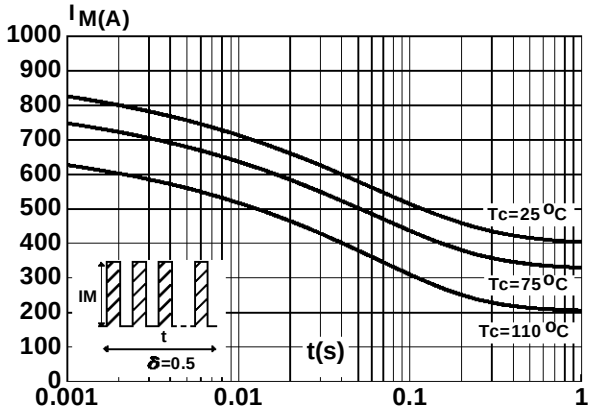



**Fig.6 :** Average current versus ambient temperature. (duty cycle : 0.5)

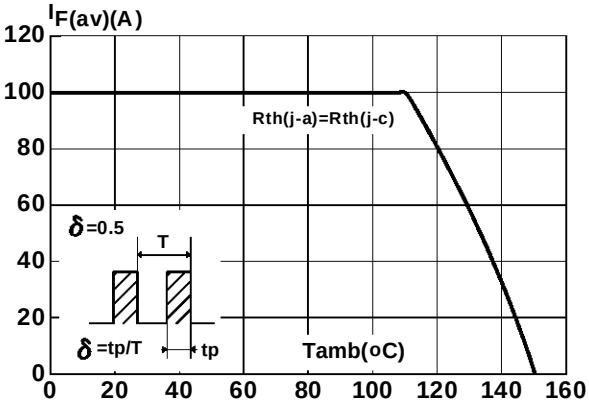


**Fig.7 :** Junction capacitance versus reverse voltage applied (Typical values).

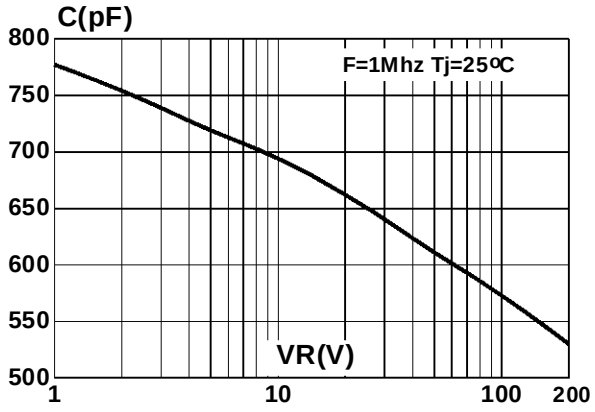



**Fig.8 :** Recovery charges versus $dI_F/dt$.

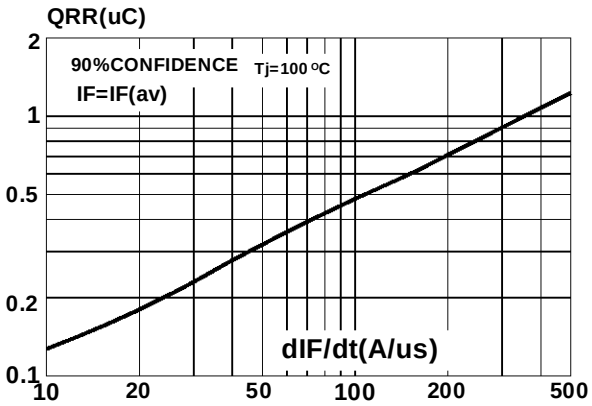



**Fig.9 :** Peak reverse current versus dIF/dt.

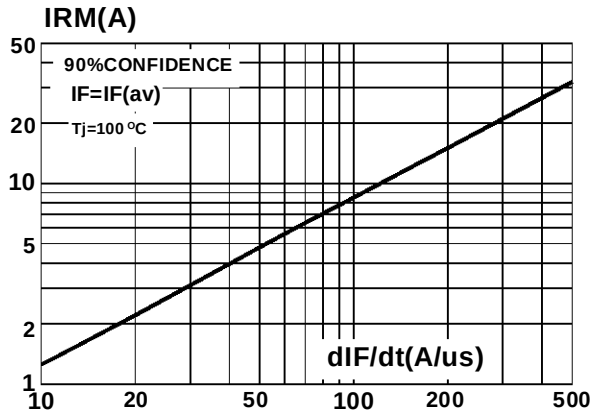
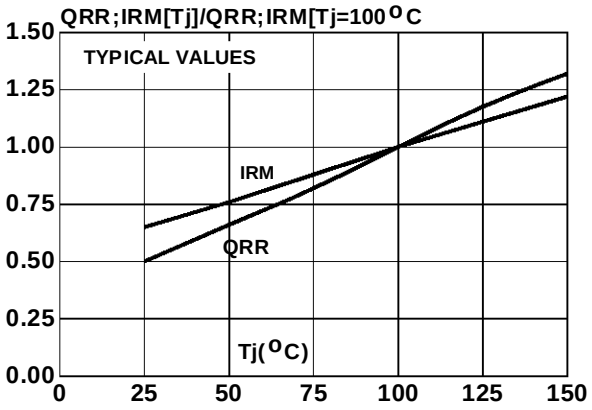
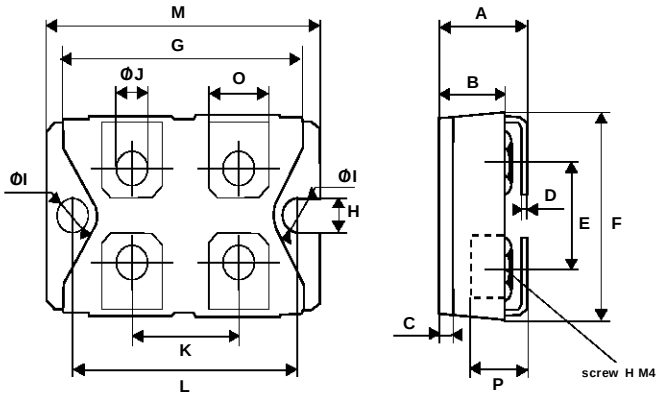



**Fig.10 :** Dynamic parameters versus junction temperature.



**PACKAGE MECHANICAL DATA**
ISOTOP




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g

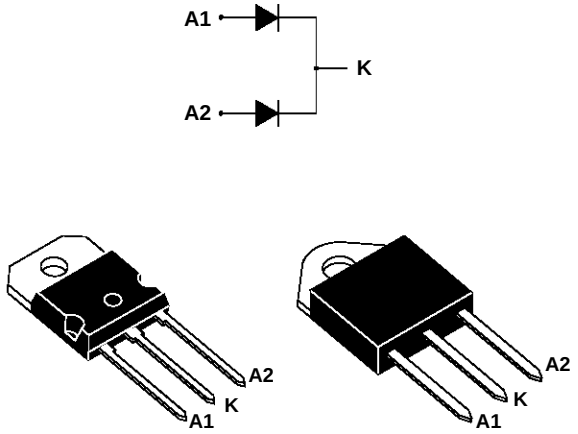
SGS-THOMSON MICROELECTRONICS

# BYV52/PI

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION TOP3I :
  Insulating voltage = 2500 V DC
  Capacitance = 12 pF




**SOT93**
(Plastic)

**BYV52-200**

**isolated**
**TOP3I**
(Plastic)

**BYV52PI-200**

### DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in SOT93, or TOP3I this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | | Value | Unit |
|---|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | | Per diode | 50 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | SOT93 | Tc=110°C | Per diode | 30 | A |
| | | TOP3I | Tc=90°C | Per diode | 30 | |
| $I_{FSM}$ | Surge non repetitive forward current | | tp=10ms sinusoidal | Per diode | 500 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYV52-/PI- | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

## THERMAL RESISTANCE

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| Rth (j-c) | Junction to case | SOT93 | Per diode | 1.2 | °C/W |
| | | | Total | 0.75 | |
| | | TOP3I | Per diode | 1.8 | |
| | | | Total | 1.2 | |
| Rth (c) | Coupling | SOT93 | | 0.3 | °C/W |
| | | TOP3I | | 0.6 | |

When the diodes 1 and 2 are used simultaneously :
Tj-Tc (diode 1) = P(diode 1) x Rth(j-c)(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 25 | µA |
| | $T_j$ = 100°C | | | | 2.5 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 20 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 40 A | | | 1.00 | |
| | $T_j$ = 25°C | $I_F$ = 40 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.7 \times I_{F(AV)} + 0.0075 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 35 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 50 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 5 ns | | 10 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 5 ns | | 1.5 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

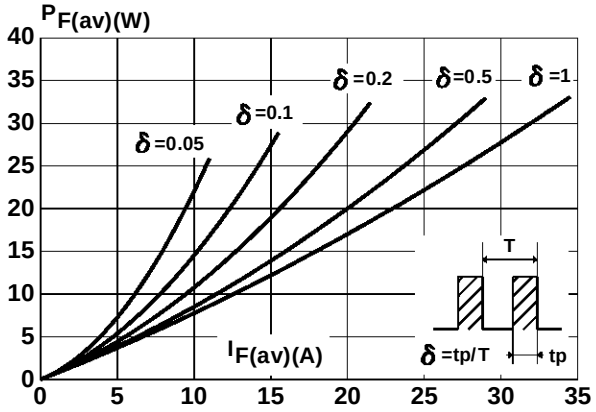



**Fig.2 :** Peak current versus form factor.

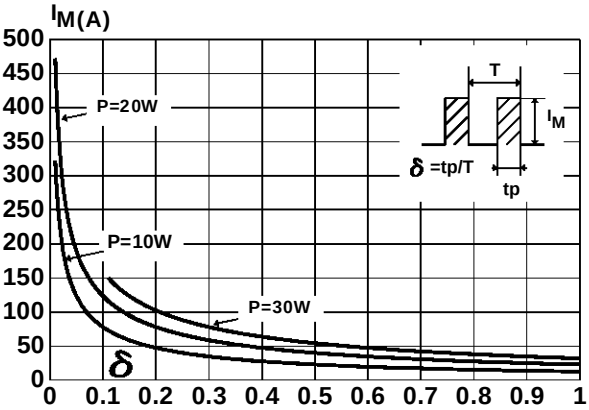



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

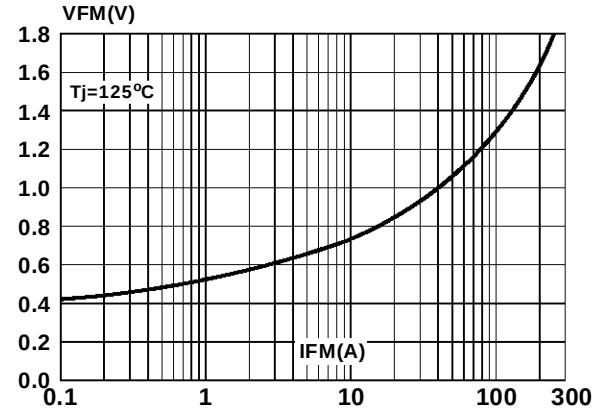



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

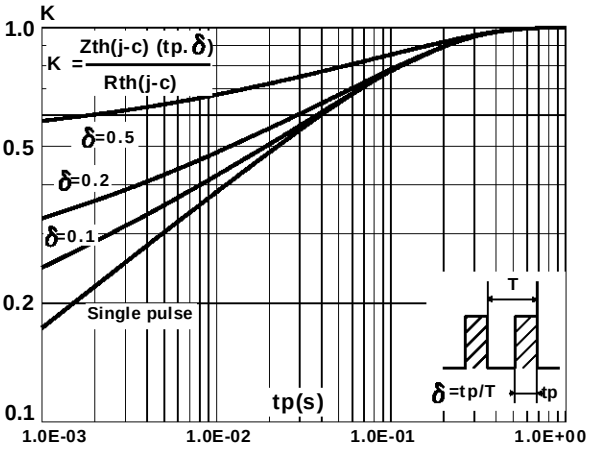



**Fig.5 :** Non repetitive surge peak forward current versus overload duration.
(SOD93)

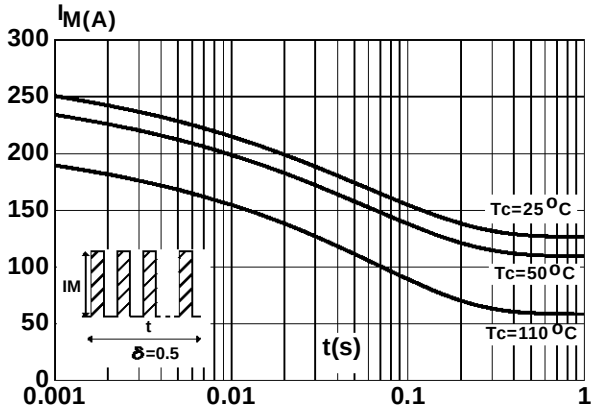



**Fig.6 :** Non repetitive surge peak forward current versus overload duration.
(TOP3I)

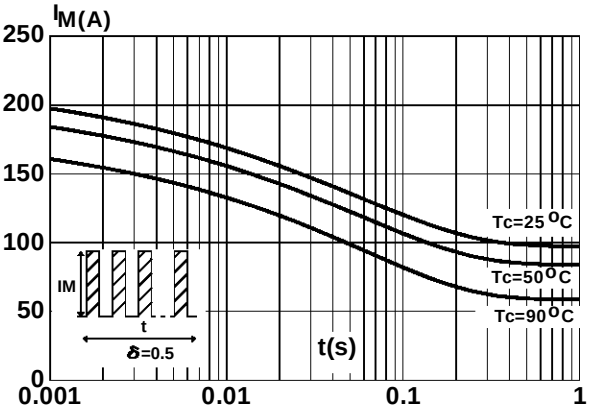


**Fig.7 :** Average current versus ambient temperature.
(duty cycle : 0.5) (SOD93)

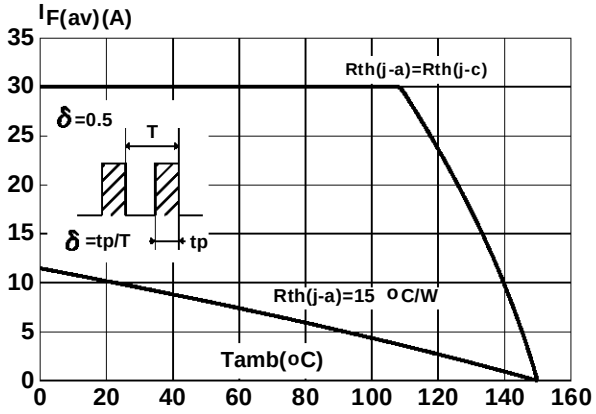



**Fig.8 :** Average current versus ambient temperature.
(duty cycle : 0.5) (TOP3I)

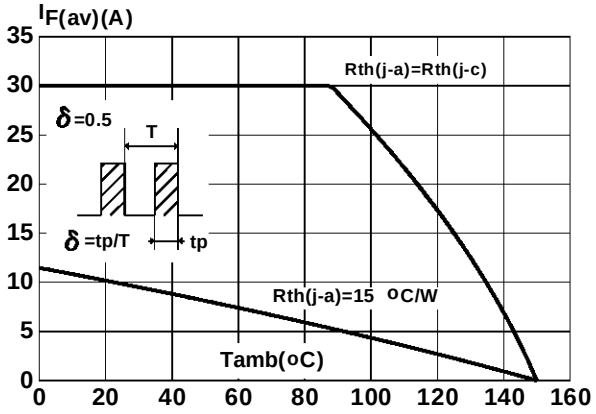



**Fig.9 :** Junction capacitance versus reverse voltage applied (Typical values).

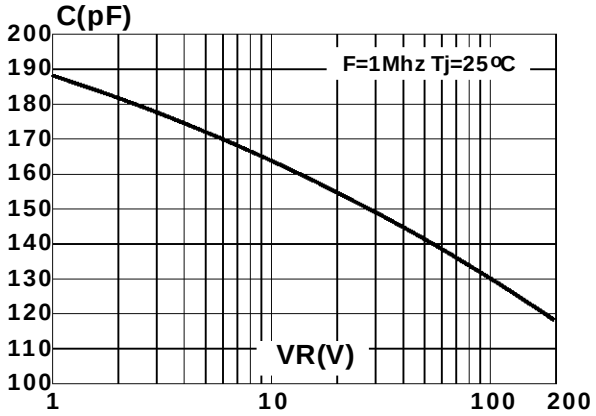



**Fig.10 :** Recovery charges versus $dI_F/dt$.

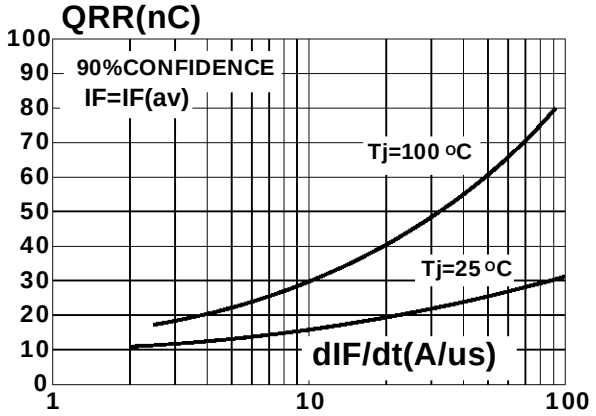



**Fig.11 :** Peak reverse current versus dIF/dt.

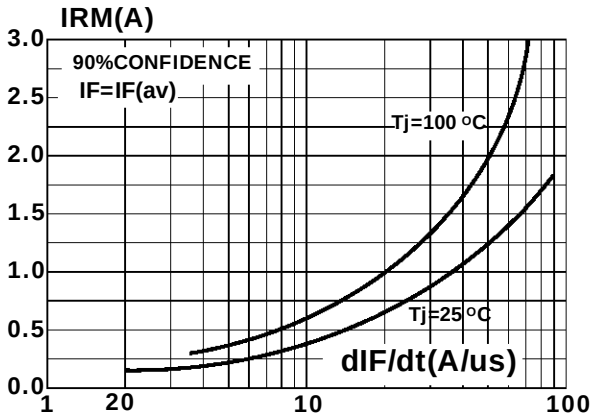
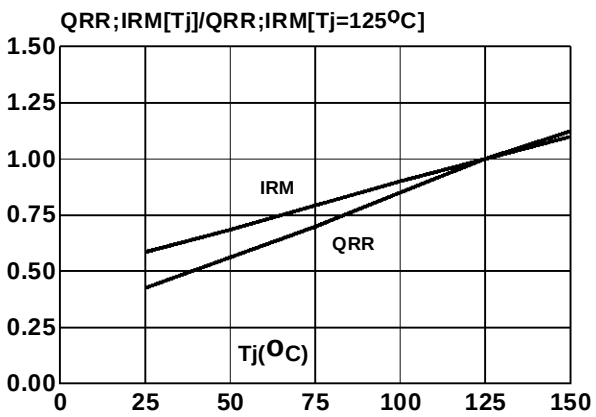
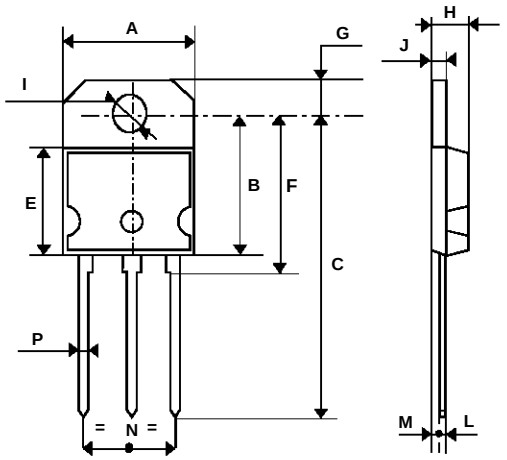



**Fig.12 :** Dynamic parameters versus junction temperature.



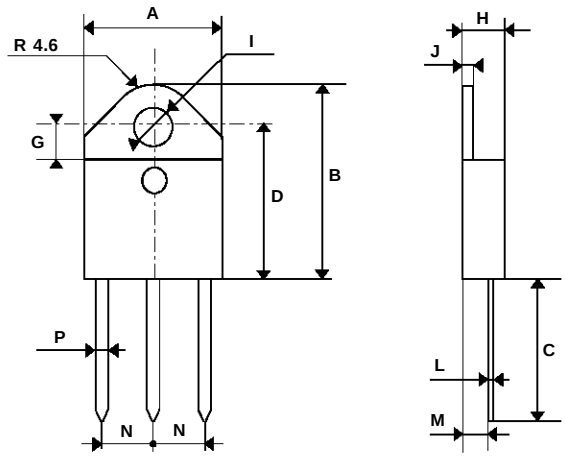
**PACKAGE MECHANICAL DATA**
SOD93




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 14.7 | 15.2 | 0.578 | 0.596 |
| B | | 16.2 | | 0.637 |
| C | 31 typ | | 1.220 typ | |
| D | 18 typ | | 0.708 typ | |
| E | | 12.2 | | 0.480 |
| G | 3.95 | 4.15 | 0.155 | 0.163 |
| H | 4.7 | 4.9 | 0.185 | 0.193 |
| I | 4 | 4.1 | 0.157 | 0.161 |
| J | 1.9 | 2.1 | 0.062 | 0.075 |
| L | 0.5 | 0.78 | 0.019 | 0.030 |
| M | 2.5 typ | | 0.098 typ | |
| N | 10.8 | 11.1 | 0.425 | 0.437 |
| P | 1.1 | 1.3 | 0.043 | 0.051 |

Cooling method : C
Marking : Type number
Weight : 5.3 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

**PACKAGE MECHANICAL DATA**
TOP3I (isolated)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 15.10 | 15.50 | 0.594 | 0.611 |
| B | 20.70 | 21.10 | 0.814 | 0.831 |
| C | 14.30 | 15.60 | 0.561 | 0.615 |
| D | 16.10 | 16.50 | 0.632 | 0.650 |
| G | 3.40 | - | 0.133 | - |
| H | 4.40 | 4.60 | 0.173 | 0.182 |
| I | 4.08 | 4.17 | 0.161 | 0.164 |
| J | 1.45 | 1.55 | 0.057 | 0.062 |
| L | 0.50 | 0.70 | 0.019 | 0.028 |
| M | 2.70 | 2.90 | 0.106 | 0.115 |
| N | 5.40 | 5.65 | 0.212 | 0.223 |
| P | 1.20 | 1.40 | 0.047 | 0.056 |

Cooling method : C
Marking : Type number
Weight : 4.7 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

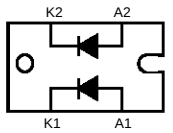
SGS-THOMSON MICROELECTRONICS

# BYV54V
# BYV541V

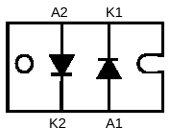
## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

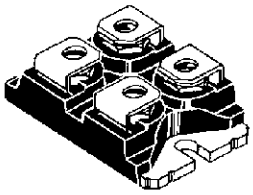
- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 45 pF




**BYV541V-200**




**BYV54V-200**



**ISOTOP**
(Plastic)

### DESCRIPTION

Dual rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in ISOTOP™ this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 100 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | Tc=90°C | Per diode | 50 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms sinusoidal | Per diode | 1000 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYV54V / BYV541V | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics.

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | Per diode | 1.2 | °C/W |
| | | Total | 0.85 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
Tj-Tc (diode 1) = P(diode 1) x Rth(j-c)(Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 50 | µA |
| | $T_j$ = 100°C | | | | 5 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 50 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 100 A | | | 1.00 | |
| | $T_j$ = 25°C | $I_F$ = 100 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.7 \times I_{F(AV)} + 0.003 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 40 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 60 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 5 ns | | 10 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 5 ns | | 1.5 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

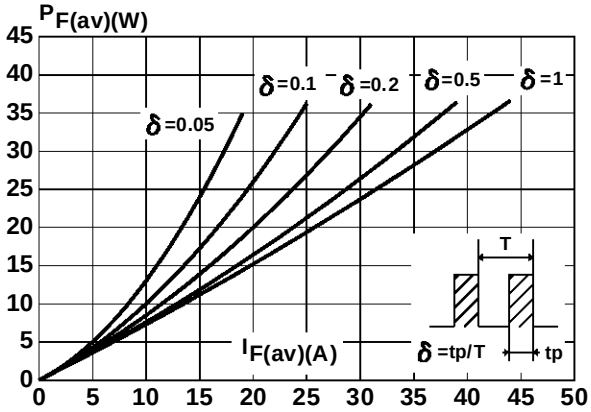



**Fig.2 :** Peak current versus form factor.

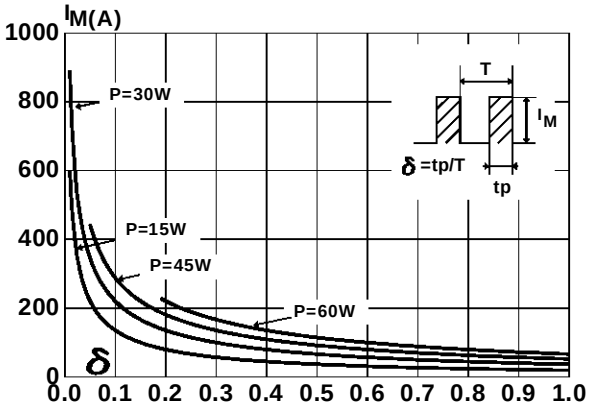



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

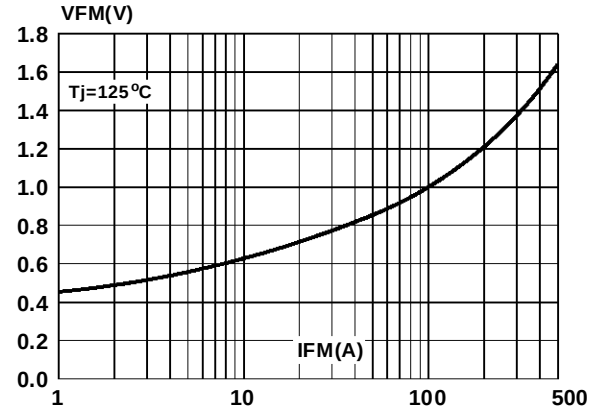



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

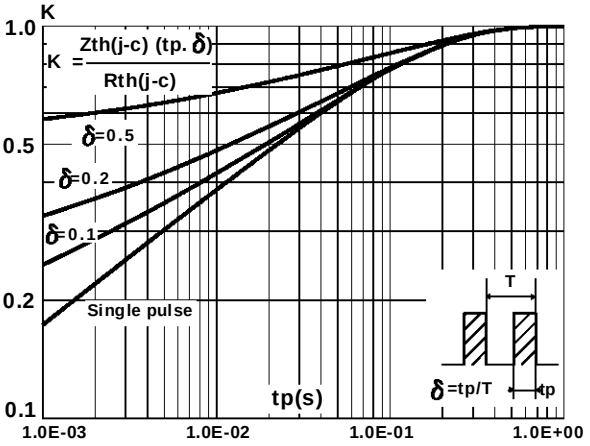



**Fig.5 :** Non repetitive surge peak forward current versus overload duration.

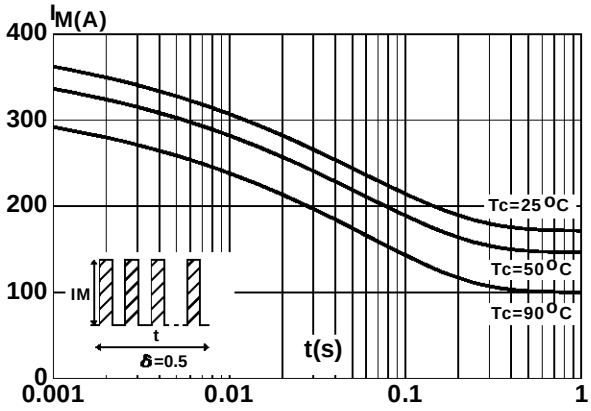



**Fig.6 :** Average current versus ambient temperature. (duty cycle : 0.5)

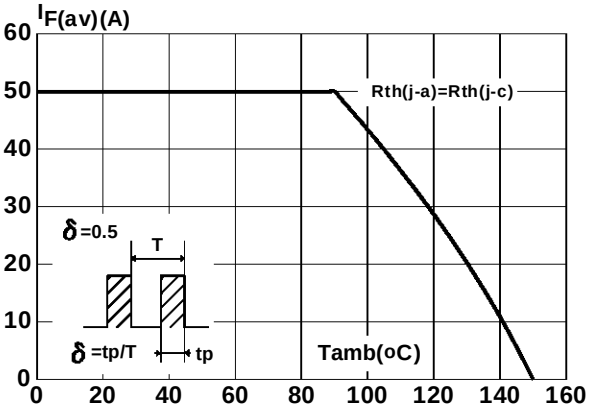


**Fig.7 :** Junction capacitance versus reverse voltage applied (Typical values).

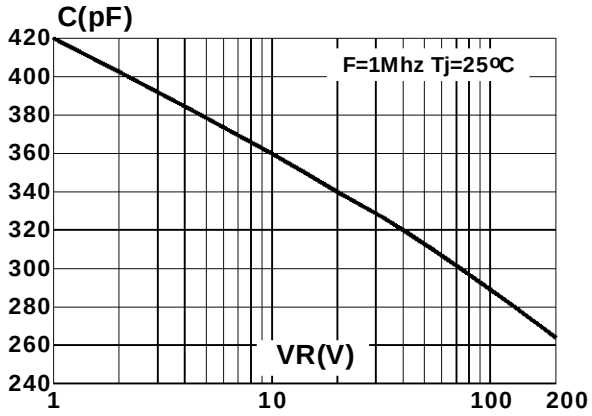



**Fig.8 :** Recovery charges versus $dI_F/dt$.

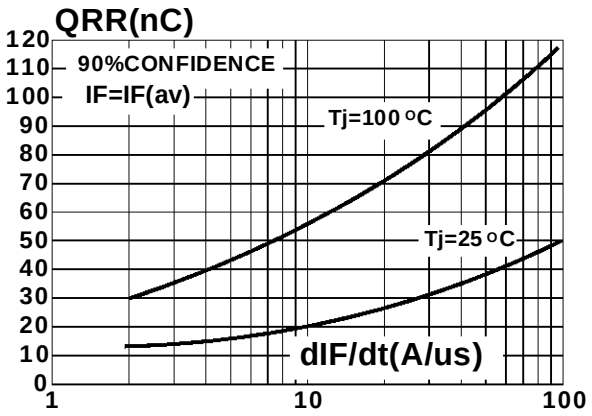



**Fig.9 :** Peak reverse current versus dIF/dt.

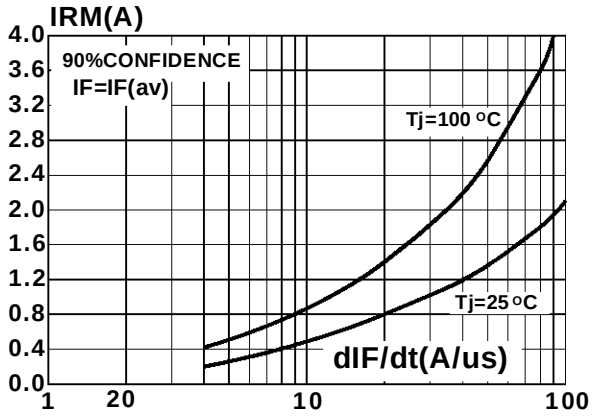
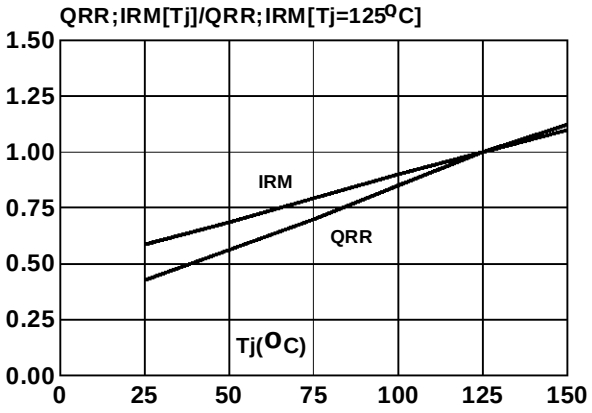
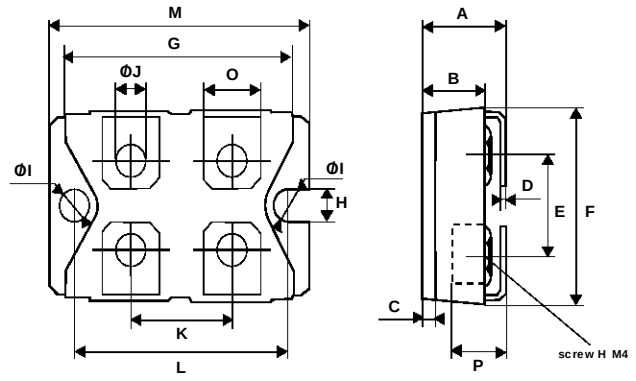



**Fig.10 :** Dynamic parameters versus junction temperature.



**PACKAGE MECHANICAL DATA**
ISOTOP




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
Marking : Type number
Weight : 28 g

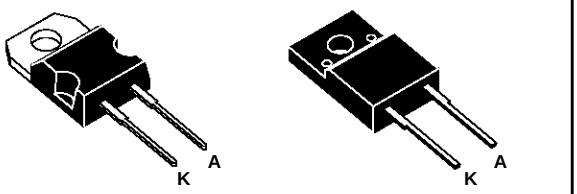
SGS-THOMSON MICROELECTRONICS

# BYW29(F)

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC) :
  Insulating voltage = 2000 V DC
  Capacitance = 12 pF




**TO220AC**
(Plastic)

**BYW29-200**

**isolated**
**ISOWATT220AC**
(Plastic)

**BYW29F-200**

### DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC or ISOWATT220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | | 16 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | TO220AC | Tc=120°C | 8 | A |
| | | ISOWATT220AC | Tc=100°C | 8 | |
| $I_{FSM}$ | Surge non repetitive forward current | | tp=10ms sinusoidal | 80 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 65 to + 150<br>- 65 to + 150 | °C<br>°C |

| Symbol | Parameter | BYW29-(F) | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | TO220AC | 2.8 | °C/W |
| | | ISOWATT220AC | 5.0 | |

## ELECTRICAL CHARACTERISTICS
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 10 | µA |
| | $T_j$ = 100°C | | | | 0.6 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 5 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 10 A | | | 1.05 | |
| | $T_j$ = 25°C | $I_F$ = 10 A | | | 1.15 | |

Pulse test :* tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.65 \times I_{F(AV)} + 0.040 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 25 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 35 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 10 ns | | 15 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 10 ns | | 2 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

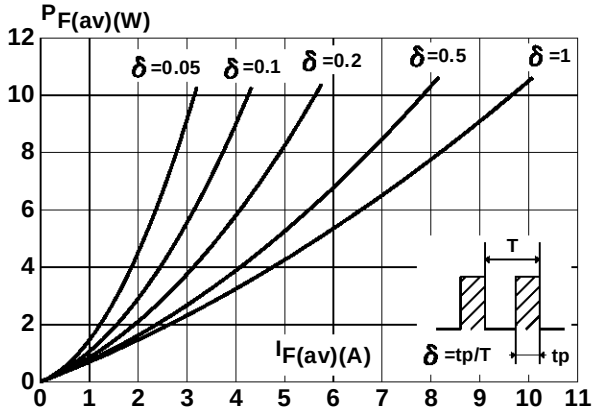



**Fig.2 :** Peak current versus form factor.

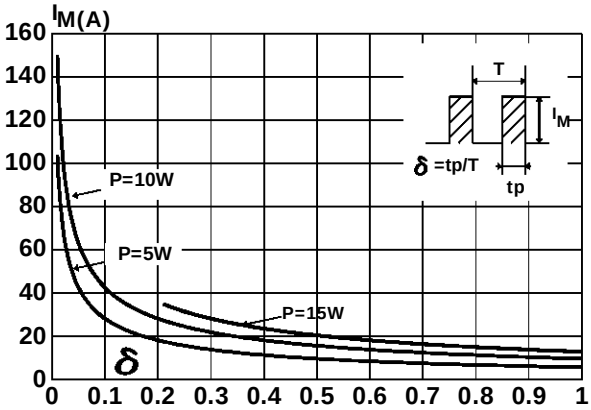



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

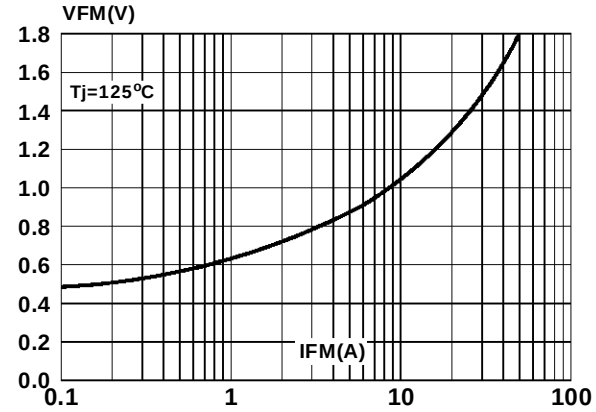



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration. (TO220AC)

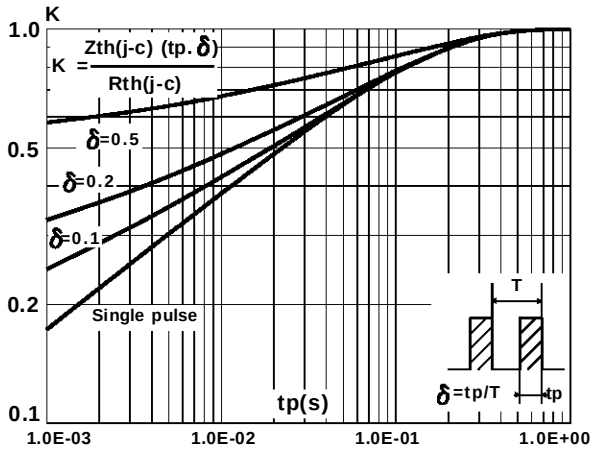



**Fig.5 :** Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AC)

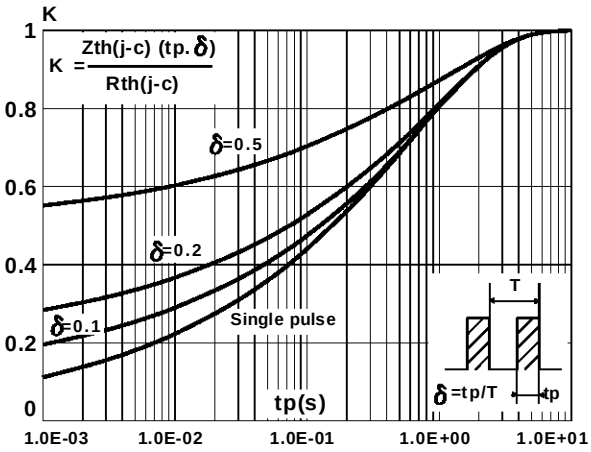


**Fig.6 :** Non repetitive surge peak forward current versus overload duration.
(TO220AC)

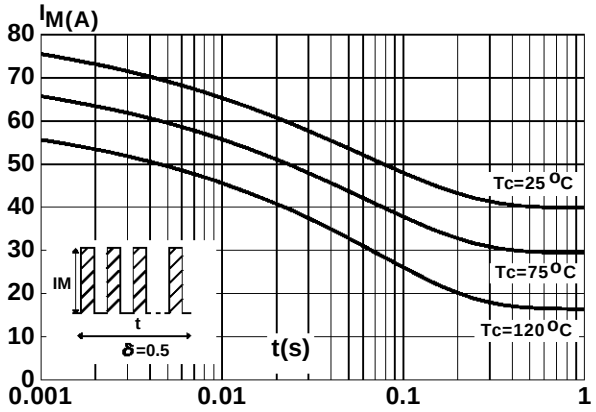



**Fig.7 :** Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

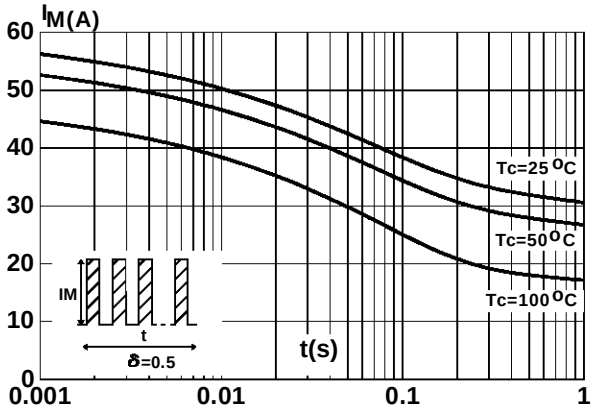



**Fig.8 :** Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AC)

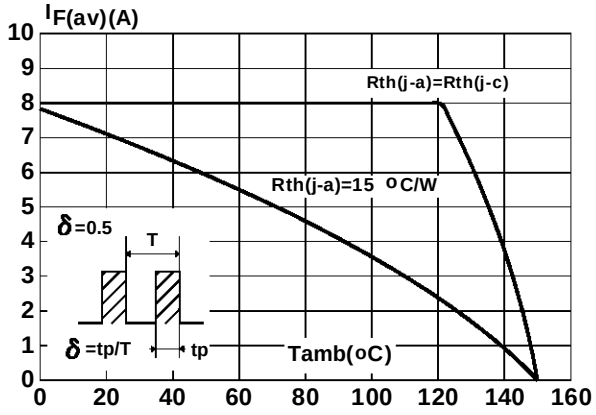



**Fig.9 :** Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

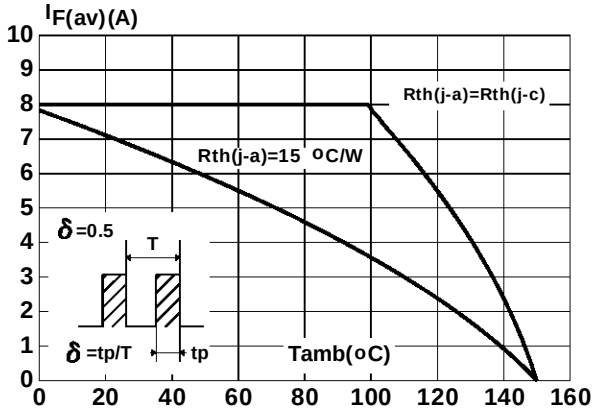



**Fig.10 :** Junction capacitance versus reverse voltage applied (Typical values).

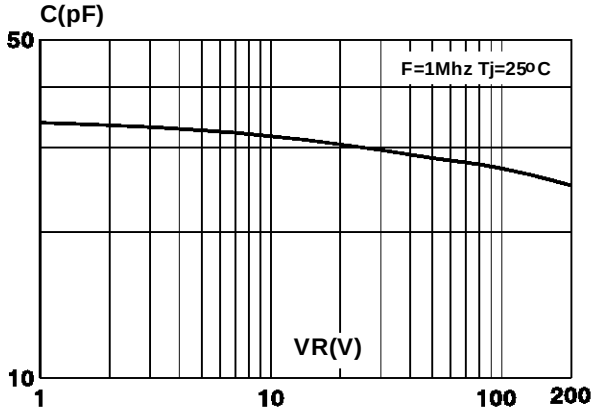



**Fig.11 :** Recovery charges versus $dI_F/dt$.

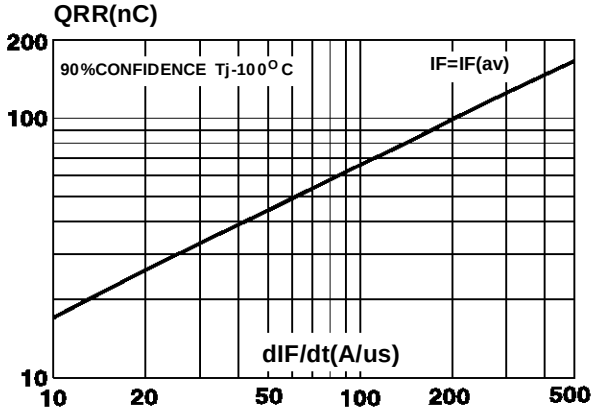


**Fig.12 :** Peak reverse current versus dIF/dt.

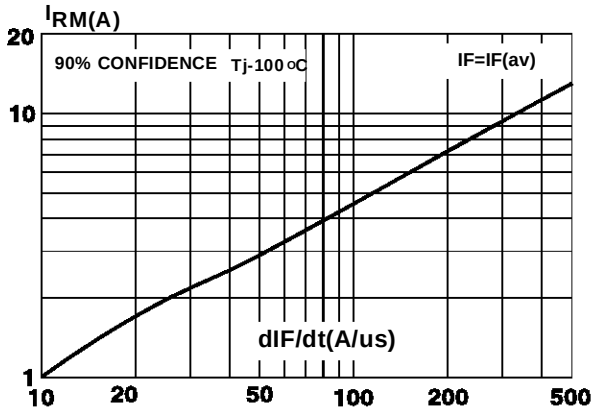
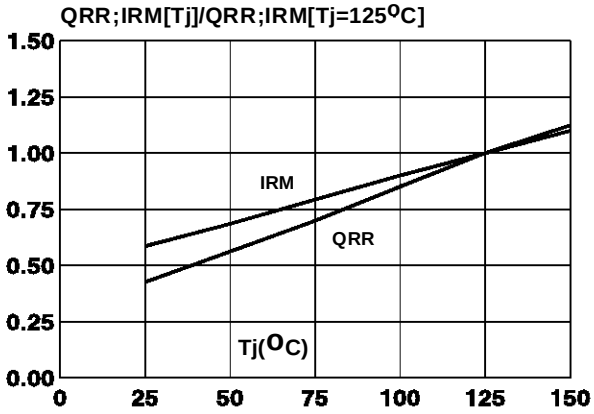
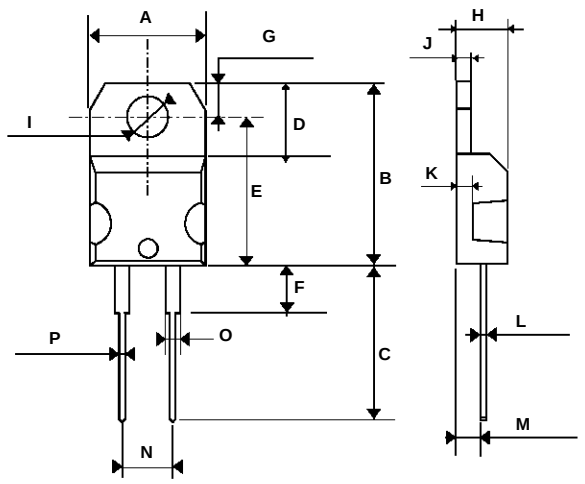



**Fig.13 :** Dynamic parameters versus junction temperature.



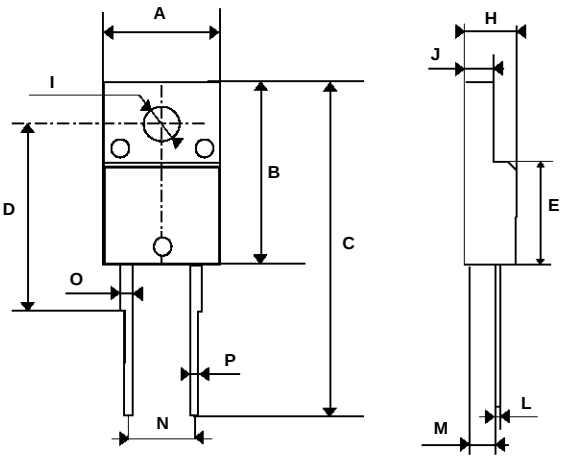
**PACKAGE MECHANICAL DATA**
TO220AC (JEDEC outline)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10 | 10.4 | 0.393 | 0.409 |
| B | 15.2 | 15.9 | 0.598 | 0.626 |
| C | 13 | 14 | 0.511 | 0.551 |
| D | 6.2 | 6.6 | 0.244 | 0.260 |
| E | 16.4 typ. | | 0.645 typ. | |
| F | 3.5 | 4.2 | 0.137 | 0.165 |
| G | 2.65 | 2.95 | 0.104 | 0.116 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3.75 | 3.85 | 0.147 | 0.151 |
| J | 1.23 | 1.32 | 0.048 | 0.051 |
| K | 1.27 typ. | | 0.050 typ. | |
| L | 0.49 | 0.70 | 0.019 | 0.027 |
| M | 2.4 | 2.72 | 0.094 | 0.107 |
| N | 4.95 | 5.15 | 0.194 | 0.203 |
| O | 1.14 | 1.70 | 0.044 | 0.067 |
| P | 0.61 | 0.88 | 0.024 | 0.034 |

Cooling method : C
Marking : Type number
Weight : 1.9 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

**PACKAGE MECHANICAL DATA**
ISOWATT220AC (JEDEC outline)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10 | 10.4 | 0.393 | 0.409 |
| B | 15.9 | 16.4 | 0.626 | 0.645 |
| C | 28.6 | 30.6 | 1.126 | 1.204 |
| D | 16 typ | | 0.630 typ | |
| E | 9 | 9.3 | 0.354 | 0.366 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3 | 3.2 | 0.118 | 0.126 |
| J | 2.5 | 2.7 | 0.098 | 0.106 |
| L | 0.4 | 0.7 | 0.015 | 0.027 |
| M | 2.4 | 2.75 | 0.094 | 0.108 |
| N | 4.95 | 5.2 | 0.195 | 0.204 |
| O | 1.15 | 1.7 | 0.045 | 0.067 |
| P | 0.75 | 1 | 0.030 | 0.039 |

Cooling method : C
Marking : Type number
Weight : 2 g
Recommended torque value : 0.55m.N
Maximum torque value : 0.70m.N

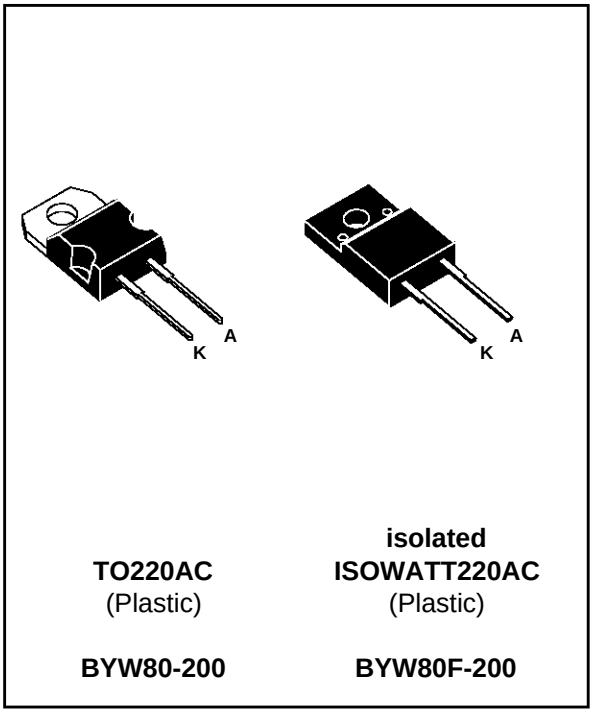
SGS-THOMSON MICROELECTRONICS

# BYW80(F)

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC) :
  Insulating voltage = 2000 V DC
  Capacitance = 12 pF




**TO220AC**
(Plastic)

**BYW80-200**

**isolated**
**ISOWATT220AC**
(Plastic)

**BYW80F-200**

### DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC, or ISOWATT220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | | 20 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | TO220AC | Tc=120°C | 10 | A |
| | | ISOWATT220AC | Tc=95°C | 10 | |
| $I_{FSM}$ | Surge non repetitive forward current | | tp=10ms sinusoidal | 100 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 65 to + 150<br>- 65 to + 150 | °C<br>°C |

| Symbol | Parameter | BYW80-(F) | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | TO220AC | 2.5 | °C/W |
| | | ISOWATT220AC | 4.7 | |

## ELECTRICAL CHARACTERISTICS
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 10 | µA |
| | $T_j$ = 100°C | | | | 1 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 7 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 15 A | | | 1.05 | |
| | $T_j$ = 25°C | $I_F$ = 15 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.65 \times I_{F(AV)} + 0.027 \times I_F{}^2{}_{(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 25 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 35 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 10 ns | | 15 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 10 ns | | 2 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

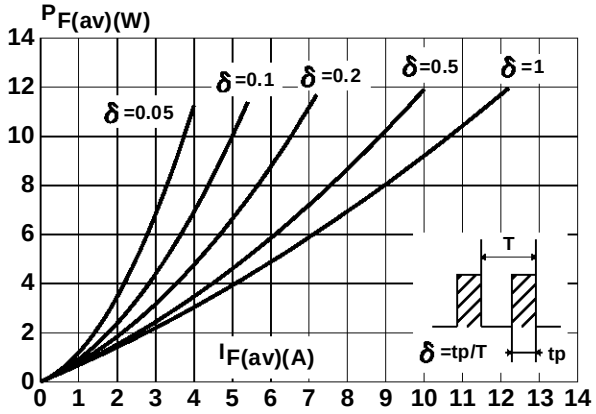



**Fig.2 :** Peak current versus form factor.

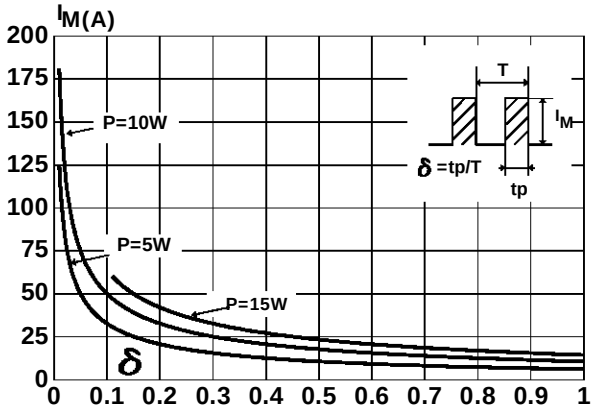



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

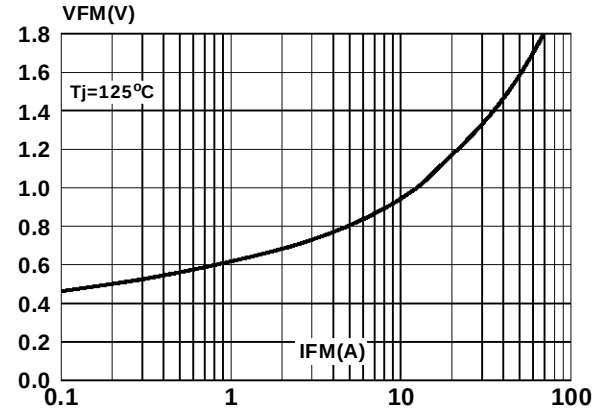



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration. (TO220AC)

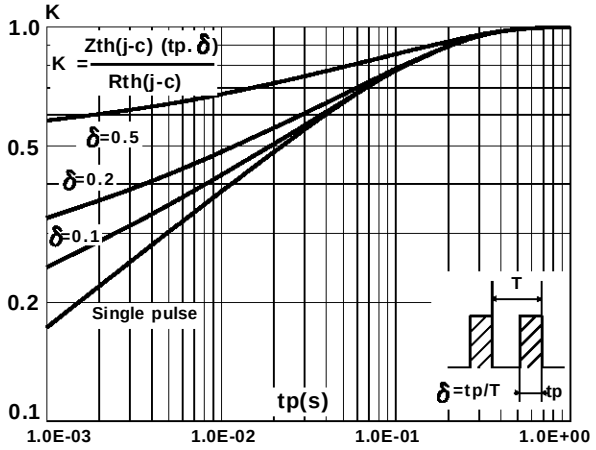



**Fig.5 :** Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AC)

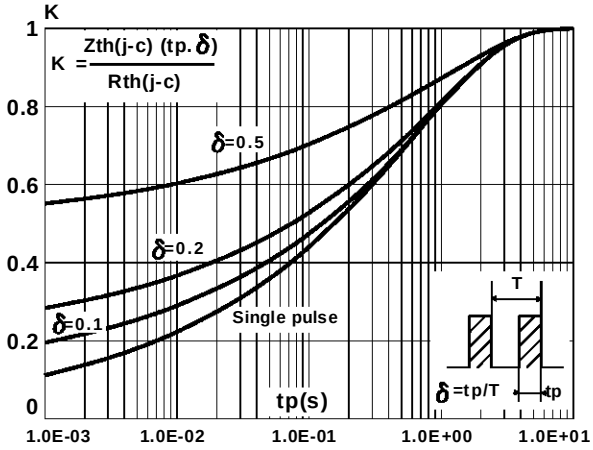


**Fig.6 :** Non repetitive surge peak forward current versus overload duration.
(TO220AC)

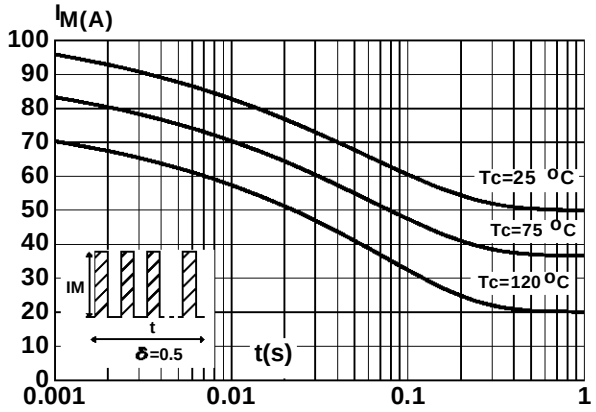



**Fig.7 :** Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

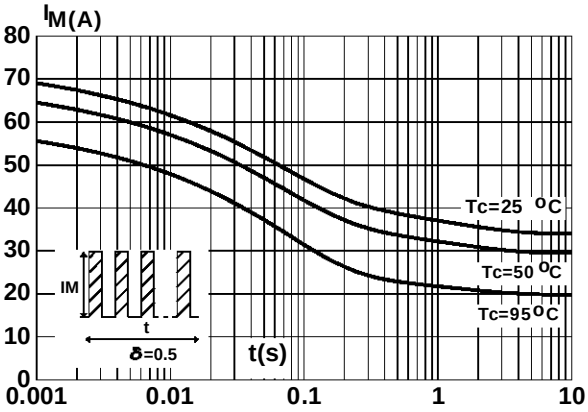



**Fig.8 :** Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AC)

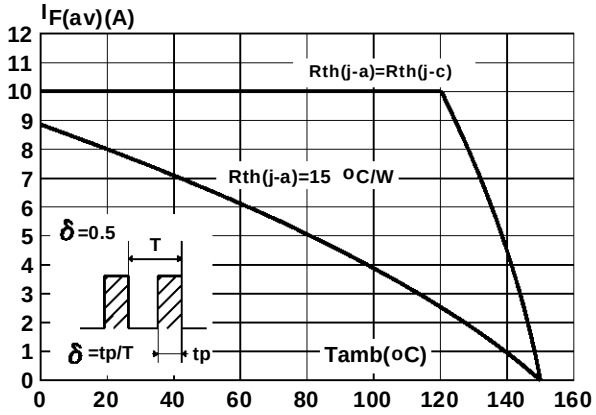



**Fig.9 :** Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

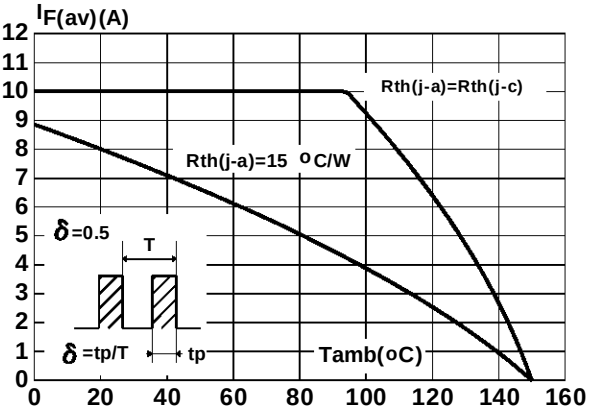



**Fig.10 :** Junction capacitance versus reverse voltage applied (Typical values).

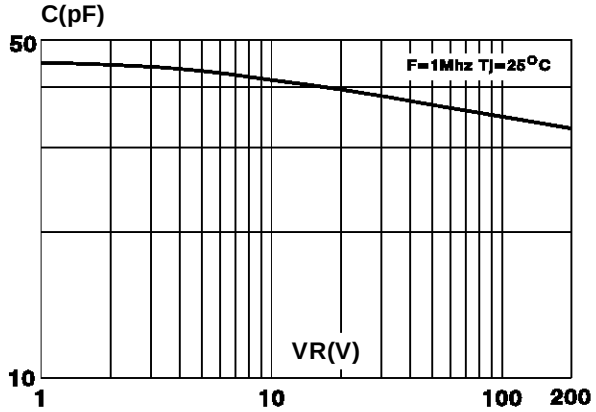



**Fig.11 :** Recovery charges versus $dI_F/dt$.

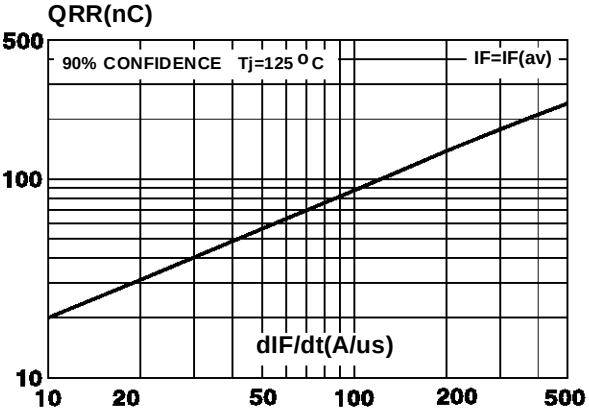


**Fig.12 :** Peak reverse current versus dIF/dt.

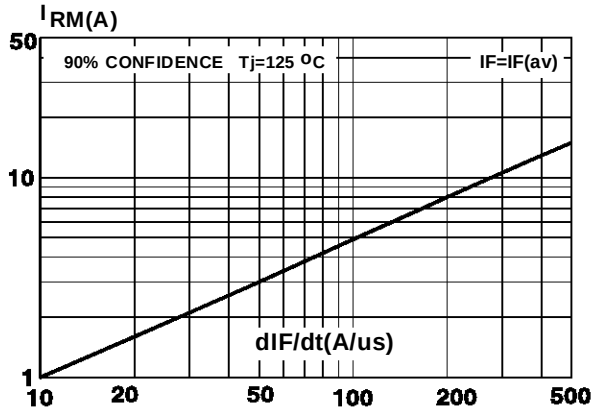
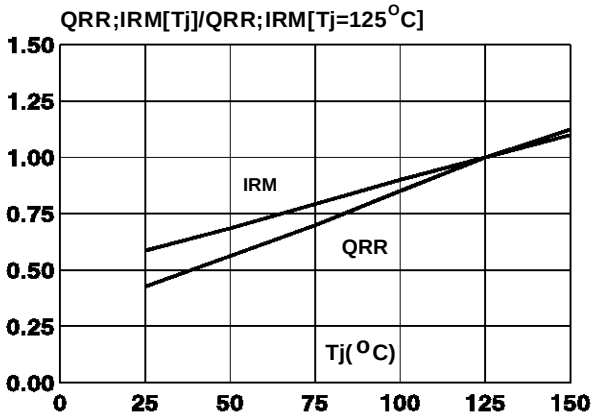
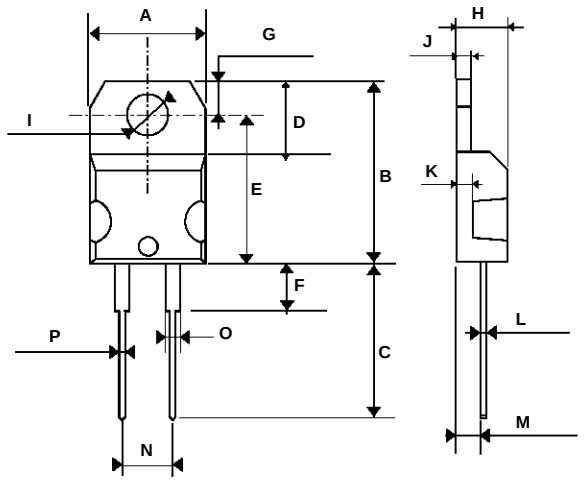



**Fig.13 :** Dynamic parameters versus junction temperature.



## PACKAGE MECHANICAL DATA

TO220AC (JEDEC outline)

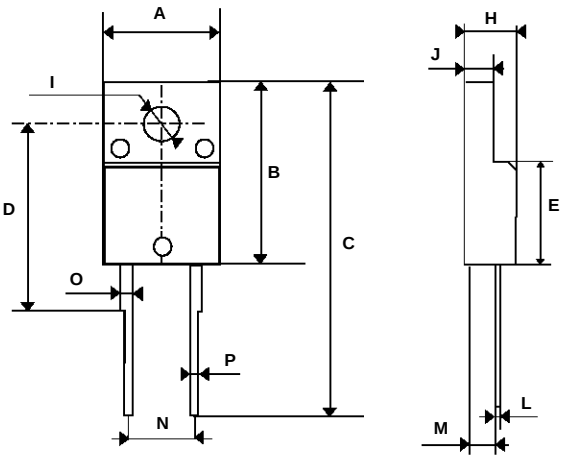



| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10 | 10.4 | 0.393 | 0.409 |
| B | 15.2 | 15.9 | 0.598 | 0.626 |
| C | 13 | 14 | 0.511 | 0.551 |
| D | 6.2 | 6.6 | 0.244 | 0.260 |
| E | 16.4 typ. | | 0.645 typ. | |
| F | 3.5 | 4.2 | 0.137 | 0.165 |
| G | 2.65 | 2.95 | 0.104 | 0.116 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3.75 | 3.85 | 0.147 | 0.151 |
| J | 1.23 | 1.32 | 0.048 | 0.051 |
| K | 1.27 typ. | | 0.050 typ. | |
| L | 0.49 | 0.70 | 0.019 | 0.027 |
| M | 2.4 | 2.72 | 0.094 | 0.107 |
| N | 4.95 | 5.15 | 0.194 | 0.203 |
| O | 1.14 | 1.70 | 0.044 | 0.067 |
| P | 0.61 | 0.88 | 0.024 | 0.034 |

Cooling method : C
Marking : Type number
Weight : 1.9 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

## PACKAGE MECHANICAL DATA

ISOWATT220AC (JEDEC outline)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10 | 10.4 | 0.393 | 0.409 |
| B | 15.9 | 16.4 | 0.626 | 0.645 |
| C | 28.6 | 30.6 | 1.126 | 1.204 |
| D | 16 typ | | 0.630 typ | |
| E | 9 | 9.3 | 0.354 | 0.366 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3 | 3.2 | 0.118 | 0.126 |
| J | 2.5 | 2.7 | 0.098 | 0.106 |
| L | 0.4 | 0.7 | 0.015 | 0.027 |
| M | 2.4 | 2.75 | 0.094 | 0.108 |
| N | 4.95 | 5.2 | 0.195 | 0.204 |
| O | 1.15 | 1.7 | 0.045 | 0.067 |
| P | 0.75 | 1 | 0.030 | 0.039 |

Cooling method : C
Marking : Type number
Weight : 2 g
Recommended torque value : 0.55m.N
Maximum torque value : 0.70m.N

SGS-THOMSON MICROELECTRONICS

# BYW 100-50 →200

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES
- HIGH SURGE CURRENT
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF $t_{rr}$ AND $I_{RM}$ AT 100°C UNDER USERS CONDITIONS

**F 126**
(Plastic)

### DESCRIPTION

Low voltage drop and rectifier suited for switching mode base drive and transistor circuits.

### ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{FRM}$ | Repetive Peak Forward Current | $t_p \leq 20\mu s$ | 50 | A |
| $I_{F(AV)}$ | Average Forward Current* | $T_a = 90°C$ $\delta = 0.5$ | 1.5 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 50 | A |
| $P_{tot}$ | Power Dissipation* | $T_a = 90°C$ | 1.3 | W |
| $T_{stg}$ $T_j$ | Storage and Junction Temperature Range | | - 40 to + 150 - 40 to + 150 | °C |
| $T_L$ | Maximum Lead Temperature for Soldering during 10s at 4mm from Case | | 230 | °C |

| Symbol | Parameter | BYW 100- | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 50 | 100 | 150 | 200 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | 55 | 110 | 165 | 220 | V |

### THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction-ambient* | 45 | °C/W |

* On infinite heatsink with 10mm lead length.

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 10 | µA |
| | $T_j$ = 100°C | | | | 0.5 | mA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 4.5A | | | 1.2 | V |
| | $T_j$ = 100°C | $I_F$ = 1.5A | | | 0.85 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C<br>$V_R$ = 30V | $I_F$ = 1A<br>See figure 10 | $di_F/dt$ = - 50A/µs | | | 35 | ns |
| $Q_{rr}$ | $T_j$ = 25°C<br>$V_R \leq$ 30V | $I_F$ = 1A | $di_F/dt$ = - 20A/µs | | 10 | | nC |
| $t_{fr}$ | $T_j$ = 25°C<br>Measured at 1.1 x $V_F$ | $I_F$ = 1A | $t_r$ = 10ns | | 30 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | $t_r$ = 10ns | | 5 | | V |

To evaluate the conduction losses use the following equations:

$V_F = 0.66 + 0.075\ I_F$

$P = 0.06 \times I_{F(AV)} + 0.075\ I_F{}^2{}_{(RMS)}$

**Figure 1. Maximum average power dissipation versus average forward current.**

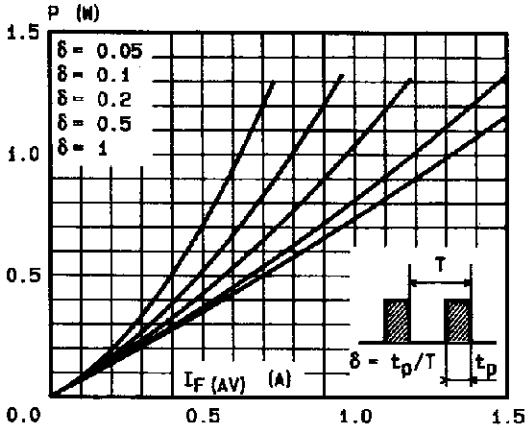



**Figure 2. Average forward current versus ambient temperature.**

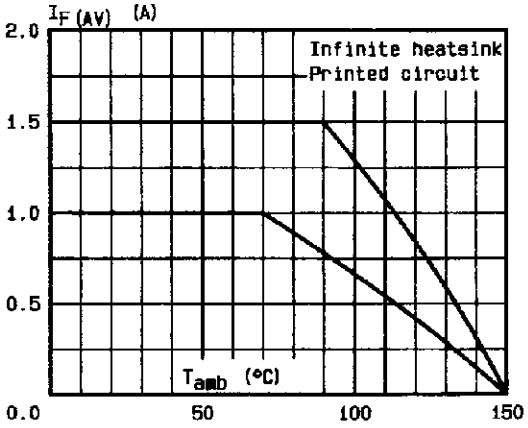
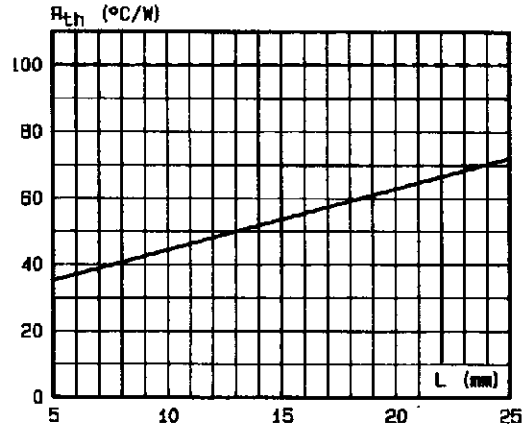



**Figure 3. Thermal resistance versus lead length.**




**Mounting n°1**
**INFINITE HEATSINK**

**Mounting n°2**
**PRINTED CIRCUIT**

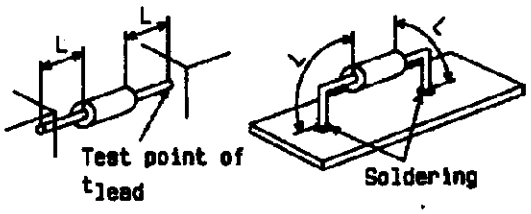



**Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).**

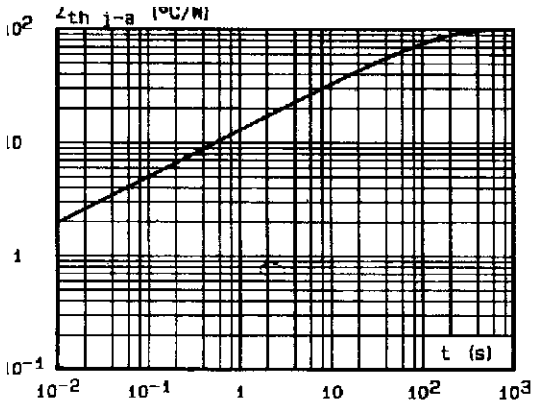



**Figure 5. Peak forward current versus peak forward voltage drop (maximum values).**

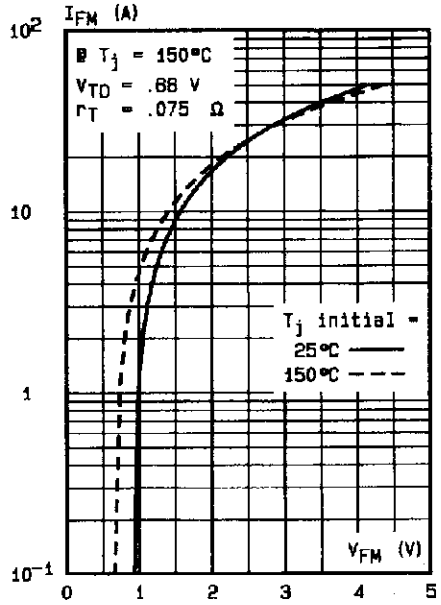


**Figure 6. Capacitance versus reverse voltage applied.**

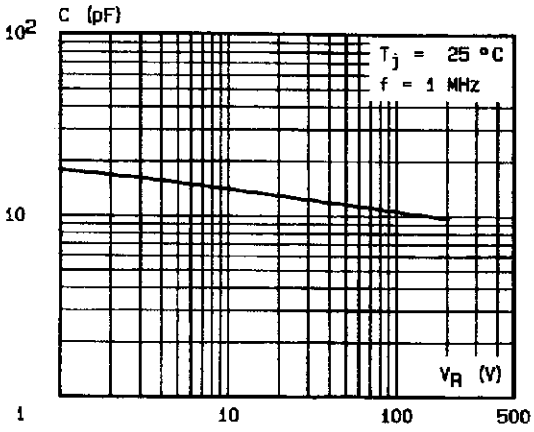



**Figure 7. Recovery time versus $di_F/dt$.**

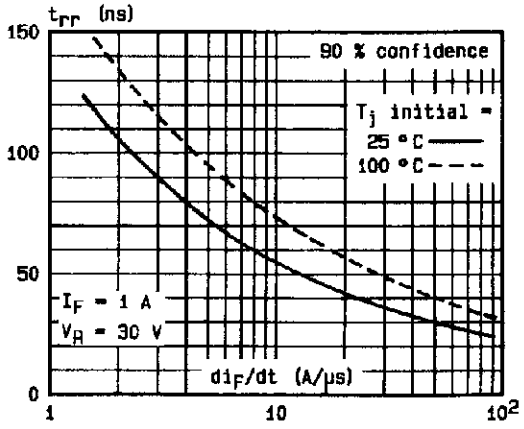



**Figure 8. Peak reverse current versus $di_F/dt$.**

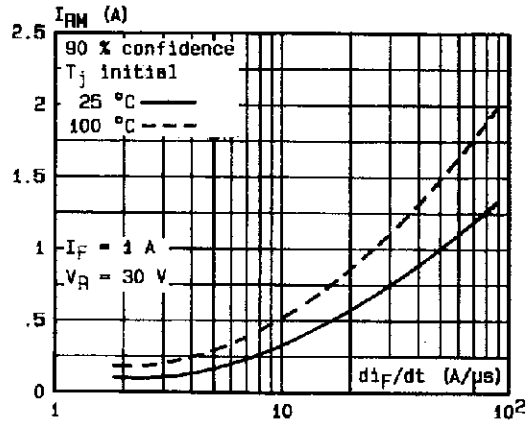



**Figure 9. Dynamic parameters versus junction temperature.**

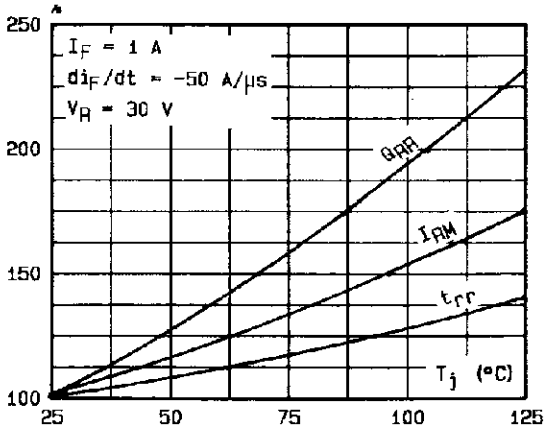
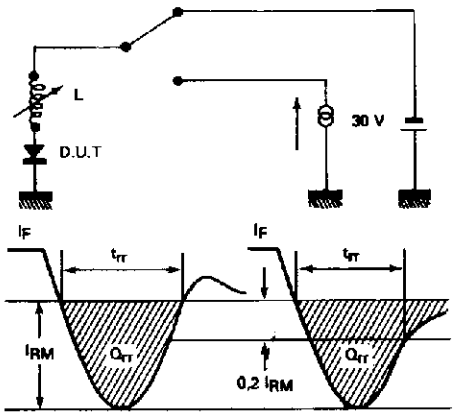
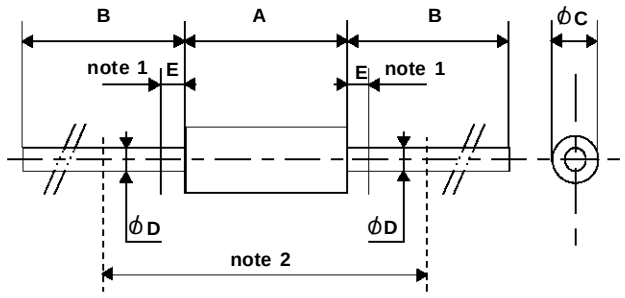



**Figure 10. Measurement of $t_{rr}$ (Fig. 7) and $I_{RM}$ (Fig. 8).**



## PACKAGE MECHANICAL DATA

F 126 (Plastic)




| REF. | DIMENSIONS | | | | NOTES |
|---|---|---|---|---|---|
| | Millimeters | | Inches | | |
| | Min. | Max. | Min. | Max. | |
| A | 6.05 | 6.35 | 0.238 | 0.250 | 1 - The lead diameter ∅ D is not controlled over zone E<br>2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59”(15 mm) |
| B | 26 | | 1.024 | | |
| ∅ C | 2.95 | 3.05 | 0.116 | 0.120 | |
| ∅ D | 0.76 | 0.86 | 0.029 | 0.034 | |
| E | | 1.27 | | 0.050 | |

Cooling method: by convection (method A)
Marking: type number
Weight: 0.4g

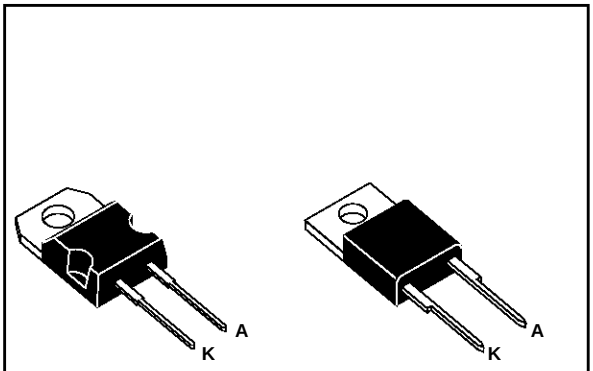
SGS-THOMSON MICROELECTRONICS

# BYW81P/PI

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION :
  Insulating voltage = 2500 $V_{RMS}$
  Capacitance = 7 pF




**TO220AC**
(Plastic)

**BYW81P-200**

**isolated**
**TO220AC**
(Plastic)

**BYW81PI-200**

### DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | | 35 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | BYW81P | Tc=115°C | 15 | A |
| | | BYW81PI | Tc=90°C | 15 | |
| $I_{FSM}$ | Surge non repetitive forward current | | tp=10ms sinusoidal | 200 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYW81P-/PI- | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

## THERMAL RESISTANCE

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| Rth (j-c) | Junction to case | BYW81P | 2.0 | °C/W |
| | | BYW81PI | 3.5 | |

## ELECTRICAL CHARACTERISTICS
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| | $T_j$ = 100°C | | | | 1.5 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 12 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 25 A | | | 1.05 | |
| | $T_j$ = 25°C | $I_F$ = 25 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.65 \times I_{F(AV)} + 0.016 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 25 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 40 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 10 ns | | 15 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 10 ns | | 2 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

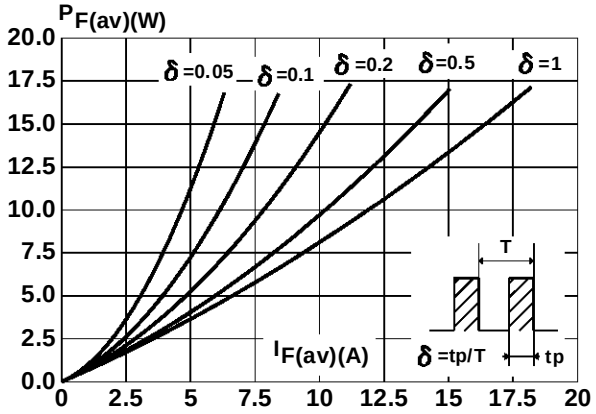



**Fig.2 :** Peak current versus form factor.

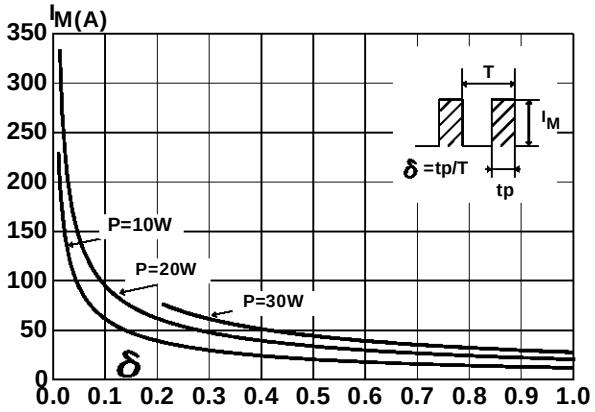



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

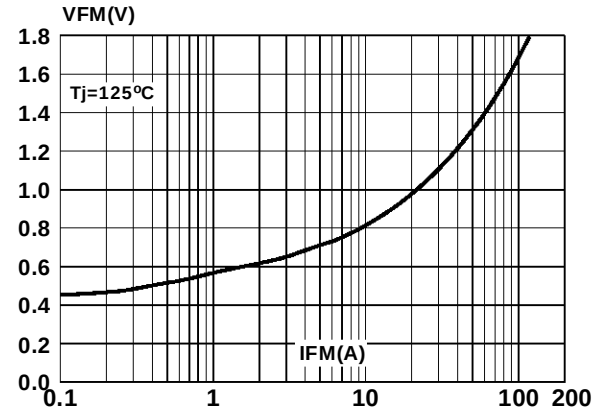



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

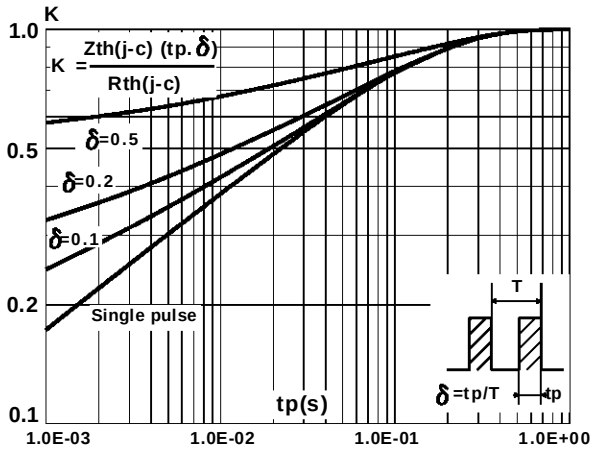



**Fig.5 :** Non repetitive surge peak forward current versus overload duration.
(BYW81P)

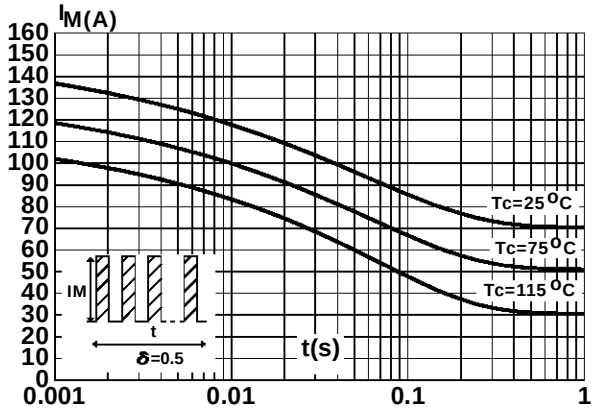



**Fig.6 :** Non repetitive surge peak forward current versus overload duration.
(BYW81PI)

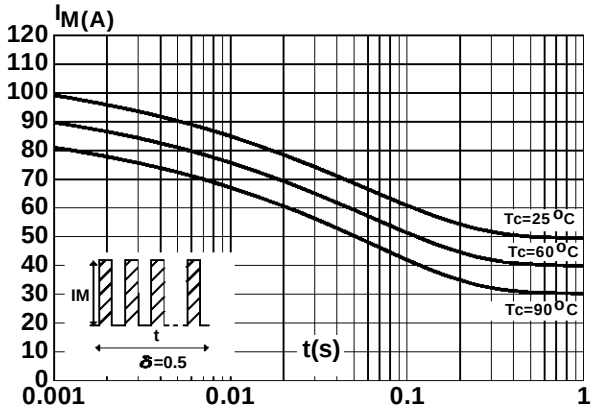


**Fig.7 :** Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81P)

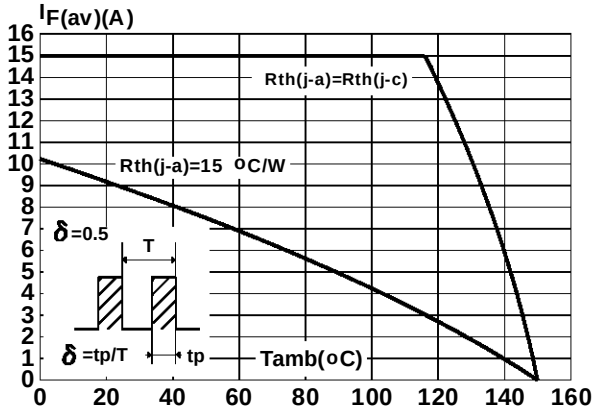



**Fig.8 :** Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81PI)

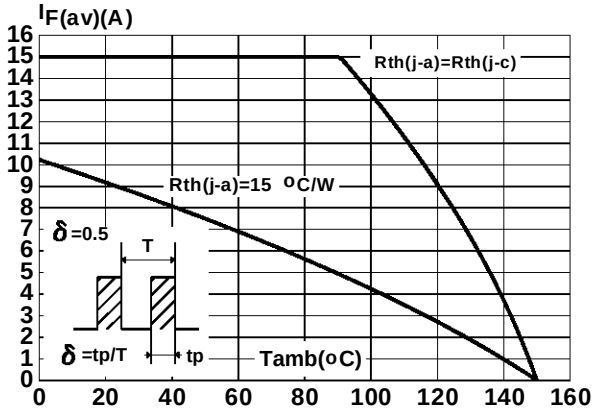



**Fig.9 :** Junction capacitance versus reverse voltage applied (Typical values).

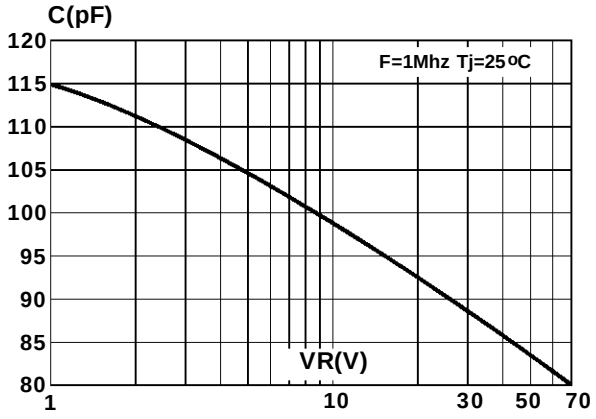



**Fig.10 :** Recovery charges versus $dI_F/dt$.

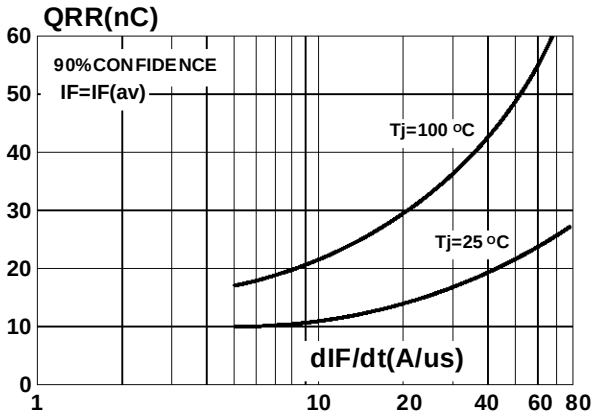



**Fig.11 :** Peak reverse current versus dIF/dt.

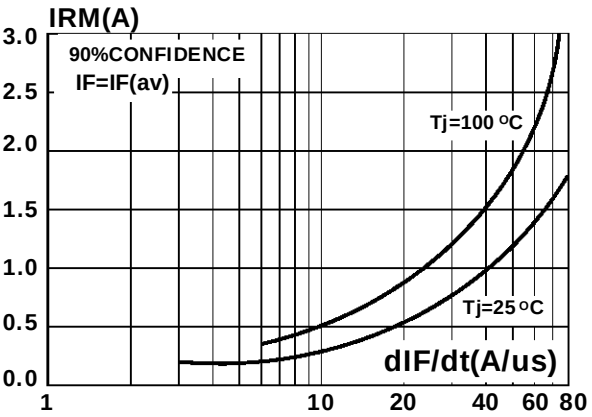
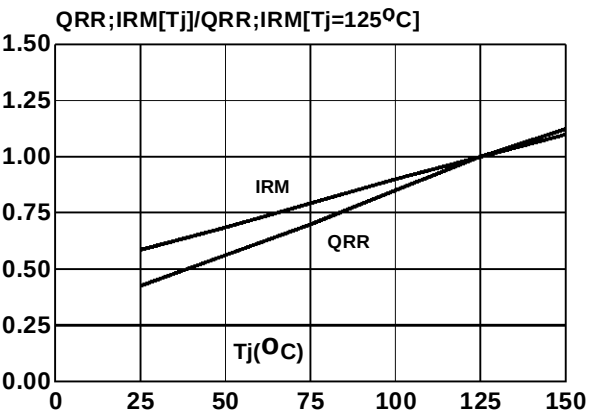
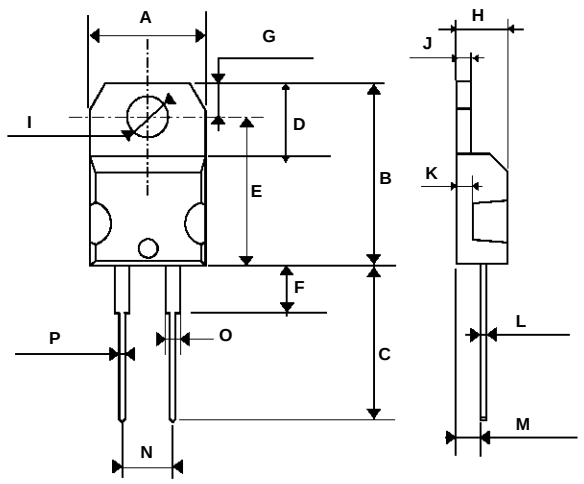



**Fig.12 :** Dynamic parameters versus junction temperature.



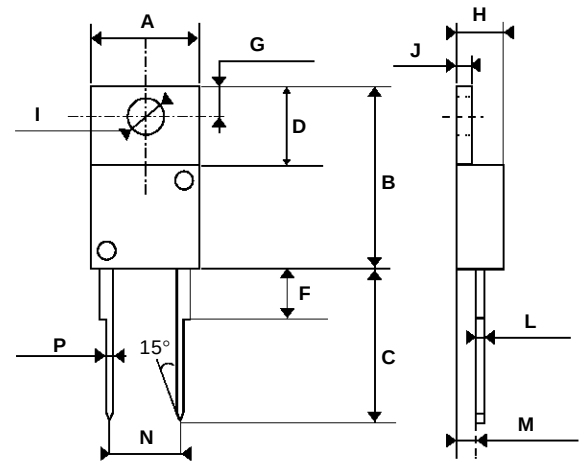
**PACKAGE MECHANICAL DATA**
TO220AC (JEDEC outline)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10 | 10.4 | 0.393 | 0.409 |
| B | 15.2 | 15.9 | 0.598 | 0.626 |
| C | 13 | 14 | 0.511 | 0.551 |
| D | 6.2 | 6.6 | 0.244 | 0.260 |
| E | 16.4 typ. | | 0.645 typ. | |
| F | 3.5 | 4.2 | 0.137 | 0.165 |
| G | 2.65 | 2.95 | 0.104 | 0.116 |
| H | 4.4 | 4.6 | 0.173 | 0.181 |
| I | 3.75 | 3.85 | 0.147 | 0.151 |
| J | 1.23 | 1.32 | 0.048 | 0.051 |
| K | 1.27 typ. | | 0.050 typ. | |
| L | 0.49 | 0.70 | 0.019 | 0.027 |
| M | 2.4 | 2.72 | 0.094 | 0.107 |
| N | 4.95 | 5.15 | 0.194 | 0.203 |
| O | 1.14 | 1.70 | 0.044 | 0.067 |
| P | 0.61 | 0.88 | 0.024 | 0.034 |

Cooling method : C
Marking : Type number
Weight : 1.9 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

**PACKAGE MECHANICAL DATA**
TO220AC (isoluted)




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 10.20 | 10.40 | 0.401 | 0.401 |
| B | 14.23 | 15.87 | 0.560 | 0.625 |
| C | 12.70 | 14.70 | 0.500 | 0.579 |
| D | 5.85 | 6.85 | 0.230 | 0.270 |
| F | | 4.50 | | 0.178 |
| G | 2.54 | 3.00 | 0.100 | 0.119 |
| H | 4.48 | 4.82 | 0.176 | 0.190 |
| I | 3.55 | 4.00 | 0.139 | 0.158 |
| J | 1.15 | 1.39 | 0.045 | 0.055 |
| L | 0.35 | 0.65 | 0.013 | 0.026 |
| M | 2.10 | 2.70 | 0.082 | 0.107 |
| N | 4.58 | 5.58 | 0.18 | 0.22 |
| P | 0.64 | 0.96 | 0.025 | 0.038 |

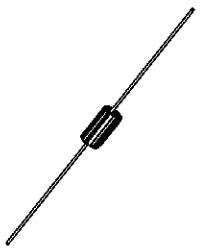
Cooling method : C
Marking : Type number
Weight : 2.2 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

SGS-THOMSON MICROELECTRONICS

# BYW 98-50 →200

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES
- HIGH SURGE CURRENT
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF $t_{rr}$ AND $I_{RM}$ AT 100°C UNDER USERS CONDITIONS



**DO 27 A**
(Plastic)

### DESCRIPTION

Low voltage drop and rectifier suited for switching mode base drive and transistor circuits.

### ABSOLUTE MAXIMUM RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{FRM}$ | Repetive Peak Forward Current | $t_p \leq 20\mu s$ | 70 | A |
| $I_{F(AV)}$ | Average Forward Current* | $T_a = 85°C$ $\delta = 0.5$ | 3 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 70 | A |
| $P_{tot}$ | Power Dissipation * | $T_a = 85°C$ | 2.5 | W |
| $T_{stg}$ $T_j$ | Storage and Junction Temperature Range | | - 40 to + 150 - 40 to + 150 | °C |
| $T_L$ | Maximum Lead Temperature for Soldering during 10s at 4mm from Case | | 230 | °C |

| Symbol | Parameter | BYW 98- | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 50 | 100 | 150 | 200 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | 55 | 110 | 165 | 220 | V |

### THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction-ambient* | 25 | °C/W |

* On infinite heatsink with 10mm lead length.

## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 10 | µA |
| | $T_j$ = 100°C | | | | 0.5 | mA |
| $V_F$ | $T_j$ = 25°C | $I_F$ = 9A | | | 1.1 | V |
| | $T_j$ = 100°C | $I_F$ = 3A | | | 0.85 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C<br>$V_R$ = 30V | $I_F$ = 1A<br>See figure 10 | $di_F/dt$ = - 50A/µs | | | 35 | ns |
| $Q_{rr}$ | $T_j$ = 25°C<br>$V_R \leq$ 30V | $I_F$ = 2A | $di_F/dt$ = - 20A/µs | | 12 | | nC |
| $t_{fr}$ | $T_j$ = 25°C<br>Measured at 1.1 x $V_F$ | $I_F$ = 1A | $t_r$ = 10ns | | 20 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | $t_r$ = 10ns | | 5 | | V |

To evaluate the conduction losses use the following equations:

$V_F = 0.66 + 0.03\ I_F$

$P = 0.06 \times I_{F(AV)} + 0.03\ I_F{}^2{}_{(RMS)}$

**Figure 1. Maximum average power dissipation versus average forward current.**

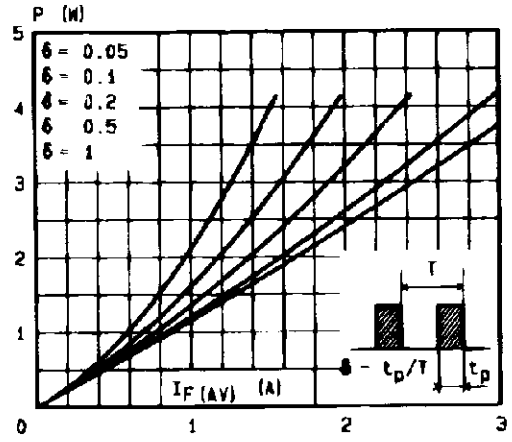



**Figure 2. Average forward current versus ambient temperature.**

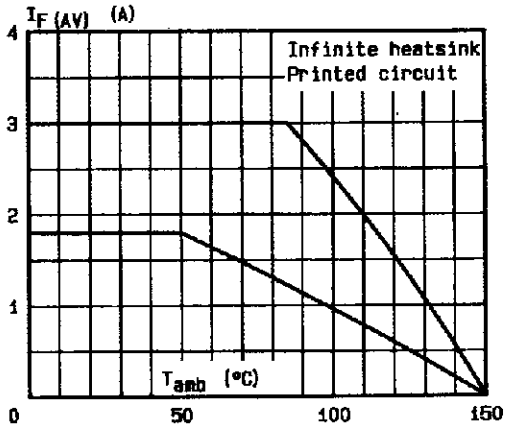
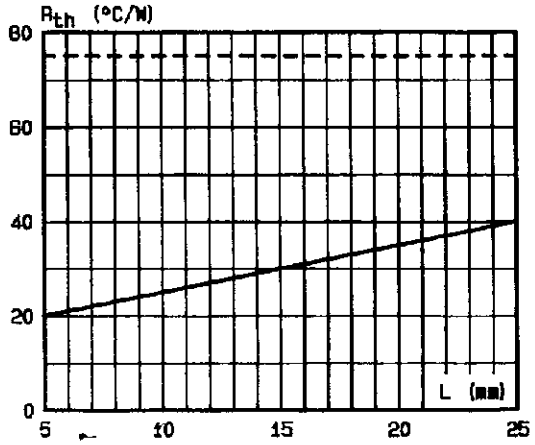



**Figure 3. Thermal resistance versus lead length.**




**Mounting n°1**
**INFINITE HEATSINK**

**Mounting n°2**
**PRINTED CIRCUIT**

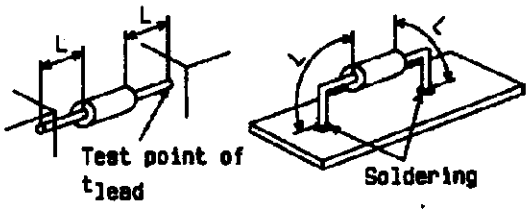



**Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).**

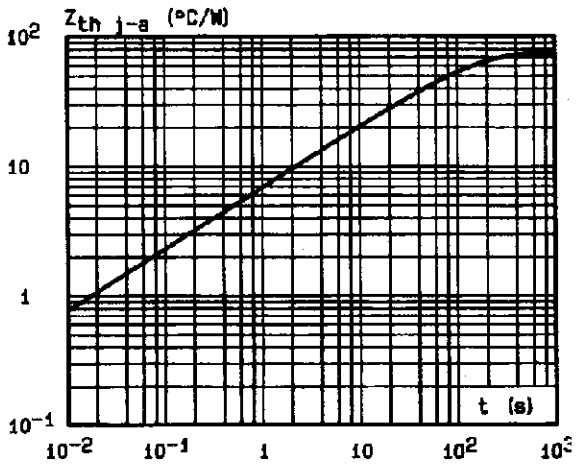



**Figure 5. Peak forward current versus peak forward voltage drop (maximum values).**

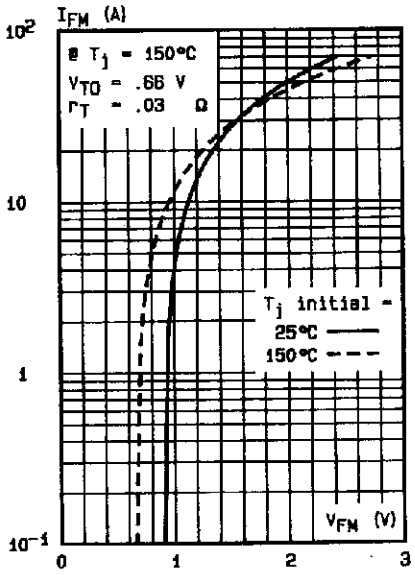


**Figure 6. Capacitance versus reverse voltage applied.**

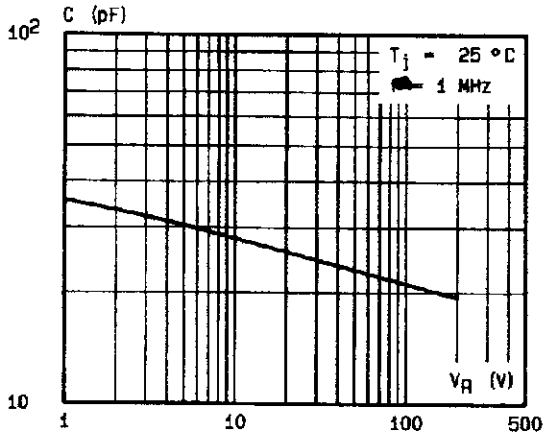



**Figure 7. Recovery time versus $di_F/dt$.**

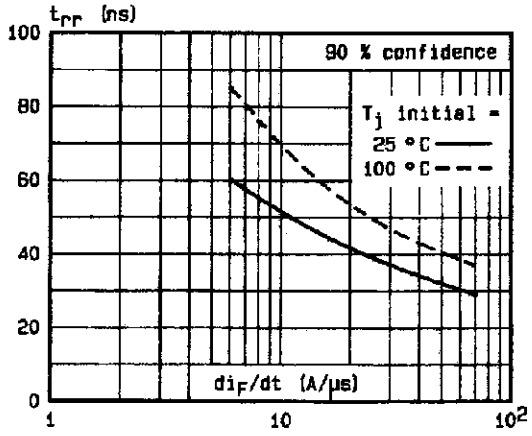



**Figure 8. Peak reverse current versus $di_F/dt$.**

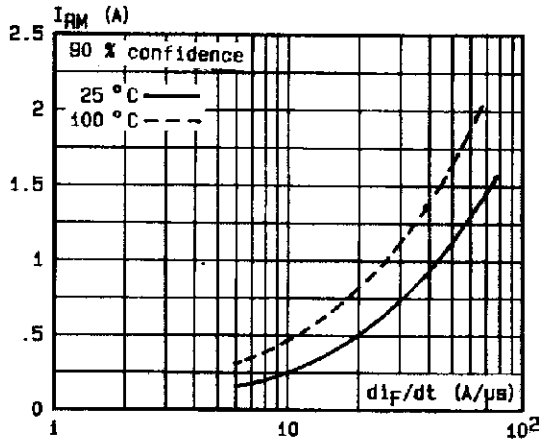



**Figure 9. Dynamic parameters versus junction temperature.**

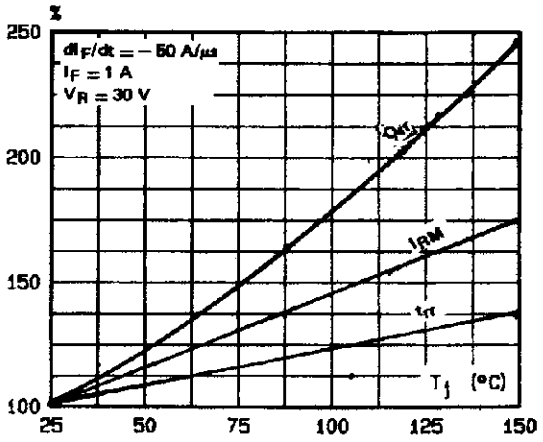
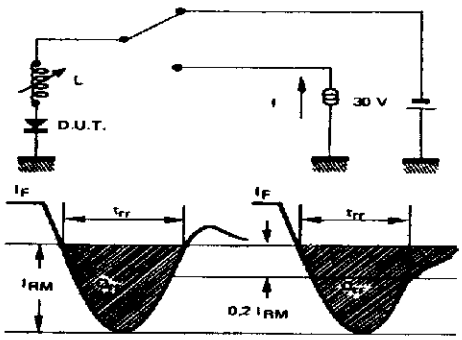
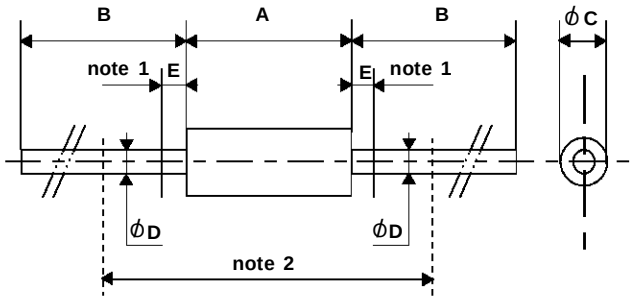



**Figure 10. Measurement of $t_{rr}$ (Fig. 7) and $I_{RM}$ (Fig. 8).**



## PACKAGE MECHANICAL DATA

DO 27A (Plastic)




| REF. | DIMENSIONS | | | | NOTES |
|---|---|---|---|---|---|
| | Millimeters | | Inches | | |
| | Min. | Max. | Min. | Max. | |
| A | | 9.80 | | 0.385 | 1 - The lead diameter ∅ D is not controlled over zone E |
| B | 26 | | 1.024 | | 2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59”(15 mm) |
| ∅ C | | 5.10 | | 0.200 | |
| ∅ D | | 1.28 | | 0.050 | |
| E | | 1.25 | | 0.049 | |

Cooling method: by convection (method A)
Marking: type number; white band indicates cathode
Weight: 1g

SGS-THOMSON MICROELECTRONICS

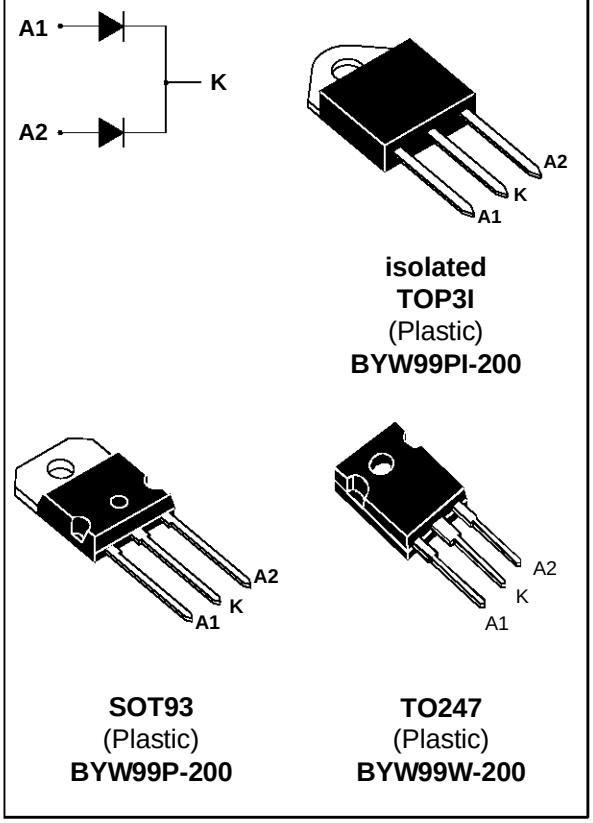
# BYW99P/PI/W

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

**PRELIMINARY DATASHEET**

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION TOP3I :
  Insulating voltage = 2500 V DC
  Capacitance = 12 pF




**isolated**
**TOP3I**
(Plastic)
**BYW99PI-200**

**SOT93**
(Plastic)
**BYW99P-200**

**TO247**
(Plastic)
**BYW99W-200**

### DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in SOT93, TOP3I or TO247 this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | | | Value | Unit |
|---|---|---|---|---|---|---|
| $I_{F(RMS)}$ | RMS forward current | | | Per diode | 35 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | SOT93 / TO247 | Tc=120°C | Per diode | 15 | A |
| | | TOP3I | Tc=115°C | Per diode | 15 | |
| $I_{FSM}$ | Surge non repetitive forward current | | tp=10ms sinusoidal | Per diode | 200 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | | - 40 to + 150<br>- 40 to + 150 | °C<br>°C |

| Symbol | Parameter | BYW99P-/PI-/W- | | | | Unit |
|---|---|---|---|---|---|---|
| | | 50 | 100 | 150 | 200 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 50 | 100 | 150 | 200 | V |

## THERMAL RESISTANCE

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| Rth (j-c) | Junction to case | SOT93 / TO247 | Per diode | 1.8 | °C/W |
| | | | Total | 1.0 | |
| | | TOP3I | Per diode | 2.0 | |
| | | | Total | 1.25 | |
| Rth (c) | Coupling | SOT93 / TO247 | | 0.2 | °C/W |
| | | TOP3I | | 0.5 | |

When the diodes 1 and 2 are used simultaneously :
Tj-Tc (diode 1) = P(diode 1) x Rth(j-c) (Per diode) + P(diode 2) x Rth(c)

## ELECTRICAL CHARACTERISTICS (Per diode)
## STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_R$ * | $T_j$ = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| | $T_j$ = 100°C | | | | 1.5 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 12 A | | | 0.85 | V |
| | $T_j$ = 125°C | $I_F$ = 25 A | | | 1.05 | |
| | $T_j$ = 25°C | $I_F$ = 25 A | | | 1.15 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.65 \times I_{F(AV)} + 0.016 \times I_{F^2(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A<br>$I_R$ = 1A | Irr = 0.25A | | | 25 | ns |
| | | $I_F$ = 1A<br>$V_R$ = 30V | $dI_F/dt$ = -50A/µs | | | 40 | |
| tfr | $T_j$ = 25°C | $I_F$ = 1A<br>$V_{FR} = 1.1 \times V_F$ | tr = 10 ns | | 15 | | ns |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A | tr = 10 ns | | 2 | | V |

**Fig.1 :** Average forward power dissipation versus average forward current.

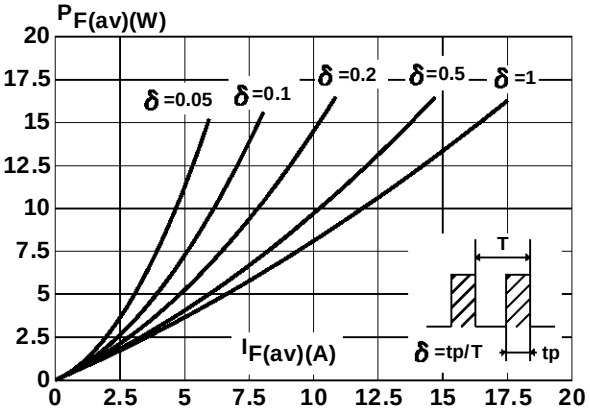



**Fig.2 :** Peak current versus form factor.

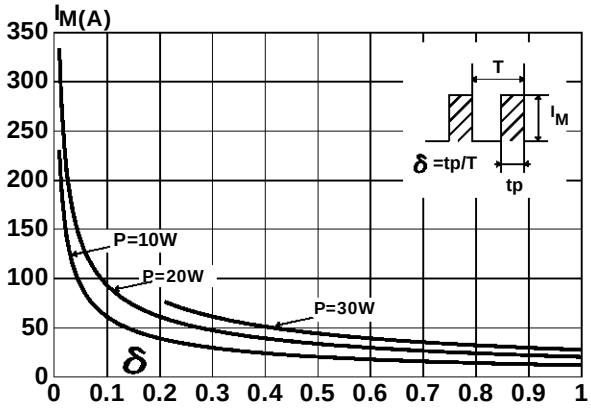



**Fig.3 :** Forward voltage drop versus forward current (maximum values).

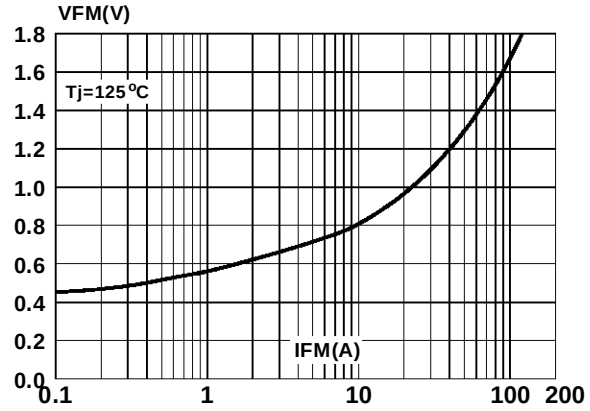



**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.

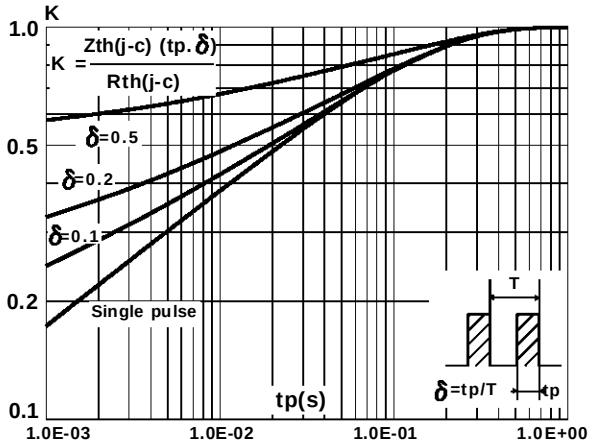



**Fig.5 :** Non repetitive surge peak forward current versus overload duration.
(SOT93, TO247)

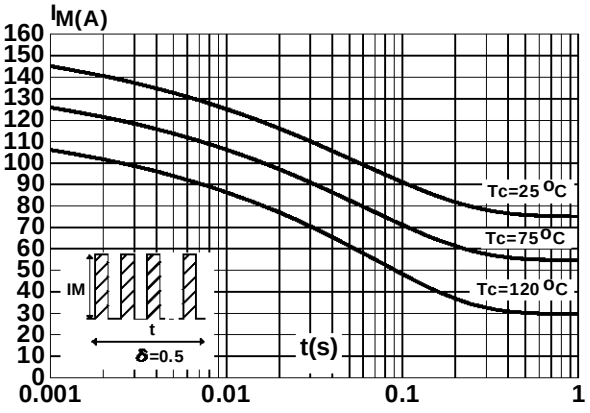



**Fig.6 :** Non repetitive surge peak forward current versus overload duration.
(TOP3I)

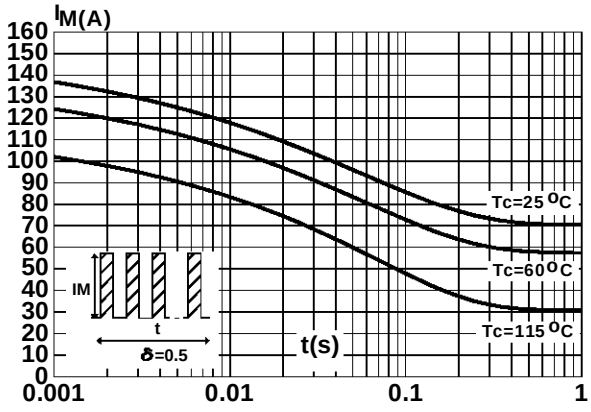


**Fig.7 :** Average current versus ambient temperature.
(duty cycle : 0.5) (SOT93, TO247)

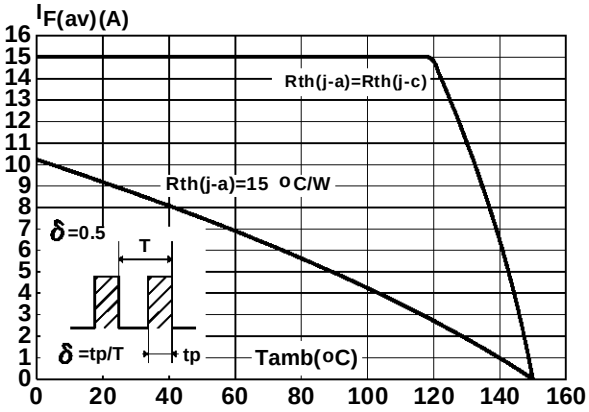



**Fig.8 :** Average current versus ambient temperature.
(duty cycle : 0.5) (TOP3I)

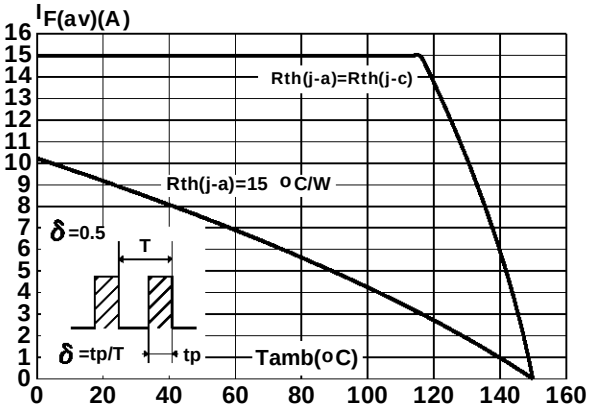



**Fig.9 :** Junction capacitance versus reverse voltage applied (Typical values).

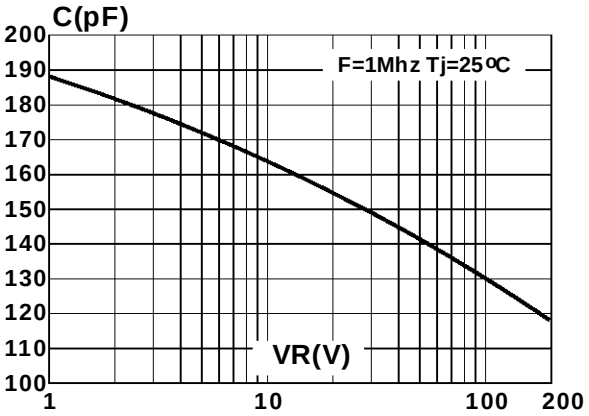



**Fig.10 :** Recovery charges versus $dI_F/dt$.

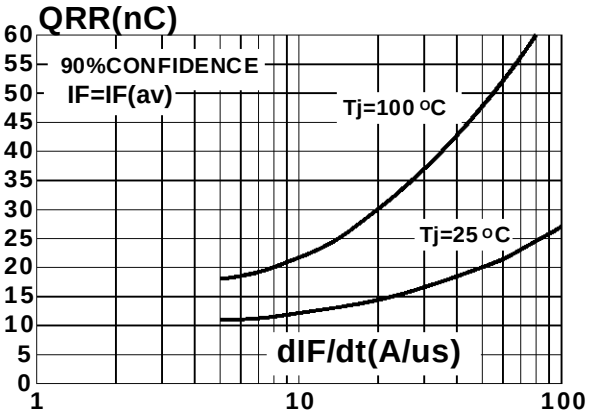



**Fig.11 :** Peak reverse current versus dIF/dt.

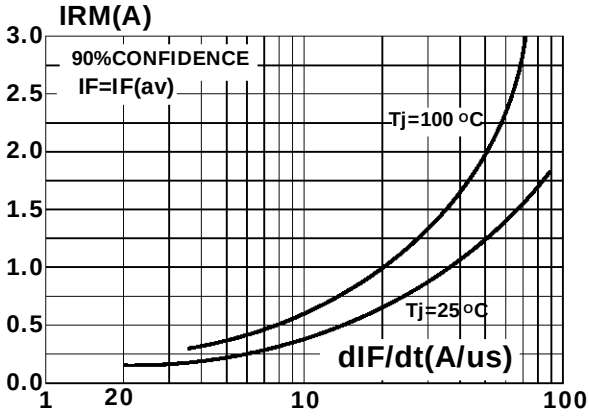
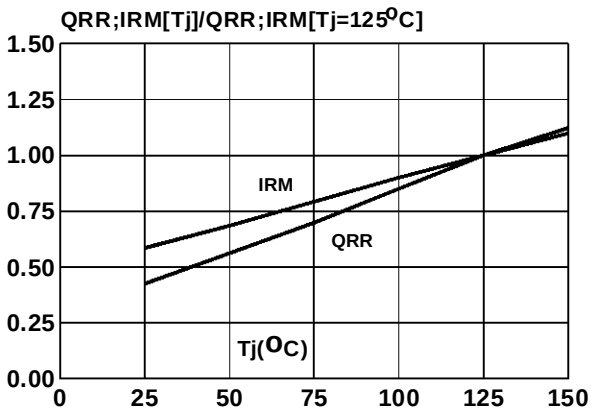
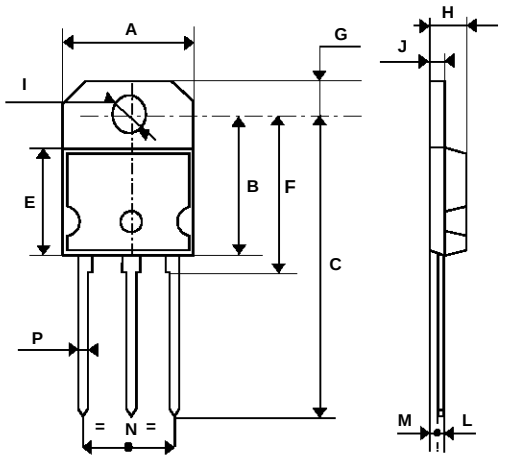



**Fig.12 :** Dynamic parameters versus junction temperature.



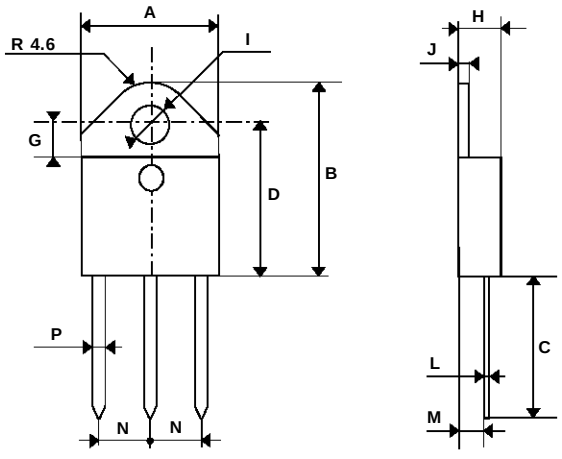
**PACKAGE MECHANICAL DATA**
SOT93




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 14.7 | 15.2 | 0.578 | 0.596 |
| B | | 16.2 | | 0.637 |
| C | 31 typ | | 1.220 typ | |
| D | 18 typ | | 0.708 typ | |
| E | | 12.2 | | 0.480 |
| G | 3.95 | 4.15 | 0.155 | 0.163 |
| H | 4.7 | 4.9 | 0.185 | 0.193 |
| I | 4 | 4.1 | 0.157 | 0.161 |
| J | 1.9 | 2.1 | 0.062 | 0.075 |
| L | 0.5 | 0.78 | 0.019 | 0.030 |
| M | 2.5 typ | | 0.098 typ | |
| N | 10.8 | 11.1 | 0.425 | 0.437 |
| P | 1.1 | 1.3 | 0.043 | 0.051 |

Cooling method : C
Marking : Type number
Weight : 5.3 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

**PACKAGE MECHANICAL DATA**
TOP3I (isolated)

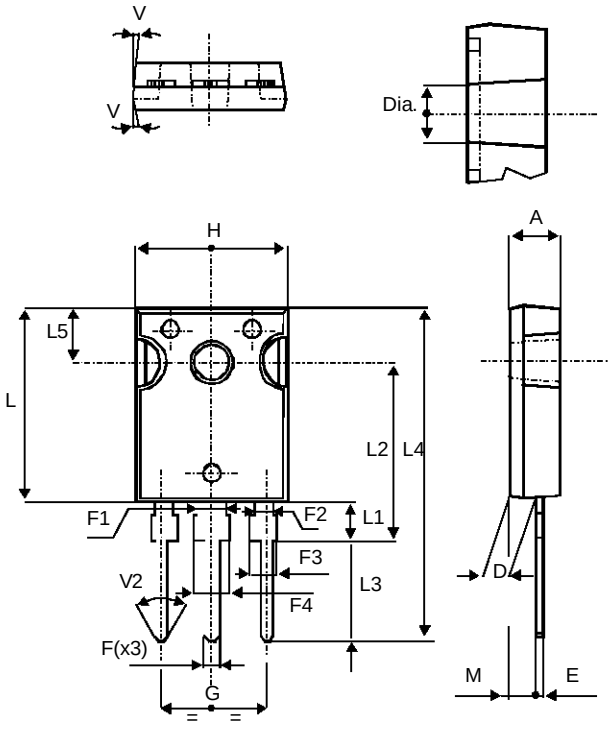



| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 15.10 | 15.50 | 0.594 | 0.611 |
| B | 20.70 | 21.10 | 0.814 | 0.831 |
| C | 14.30 | 15.60 | 0.561 | 0.615 |
| D | 16.10 | 16.50 | 0.632 | 0.650 |
| G | 3.40 | - | 0.133 | - |
| H | 4.40 | 4.60 | 0.173 | 0.182 |
| I | 4.08 | 4.17 | 0.161 | 0.164 |
| J | 1.45 | 1.55 | 0.057 | 0.062 |
| L | 0.50 | 0.70 | 0.019 | 0.028 |
| M | 2.70 | 2.90 | 0.106 | 0.115 |
| N | 5.40 | 5.65 | 0.212 | 0.223 |
| P | 1.20 | 1.40 | 0.047 | 0.056 |

Cooling method : C
Marking : Type number
Weight : 4.7 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

## PACKAGE MECHANICAL DATA

TO247




| REF. | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Typ. | Min. | Max. | Typ. | Min. | Max. |
| A | | 4.70 | 5.30 | | 0.190 | 0.210 |
| D | | 2.20 | 2.60 | | 0.0866 | 0.102 |
| E | | 0.40 | 0.80 | | 0.015 | 0.031 |
| F | | 1.00 | 1.40 | | 0.039 | 0.055 |
| F1 | 3.00 | | | 0.118 | | |
| F2 | 2.00 | | | 0.078 | | |
| F3 | | 2.00 | 2.40 | | 0.078 | 0.094 |
| F4 | | 3.00 | 3.40 | | 0.118 | 0.133 |
| G | 10.90 | | | 0.429 | | |
| H | | 15.30 | 15.90 | | 0.602 | 0.625 |
| L | | 19.70 | 20.30 | | 0.775 | 0.799 |
| L1 | | 3.70 | 4.30 | | 0.145 | 0.169 |
| L2 | 18.50 | | | 0.728 | | |
| L3 | 10.50 | | | 0.413 | | |
| L4 | 34.60 | | | 1.362 | | |
| L5 | 5.50 | | | 0.216 | | |
| M | | 2.00 | 3.00 | | 0.078 | 0.118 |
| V | 5° | | | 5° | | |
| V2 | 60° | | | 60° | | |
| Dia. | | 3.55 | 3.65 | | 0.139 | 0.143 |

Cooling method : C
Marking : Type number
Weight : 4.4 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N