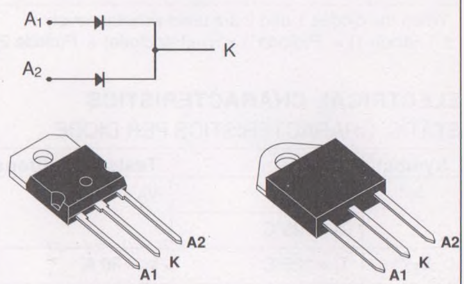
SGS-THOMSON
MICROELECTRONICS

STPS3035CP/CPI
STPS3045CP/CPI

POWER SCHOTTKY RECTIFIER

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- HIGH AVALANCHE CAPABILITY
- LOW THERMAL RESISTANCE
- INSULATED PACKAGE :
  Insulating voltage = 2500V_{RMS}
  Capacitance = 12pF



SOT 93
(Plastic)

STPS3035CP
STPS3045CP

TOP 3I
(Plastic)

STPS3035CPI
STPS3045CPI

DESCRIPTION

Dual center tap schottky rectifier suited for switch-mode power supply and high frequency DC to DC converters.

Packaged in SOT 93 and TOP 3I, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter				Value	Unit
$I_{F(RMS)}$	RMS Forward Current			Per diode	30	A
$I_{F(AV)}$	Average Forward Current δ = 0.5	SOT 93	Tc = 135°C	Per diode	15	A
		TOP 3I	Tc = 125°C	Per device	30	
I_{FSM}	Surge Non Repetitive Forward Current		Tp = 10 ms Sinusoidal	Per diode	220	A
I_{RRM}	Peak Repetitive Reverse Current		Tp = 2 µs F = 1KHz	Per diode	1	A
Tstg Tj	Storage and Junction Temperature Range				- 65 to + 150 - 65 to + 150	°C
dV/dt	Critical Rate of Rise of Reverse Voltage				1000	V/µs

Symbol	Parameter	STPS		Unit
		3035CP 3035CPI	3045CP 3045CPI	
V_{RRM}	Repetitive Peak Reverse Voltage	35	45	V

THERMAL RESISTANCE

Symbol	Parameter			Value	Unit
$R_{TH\ (j-c)}$	Junction-case	SOT 93	Per diode total	1.5 0.8	°C/W
		TOP 3I	Per diode total	2.2 1.6	
$R_{TH\ (c)}$	Coupling	SOT 93		0.1	°C/W
		TOP 3I		1.0	

When the diodes 1 and 2 are used simultaneously :
ΔT_J(diode 1) = P(diode1) x R_{TH}(Per diode) + P(diode 2) x $R_{TH(c)}$

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS PER DIODE

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Tj = 25°C	$V_R = V_{RRM}$			200	µA
	Tj = 125°C				40	mA
V_F **	Tj = 125°C	I_F = 30 A			0.72	V
	Tj = 125°C	I_F = 15 A			0.57	
	Tj = 25°C	I_F = 30 A			0.84	

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

To evaluate the conduction losses use the following equation :
$P = 0.42 \times I_{F(AV)} + 0.01\ I_F^2{}_{(RMS)}$

Fig. 1 : Average forward power dissipation versus average forward current. (Per diode)

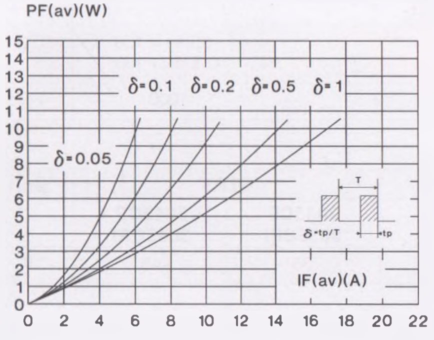


Fig. 2 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode) (SOT 93)

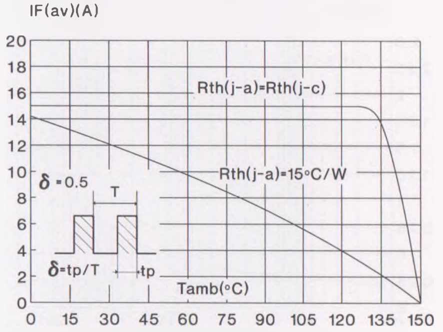


Fig. 2 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode) (TOP 3I)

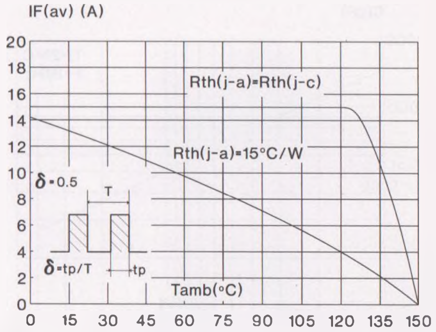


Fig. 4 : Non repetitive surge peak forward current versus overload duration.
(Maximum values) (Per diode) (SOT 93)

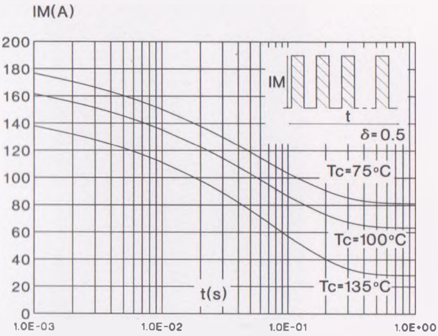


Fig. 5 : Non repetitive surge peak forward current versus overload duration.
(Maximum values) (Per diode) (TOP 3I)

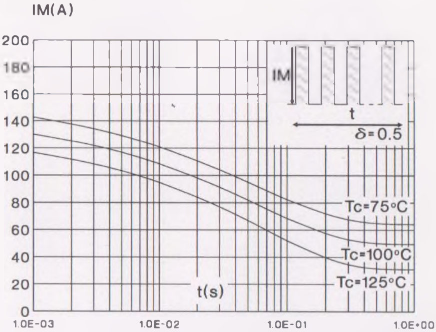


Fig. 6 : Relative variation of thermal transient impedance junction to case versus pulse duration.

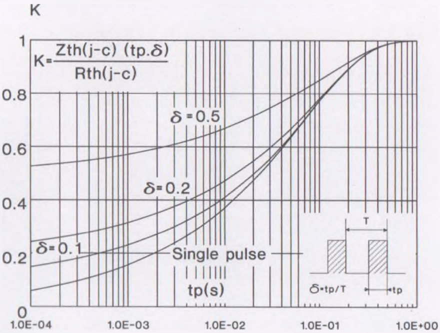


Fig. 7 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

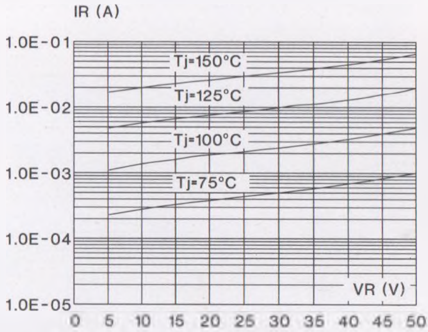


Fig. 8 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

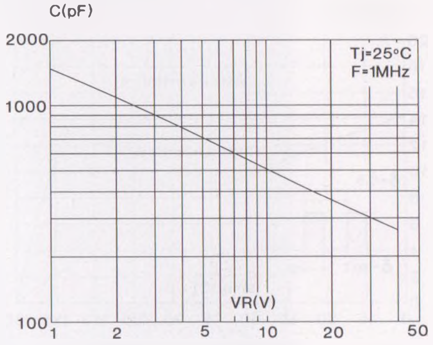


Fig. 9 : Forward voltage drop versus forward current. (Maximum values) (Per diode)