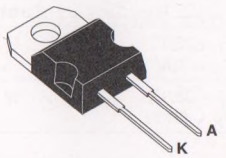
SGS-THOMSON
MICROELECTRONICS

ESM 765-100 → 800

FAST RECOVERY RECTIFIER DIODES

- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF THE trr AND I_{RM} AT 100°C UNDER USERS CONDITIONS

APPLICATIONS
- MOTOR CONTROLS AND CONVERTERS
- SWITCHMODE POWER SUPPLIES



TO220AC
(Plastic)

DESCRIPTION

Fast recovery rectifiers suited for applications in combination with superswitch transistors

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	120	A
$I_{F(RMS)}$	RMS Forward Current		16	A
$I_{F(AV)}$	Average Forward Current	$T_C = 100°C$ $\delta = 0.5$	10	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	120	A
P_{tot}	Power Dissipation	$T_C = 100°C$	20	W
T_{stg} T_j	Storage and Junction Temperature Range		– 40 to 150	°C

Symbol	Parameter	ESM 765–					Unit
		100	200	400	600	800	
V_{RRM}	Repetitive Peak Reverse Voltage	100	200	400	600	800	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	100	200	400	600	800	V

THERMAL RESISTANCE

Symbol	Parameter	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	$V_R = V_{RRM}$			20	µA
	T_j = 100°C				1	mA
V_F	T_j = 25°C	I_F = 10A			1.4	V
	T_j = 100°C				1.35	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	T_j = 25°C V_R = 30V	I_F = 1A	di_F/dt = – 15A/µs			300	ns
Q_{rr}	T_j = 25°C V_R = 200V	I_F = 10A	di_F/dt = – 50A/µs		2.3		µC

To evaluate the conduction losses use the following equations :

$V_F = 1.2 + 0.015\ I_F$ $\qquad$ $P = 1.2 \times I_{F(AV)} + 0.015\ I_F{}^2{}_{(RMS)}$

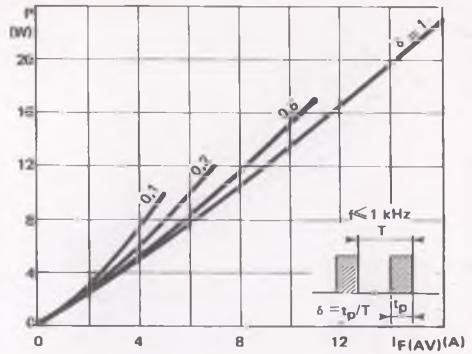


FIGURE 1: Low frequency power losses versus average current

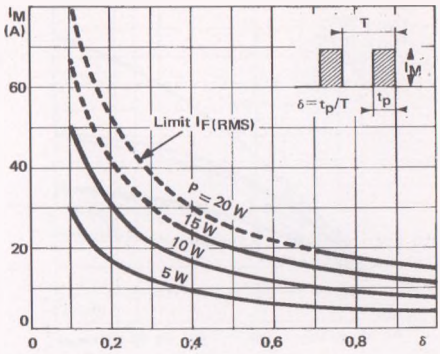


FIGURE 2: Peak current versus form factor

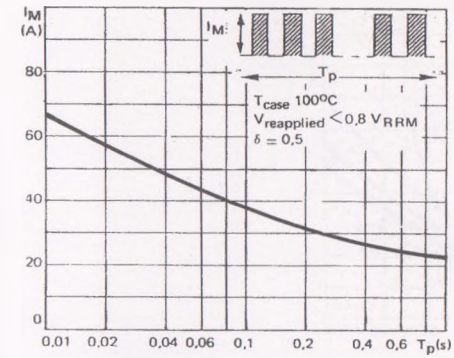


FIGURE 3: Non repetitive peak surge current versus overload duration

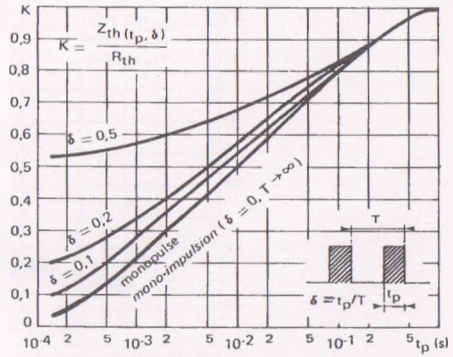


FIGURE 4: Thermal impedance versus pulse width

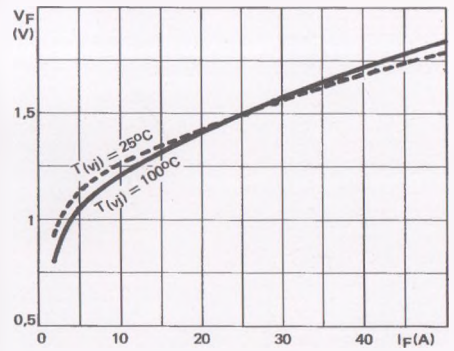


FIGURE 5: Forward voltage drop versus forward current

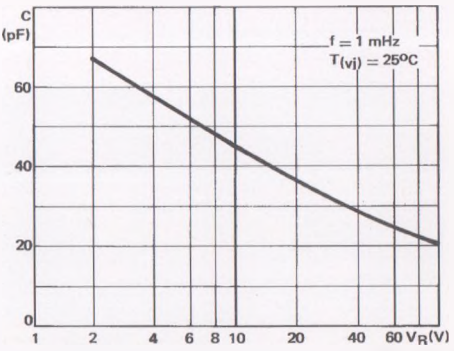


FIGURE 6: Capacitance versus applied reverse voltage

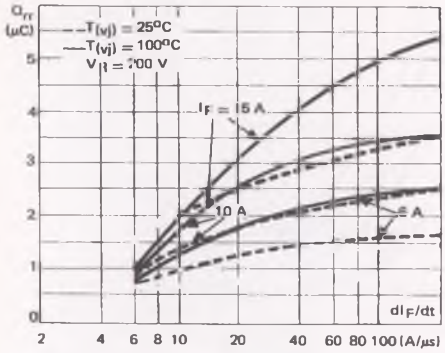


FIGURE 7: Recovery charge versus dI_F/dt

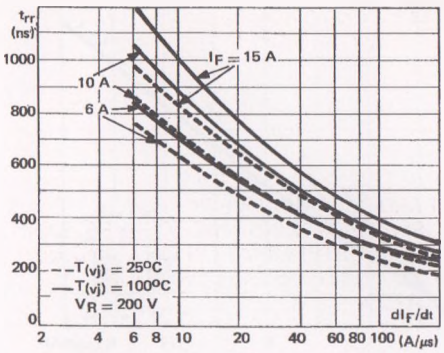


FIGURE 8:Recovery time versus dI_F/dt

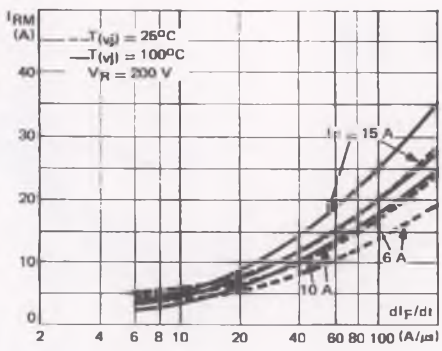


FIGURE 9: Peak reverse current versus dI_F/dt