

## FAST RECOVERY RECTIFIER DIODES

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

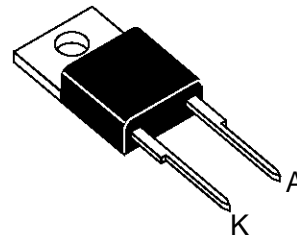
### APPLICATIONS

- MOTOR CONTROLS AND CONVERTERS
- SWITCH MODE POWER SUPPLIES

### DESCRIPTION

Fast recovery rectifiers suited for applications in combination with superswitch transistors.

Insulating voltage 2500 V<sub>RMS</sub>



**Isolated  
TO220AC  
(Plastic)**

### ABSOLUTE MAXIMUM 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	$T_C = 100^\circ C$ $\delta = 0.5$	10	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	120	A
$P_{tot}$	Power Dissipation	$T_C = 100^\circ C$	20	W
$T_{stg}$ $T_j$	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter	ESM 765PI-		Unit
		600	800	
$V_{RRM}$	Repetitive Peak Reverse Voltage	600	800	V
$V_{RSM}$	Non Repetitive Peak Reverse Voltage	600	800	V

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th (j-c)}$	Junction-case	3.5	°C/W

## ELECTRICAL CHARACTERISTICS

### STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$I_R$	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$				1	$\text{mA}$
$V_F$	$T_j = 25^\circ\text{C}$	$I_F = 10\text{A}$			1.4	$\text{V}$
	$T_j = 100^\circ\text{C}$				1.35	

### RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$t_{rr}$	$T_j = 25^\circ\text{C}$ $V_R = 30\text{V}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$			300	$\text{ns}$
$Q_{rr}$	$T_j = 25^\circ\text{C}$ $V_R = 200\text{V}$	$I_F = 10\text{A}$	$di_F/dt = -50\text{A}/\mu\text{s}$		2.3		$\mu\text{C}$

To evaluate the conduction losses use the following equations:

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

Figure 1. Low frequency power losses versus average current

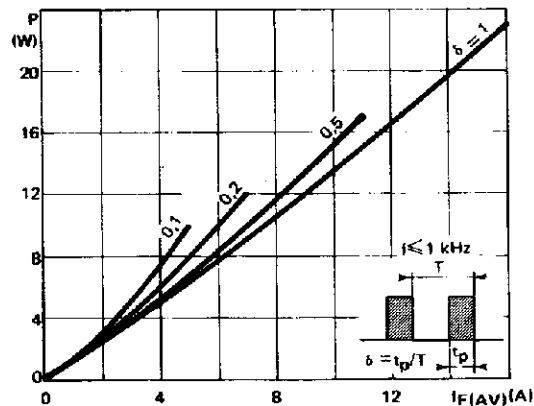


Figure 2. Peak current versus form factor

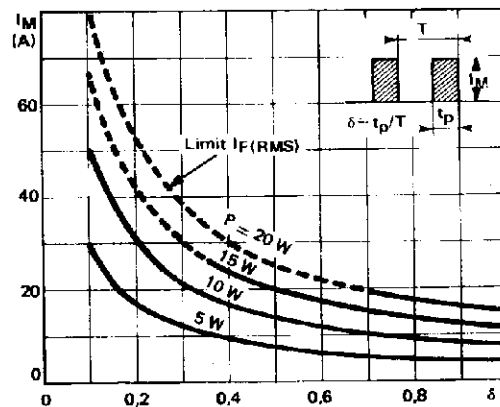


Figure 3. Non repetitive peak surge current versus overload duration

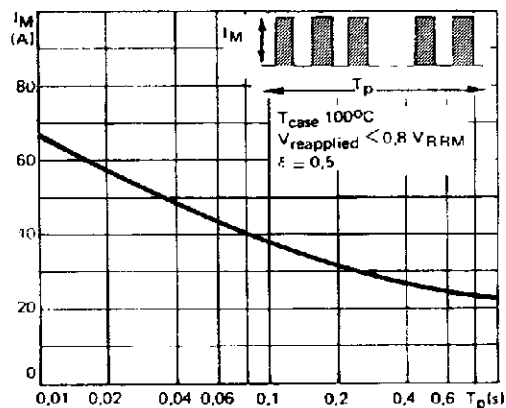


Figure 4. Thermal impedance versus pulse width

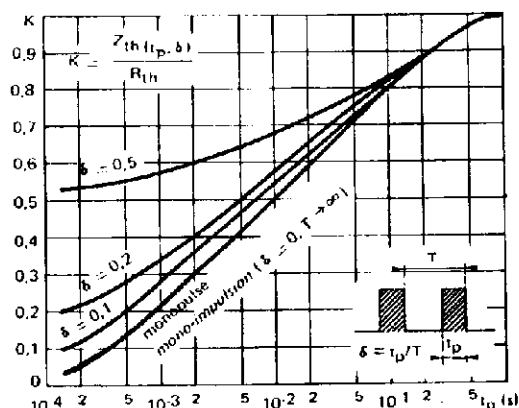


Figure 5. Voltage drop versus forward current

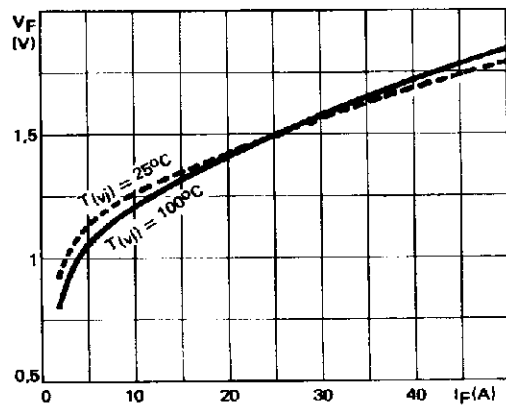
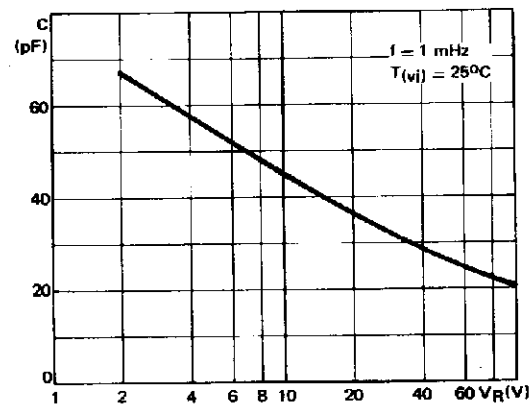
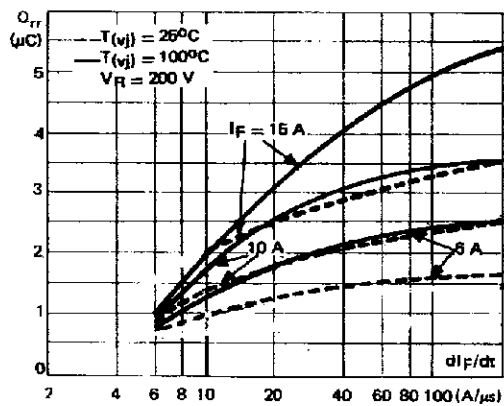
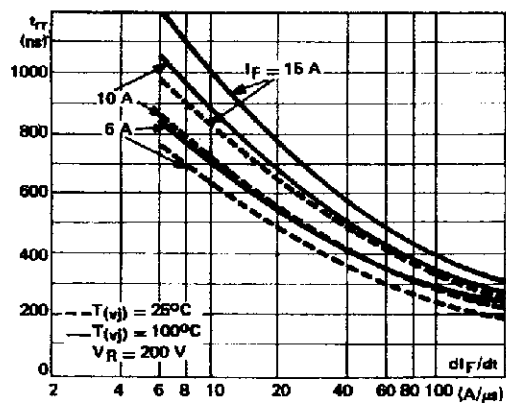
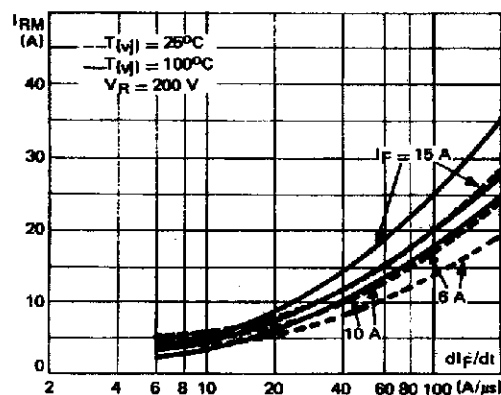
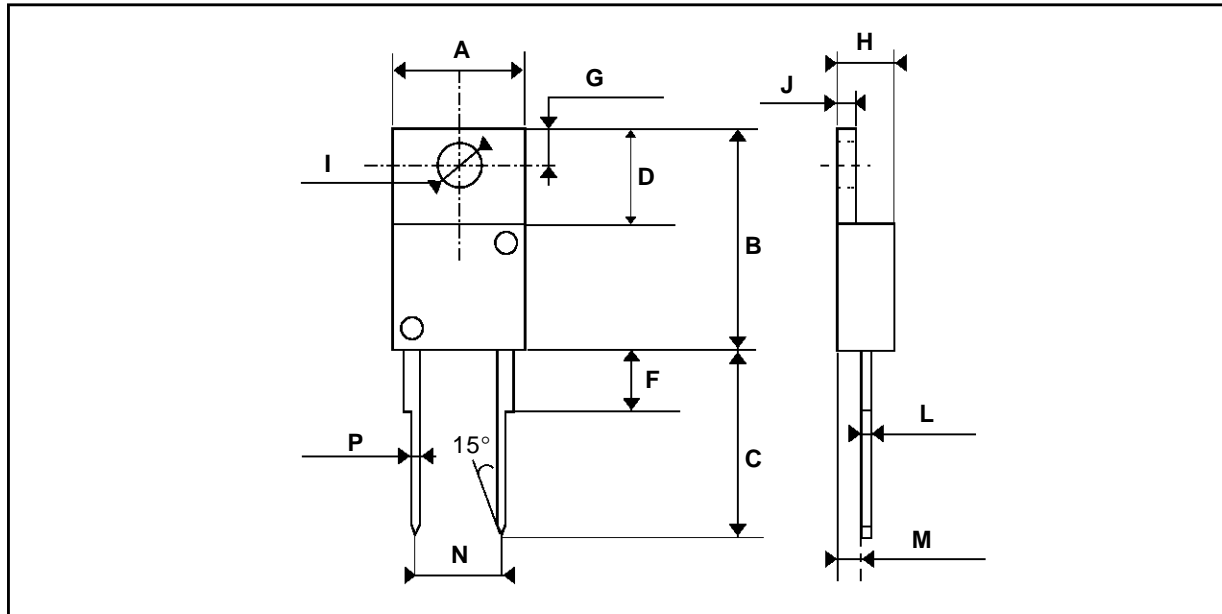


Figure 6. Capacitance versus applied reverse voltage

Figure 7. Recovery charge versus  $di_F/dt$ Figure 8. Recovery time versus  $di_F/dt$ Figure 9. Peak reverse current versus  $di_F/dt$ 

# PACKAGE MECHANICAL DATA

Isolated TO220AC Plastic



Note: SGS-THOMSON reserves the right to have two notches on the heatsink.

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
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
E		4.50		0.178
F	2.54	3.00	0.100	0.119
G	4.48	4.82	0.176	0.190
H	3.55	4.00	0.140	0.158
I	1.15	1.39	0.045	0.055
J	0.35	0.65	0.013	0.026
L	2.10	2.70	0.082	0.107
M	4.58	5.58	0.18	0.22
P	0.64	0.96	0.025	0.038

Cooling method : by conduction (method C)

Marking : type number

Weight : 2g

Recommended torque value : 80cm. N

Maximum torque value : 100cm. N

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