

## FAST RECOVERY RECTIFIER DIODES

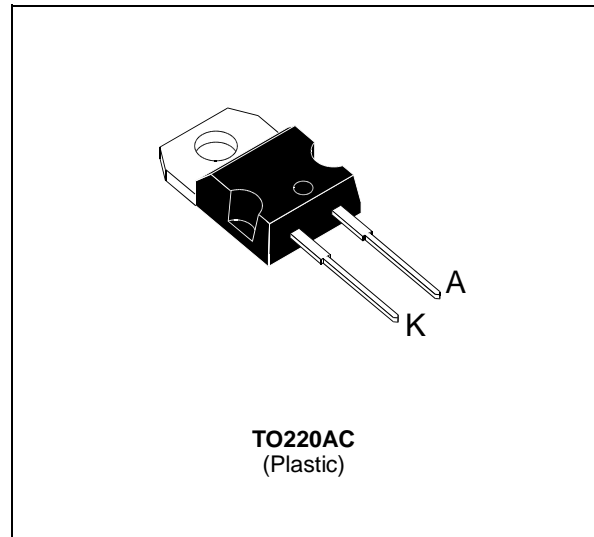
- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF THE  $t_{rr}$  AND  $I_{RM}$  AT 100 °C UNDER USERS CONDITION

### APPLICATIONS

- MOTOR CONTROLS AND CONVERTERS
- SWITCH MODE POWER SUPPLIES

### DESCRIPTION

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



### 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 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
$I_R$	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			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

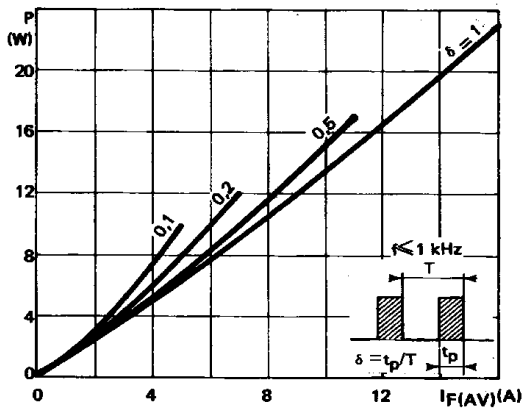


Figure 2. Peak current versus form factor

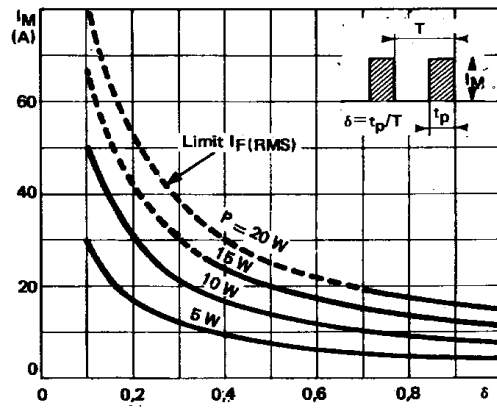


Figure 3. Non repetitive peak surge current versus overload duration

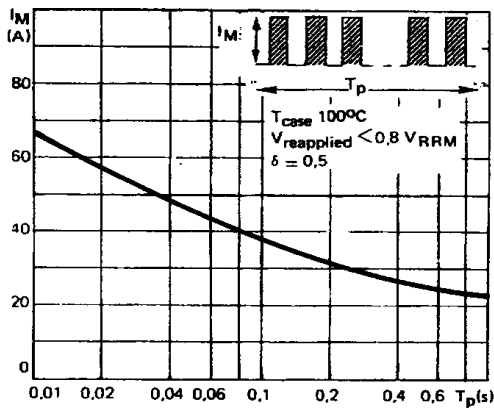


Figure 4. Thermal impedance versus pulse width

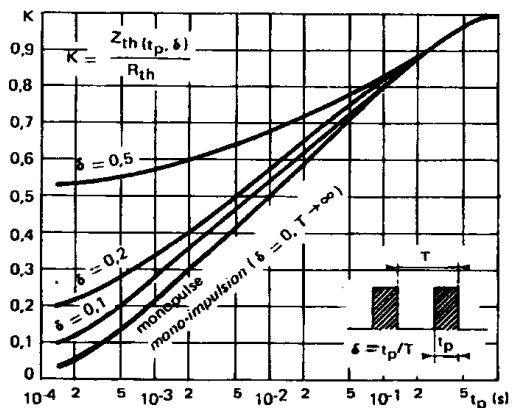


Figure 5. Voltage drop versus forward current

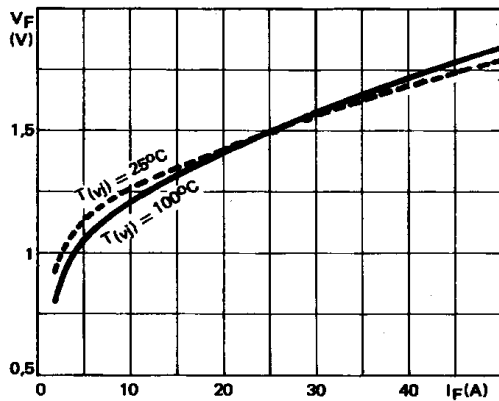


Figure 6. Capacitance versus applied reverse voltage

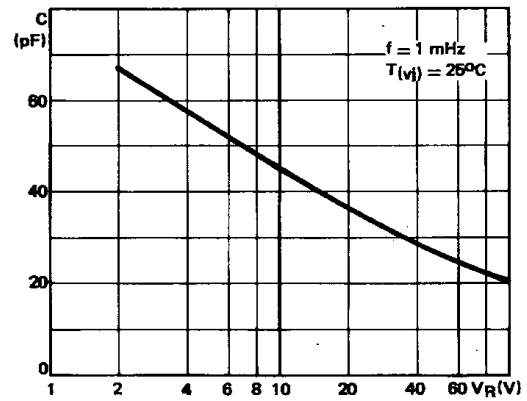


Figure 7. Recovery charge versus  $di_F/dt$

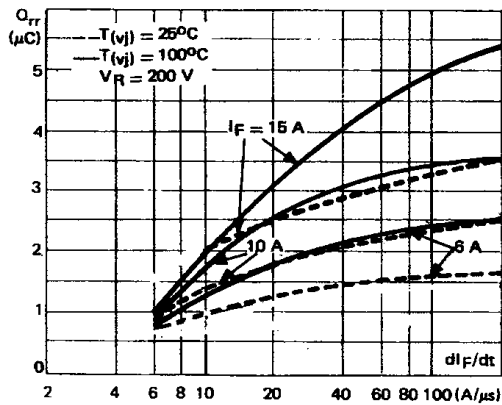


Figure 8. Recovery time versus  $di_F/dt$

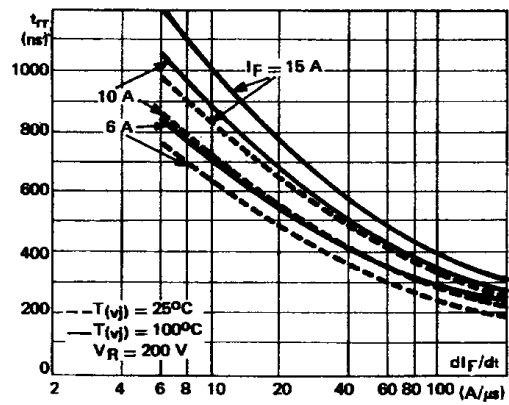
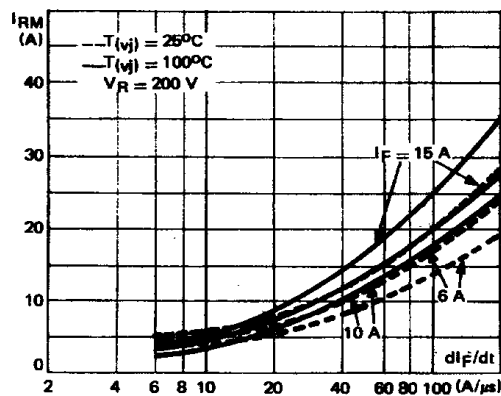
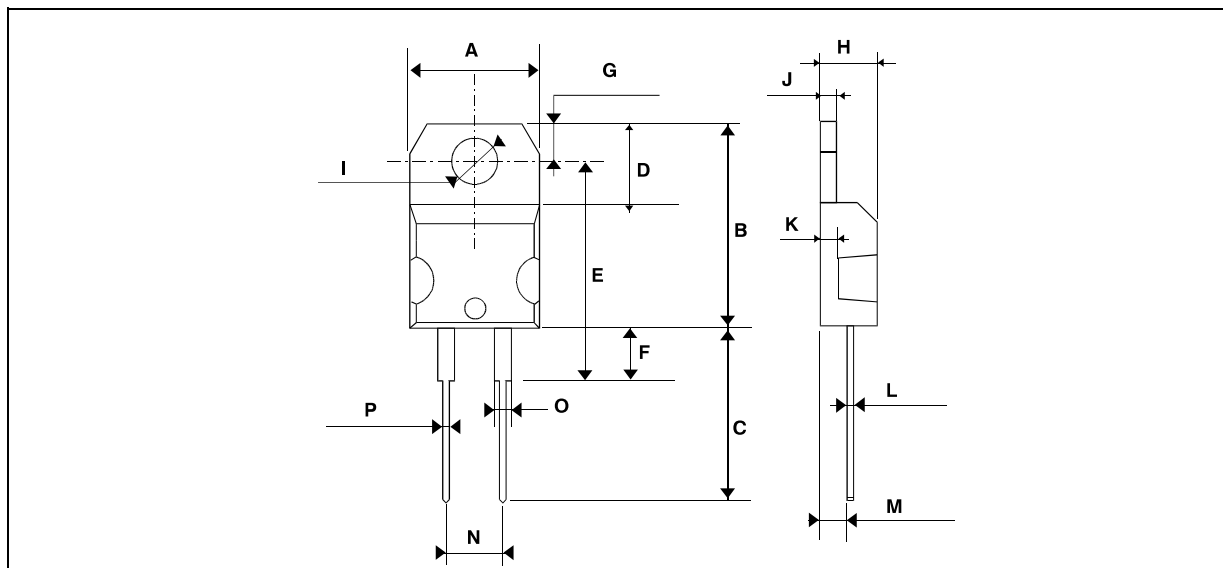


Figure 9. Peak reverse current versus  $di_F/dt$



**PACKAGE MECHANICAL DATA**

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 : 2.4g  
 Recommended torque value : 80cm. N  
 Maximum torque value : 100cm. N

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