

## FAST RECOVERY RECTIFIER DIODES

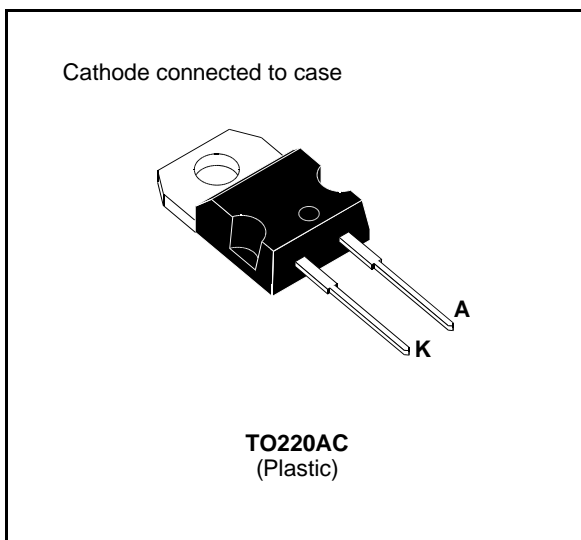
- LOW SWITCHING LOSSES
- LOW PEAK RECOVERY CURRENT  $I_{RM}$
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF  $t_{rr}$  AND  $I_{RM}$  AT 100°C UNDER USERS CONDITIONS

### APPLICATIONS

- MOTOR CONTROLS (FREE-WHEELING DIODE)
- SWITCH MODE POWER SUPPLIES
- SNUBBER DIODES

### DESCRIPTION

Fast recovery rectifiers suited for power switching applications.



### ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{FRM}$	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	100	A
$I_F (RMS)$	RMS Forward Current		20	A
$I_F (AV)$	Average Forward Current	$T_c = 115^\circ C$ $\delta = 0.5$	10	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	100	A
$P_{tot}$	Power Dissipation	$T_c = 90^\circ C$	20	W
$T_{stg}$ $T_j$	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	$^\circ C$

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	600	V
$V_{RSM}$	Non Repetitive Peak Reverse Voltage	600	V

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	3	$^\circ C/W$

## 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	$\text{mA}$
$V_F$	$T_j = 25^\circ\text{C}$	$I_F = 8\text{A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.25	

## RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$t_{rr}$	$T_j = 25^\circ\text{C}$ $V_R = 30\text{V}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$			150	ns
$Q_{rr}$	$T_j = 25^\circ\text{C}$ $V_R = 100\text{V}$	$I_F = 8\text{A}$	$di_F/dt = -20\text{A}/\mu\text{s}$		2.2		$\mu\text{C}$
$I_{RM}$	$T_j = 25^\circ\text{C}$ $V_R = 100\text{V}$	$I_F = 8\text{A}$	$di_F/dt = -20\text{A}/\mu\text{s}$			4	A

To evaluate the conduction losses use the following equations:

$$V_F = 0.95 + 0.012 I_F \quad P = 0.95 \times I_{F(AV)} + 0.012 I_F^2(\text{RMS})$$

Figure 1. Low frequency power losses versus average current

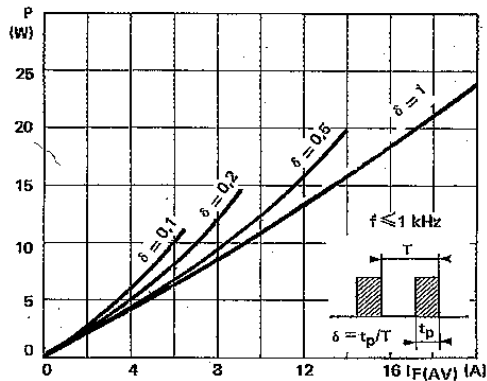


Figure 2. Peak current versus form factor

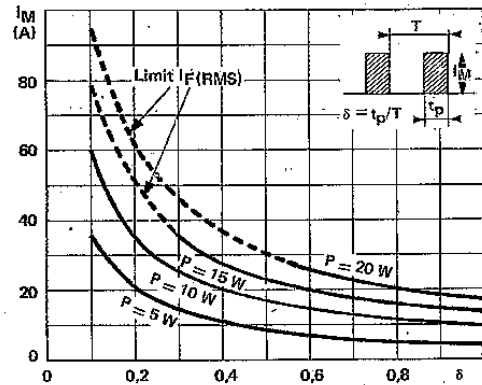


Figure 3. Non repetitive peak surge current versus overload duration

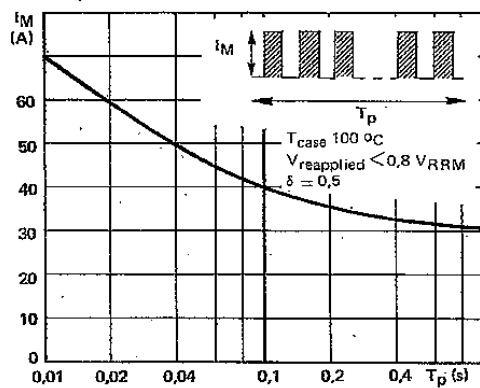


Figure 4. Thermal impedance versus pulse width

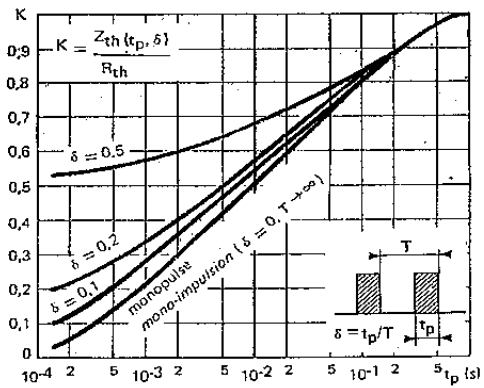


Figure 5. Voltage drop versus forward current

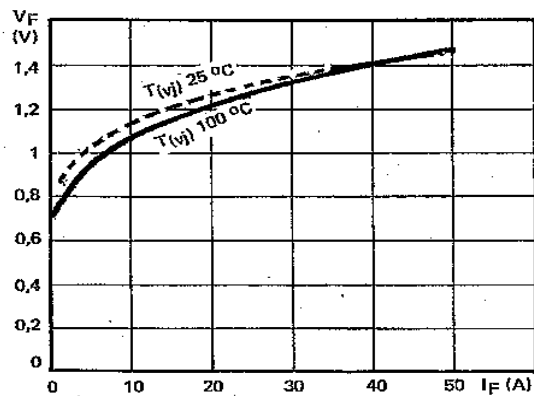


Figure 6. Capacitance versus reverse voltage

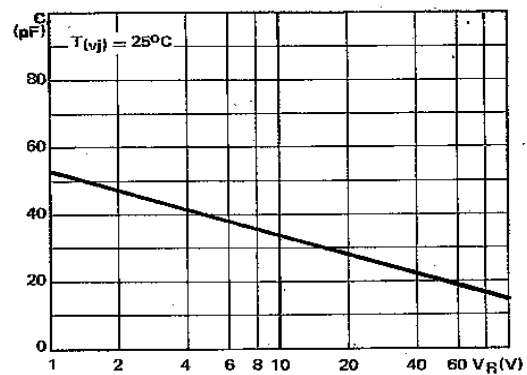


Figure 7. Recovery time versus  $di_F/dt$ .

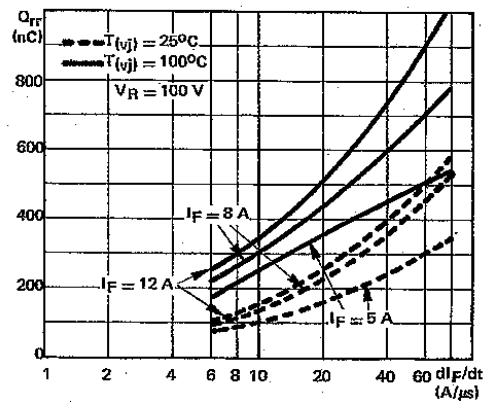


Figure 8. Recovery time versus  $di_F/dt$ .

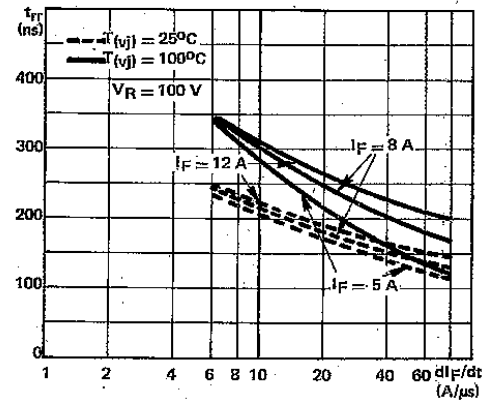
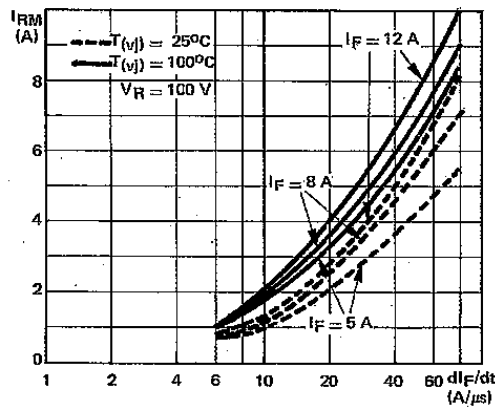


Figure 9. Peak reverse current versus  $di_F/dt$ .



**PACKAGE MECHANICAL DATA**

TO220AC (Plastic)

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

- **Marking:** type number
- Cooling method: by conduction (method C)
- Weight: 1.86g
- Recommended torque value: 80cm. N
- Maximum torque value: 100cm.N

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