BY 233-600

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

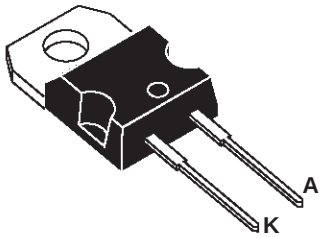
APPLICATIONS

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

DESCRIPTION

Fast recovery rectifiers suited for power switching applications.

Cathode connected to case



TO220AC
(Plastic)

ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetive 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	$T_c = 115°C$ $\delta = 0.5$	10	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	100	A
P_{tot}	Power Dissipation	$T_c = 90°C$	20	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°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	°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 = 8A			1.5	V
	T_j = 100°C				1.25	

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			150	ns
Q_{rr}	T_j = 25°C V_R = 100V	I_F = 8A	di_F/dt = - 20A/µs		2.2		µC
I_{RM}	T_j = 25°C V_R = 100V	I_F = 8A	di_F/dt = - 20A/µs			4	A

To evaluate the conduction losses use the following equations:

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

Figure 1. Low frequency power losses versus average current

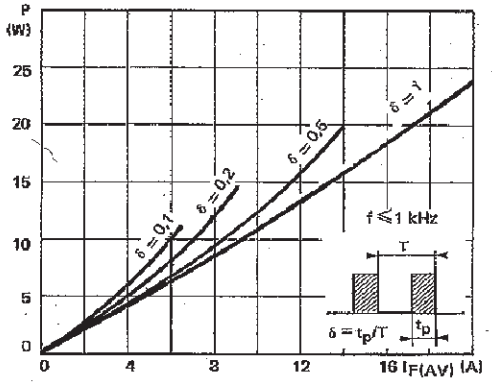


Figure 2. Peak current versus form factor

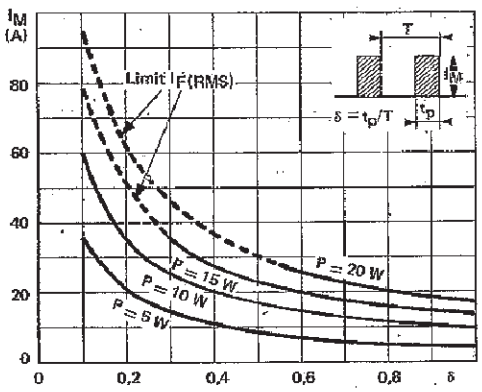


Figure 3. Non repetitive peak surge current versus overload duration

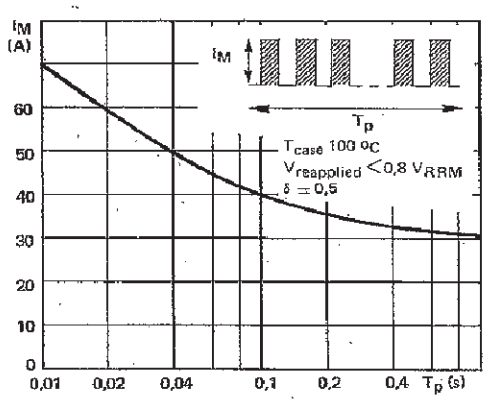


Figure 4. Thermal impedance versus pulse width

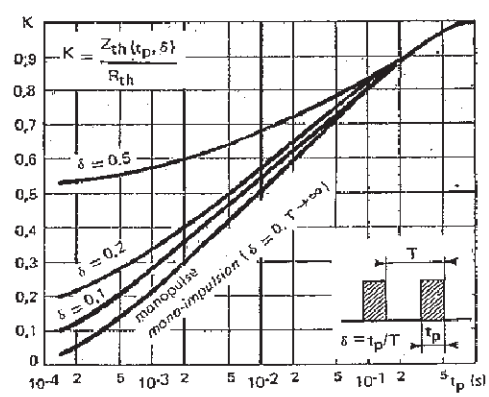


Figure 5. Voltage drop versus forward current

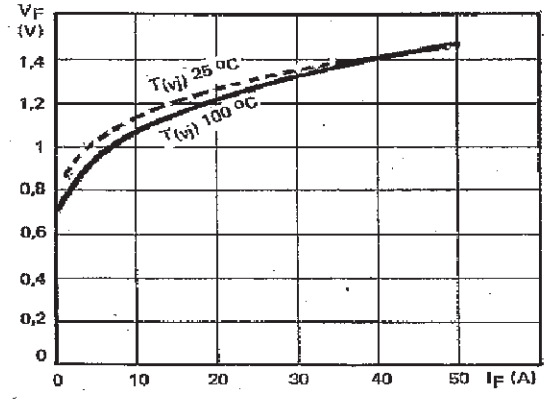


Figure 6. Capacitance versus reverse voltage

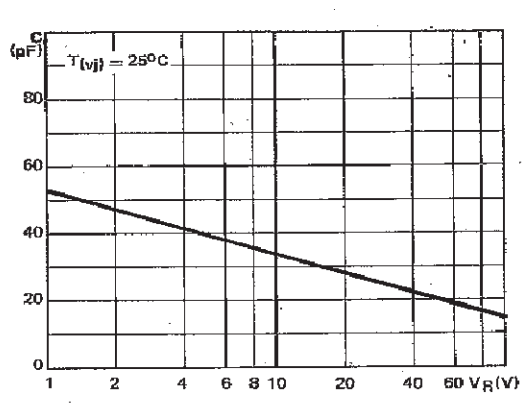


Figure 7. Recovery time versus di_F/dt.

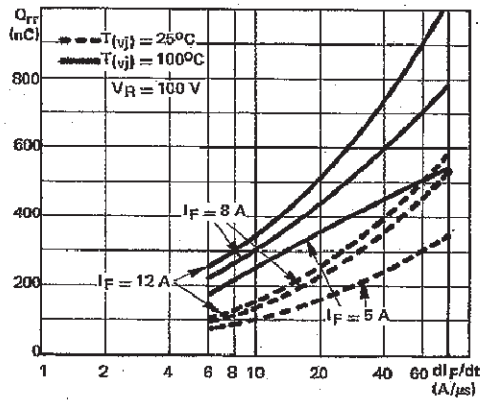


Figure 8. Recovery time versus di_F/dt.

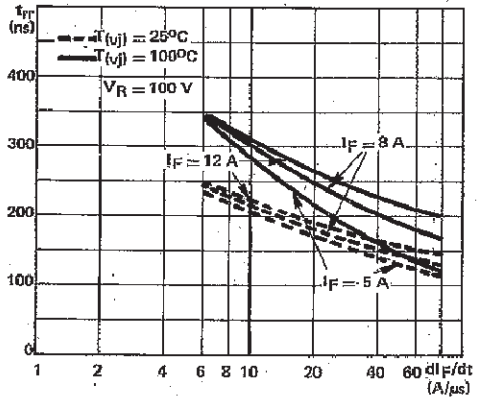
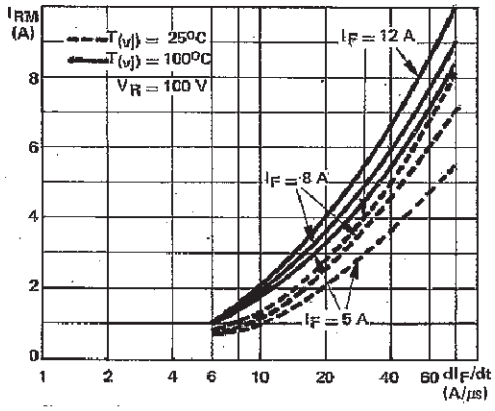
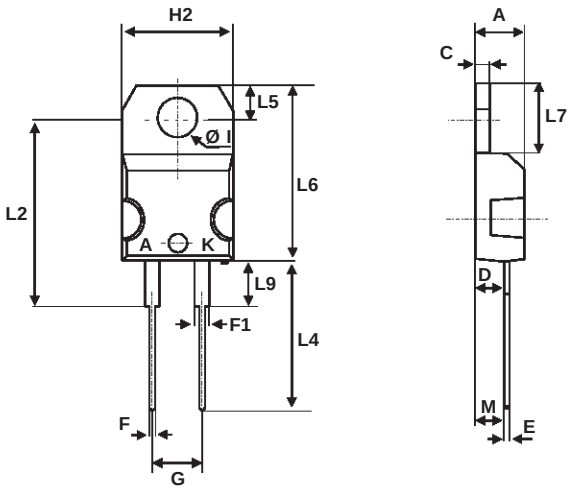


Figure 9. Peak reverse current versus di_F/dt.



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