

BY 233-600

FAST RECOVERY RECTIFIER DIODES

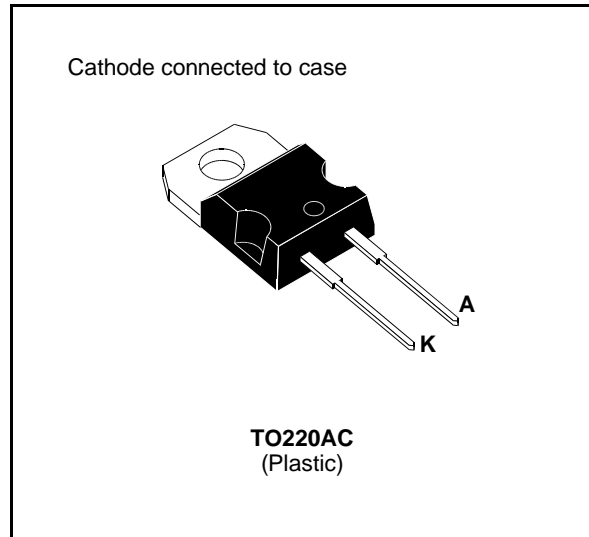
- LOW SWITCHING LOSSES
- LOW PEAK RECOVERY CURRENT I_{RM}
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF t_{rr} AND I_{RM} AT 100°C UNDER USERS CONDITIONS

APPLICATIONS

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

DESCRIPTION

Fast recovery rectifiers suited for power switching applications.



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	$T_c = 115^\circ C$ $\delta = 0.5$	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°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:

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

Figure 1. Low frequency power losses versus average current

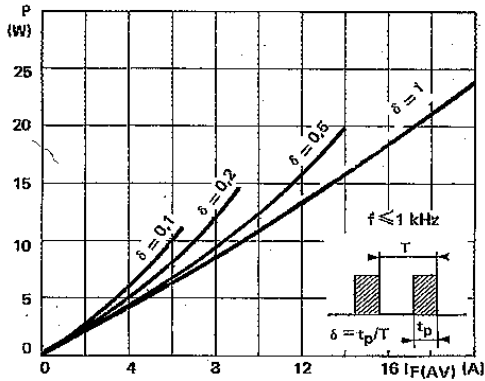


Figure 2. Peak current versus form factor

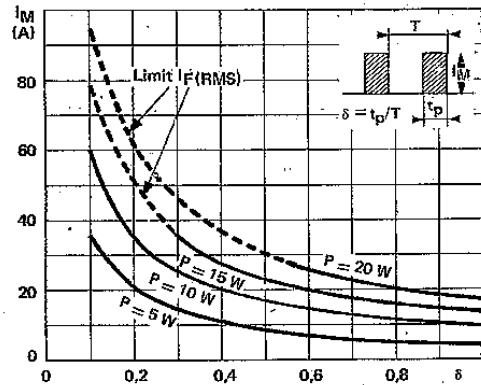


Figure 3. Non repetitive peak surge current versus overload duration

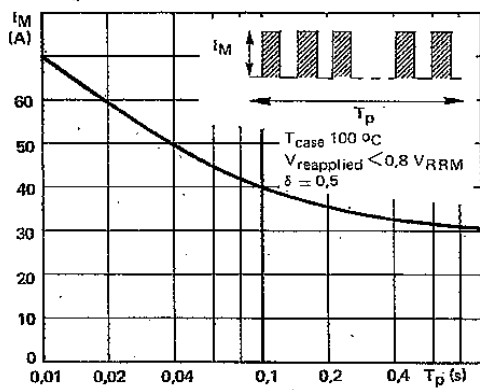


Figure 4. Thermal impedance versus pulse width

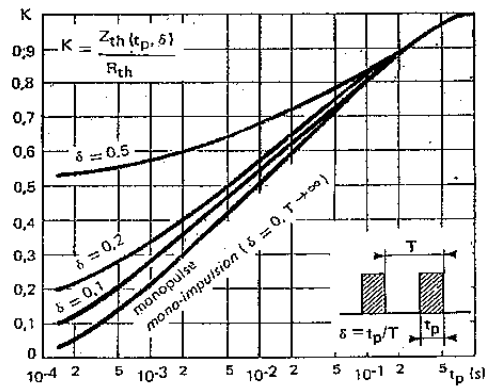


Figure 5. Voltage drop versus forward current

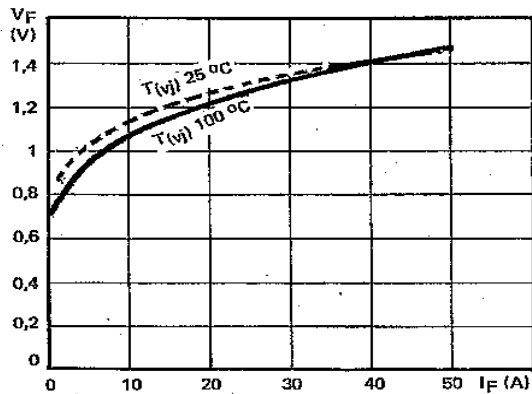


Figure 6. Capacitance versus reverse voltage

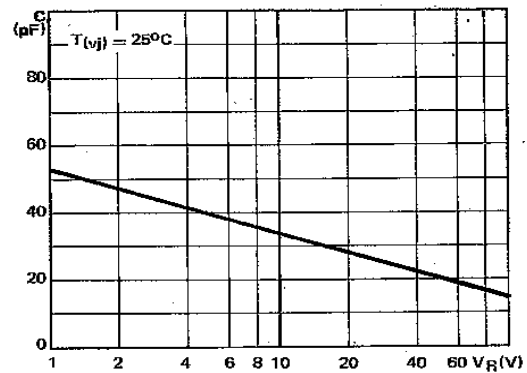


Figure 7. Recovery time versus di_F/dt .

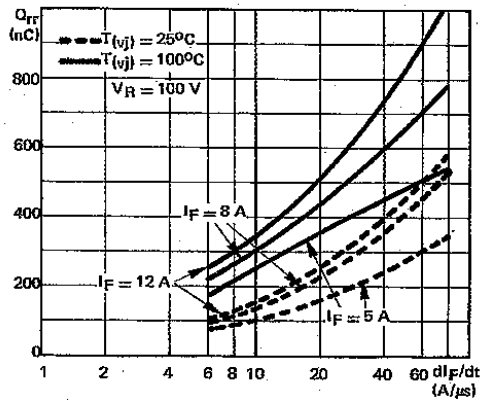


Figure 8. Recovery time versus di_F/dt .

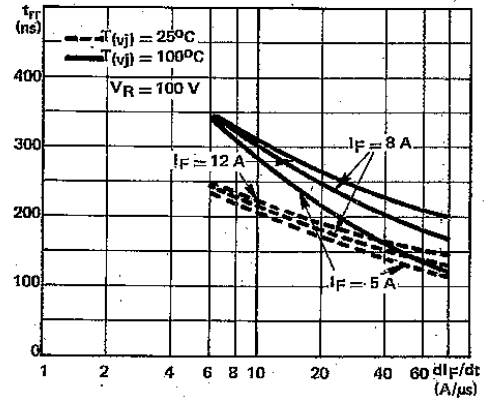
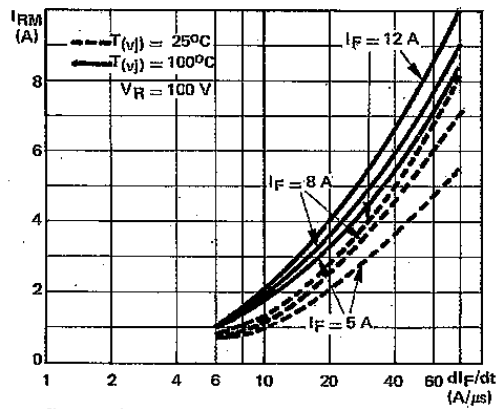
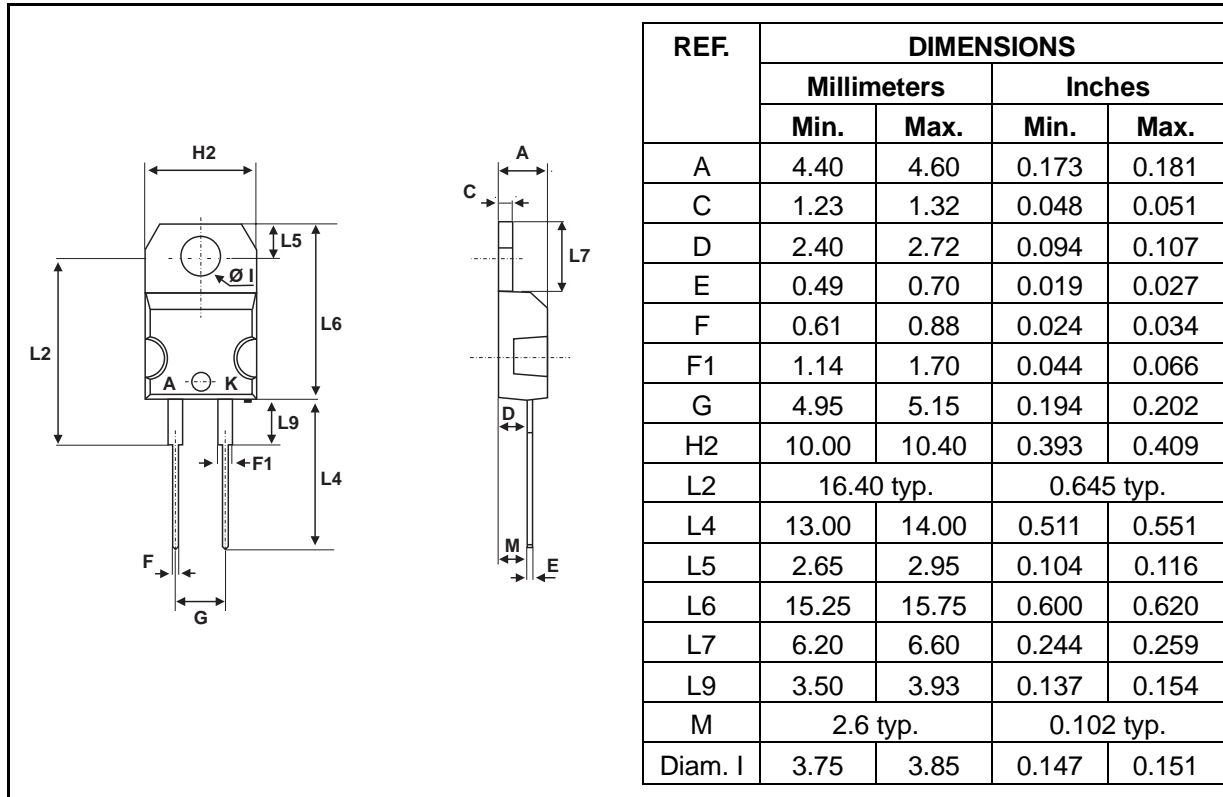


Figure 9. Peak reverse current versus di_F/dt .



PACKAGE MECHANICAL DATA

TO220AC (Plastic)



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

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics
 © 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco -
 The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

