


ESM765-800

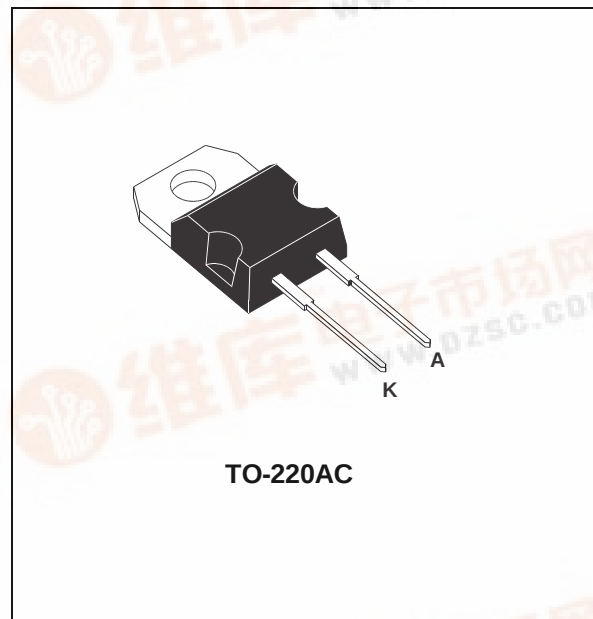
RECOVERY RECTIFIER DIODES

MAIN PRODUCTS CHARACTERISTICS

$I_F(AV)$	10 A
V_{RRM}	800 V
$T_j(max)$	150°C
$V_F(max)$	1.35 V
$t_{rr}(max)$	300 ns

FEATURES

- 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
- MOTOR CONTROLS AND CONVERTERS
- SWITCH MODE POWER SUPPLIES
- INSULATED PACKAGE: TO-220AC
Insulating voltage = 2500 V_{RMS}



DESCRIPTION

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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage	$t_p \leq 20\mu s$	800	V
$I_F(RMS)$	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	$T_p = 10 ms$ Sinusoidal	120	A
P_{tot}	Power dissipation	$T_c = 100^\circ C$	20	W
T_{stg}	Storage temperature range		- 40 to + 150	°C
T_j	Maximum operating junction temperature		+ 150	

ESM765-800

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	2	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$			20	mA
		$T_j = 100^\circ\text{C}$			1	
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$			1.4	V
		$T_j = 100^\circ\text{C}$			1.35	

Pulse test : * $t_p = 5 \text{ ms}$, $\delta < 2 \%$

** $t_p = 380 \mu\text{s}$, $\delta < 2 \%$

To evaluate the conduction losses use the following equation :

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

$$V_F = 1.2 + 0.015 I_F$$

RECOVERY CHARACTERISTICS

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

Fig. 1: Low frequency power losses versus average current.

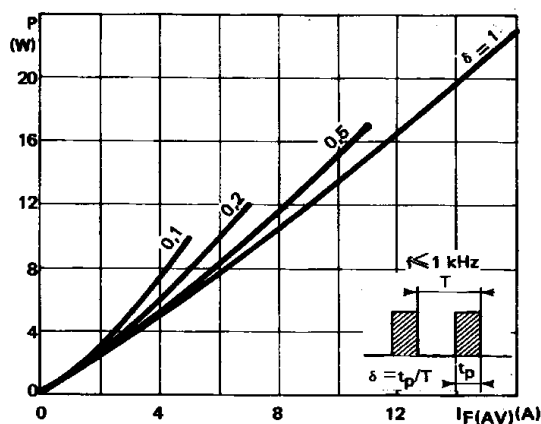


Fig. 2: Peak current versus form factor.

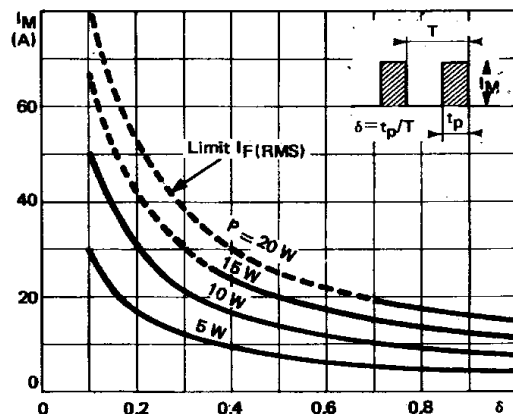


Fig. 3: Non repetitive peak surge current versus overload duration.

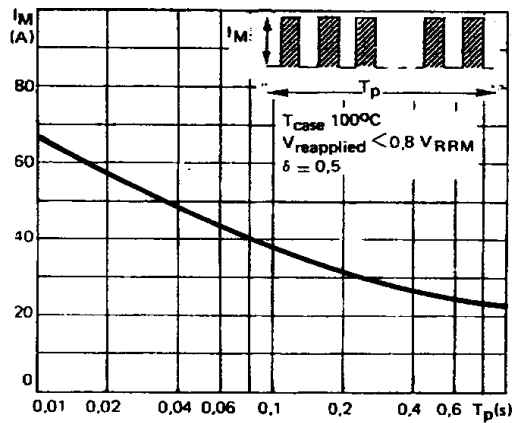


Fig. 4: Thermal impedance versus pulse width.

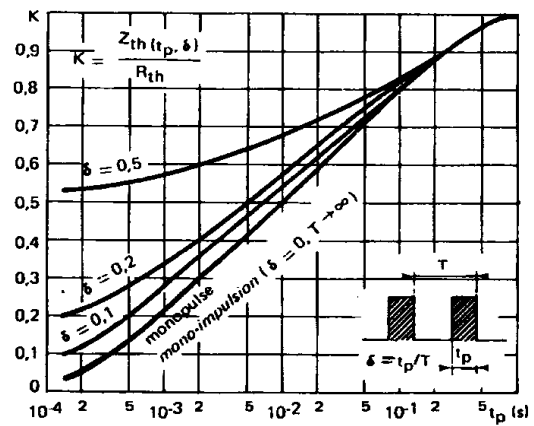


Fig. 5: Voltage drop versus forward current.

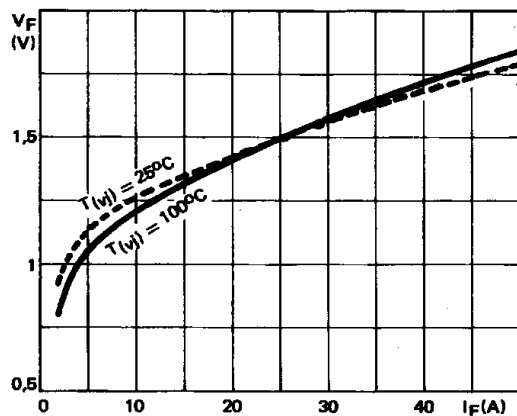


Fig. 6: Capacitance versus applied reverse voltage.

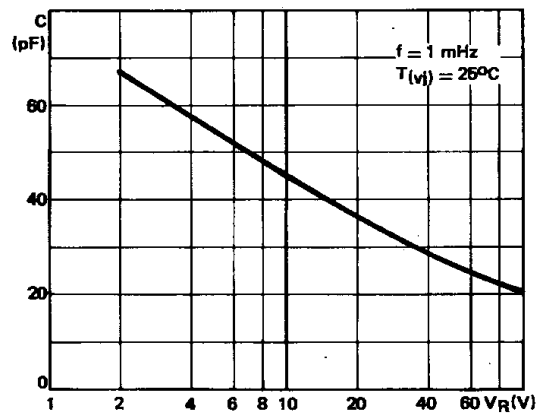


Fig. 7: Recovery charge versus di_F/dt .

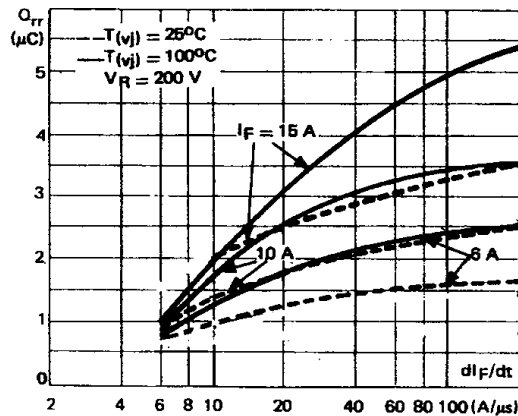


Fig. 8: Recovery time versus di_F/dt .

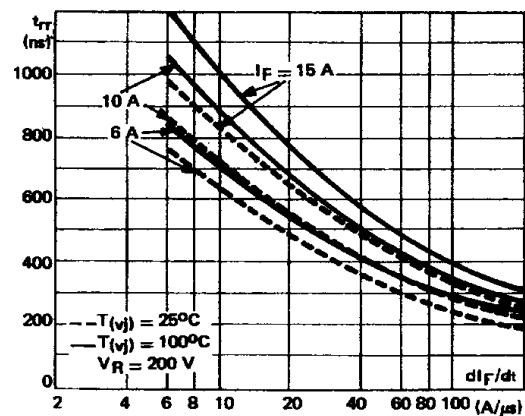
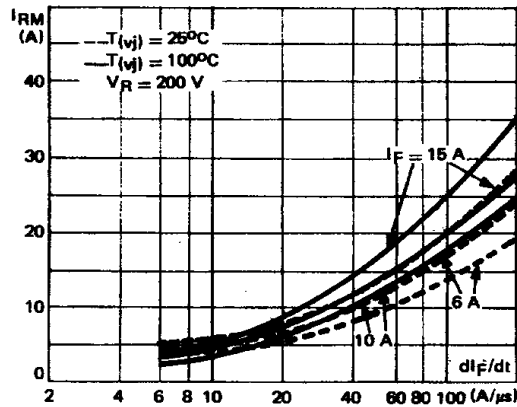
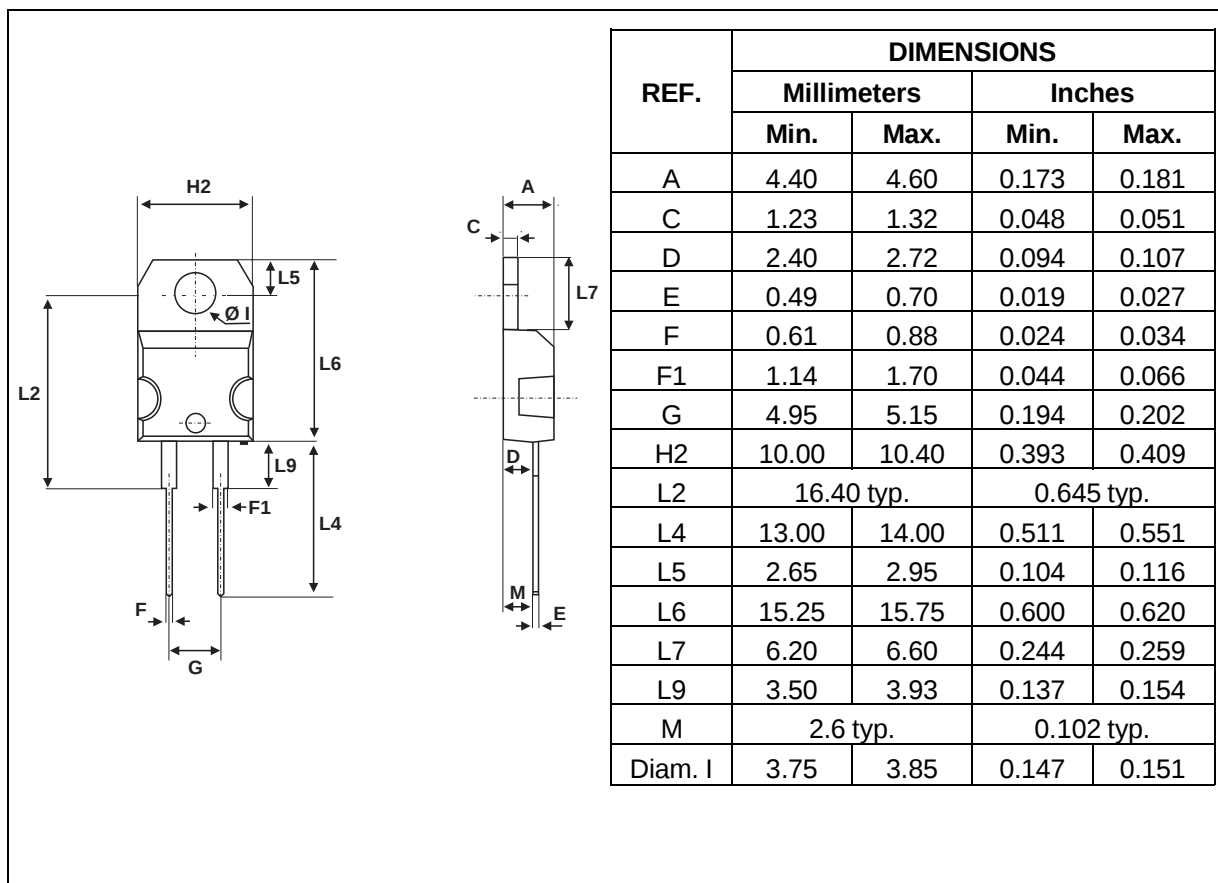


Fig. 9: Peak reverse current versus di_F/dt .



PACKAGE MECHANICAL DATA

TO-220AC



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

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>