



ESM765PI-800

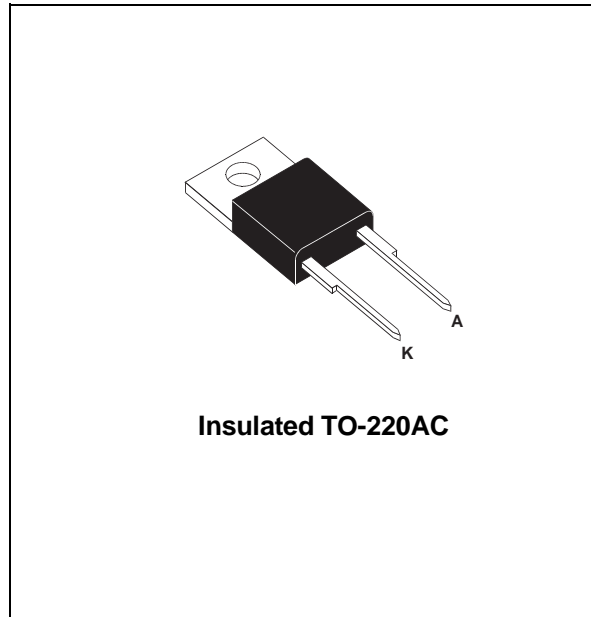
RECOVERY RECTIFIER DIODES

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 ≤ 20μs	800	V
I _{F(RMS)}	RMS forward current		16	A
I _{F(AV)}	Average forward current	T _c = 100°C δ = 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°C	20	W
T _{stg}	Storage temperature range		- 40 to + 150	°C
T _j	Maximum operating junction temperature		+ 150	

ESM765PI-800

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	3.5	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		20	mA
		$T_j = 100^\circ\text{C}$			1	
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$		1.4	V
		$T_j = 100^\circ\text{C}$			1.35	

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

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

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}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$	$di_F/dt = -15\text{ A}/\mu\text{s}$			300	ns
Q_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$	$di_F/dt = -50\text{ A}/\mu\text{s}$		2.3		μC

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

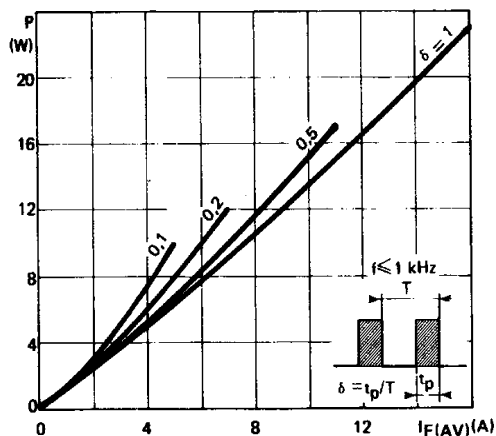


Fig. 2: Peak current versus form factor.

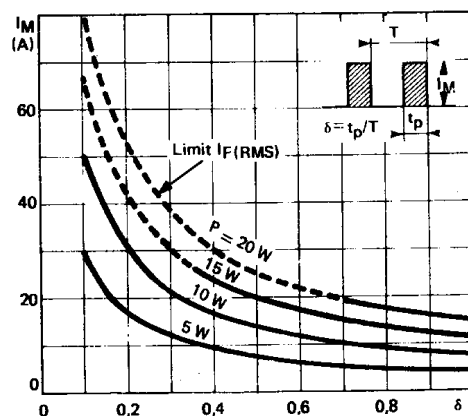


Fig. 3: Non repetitive peak surge current versus overload duration.

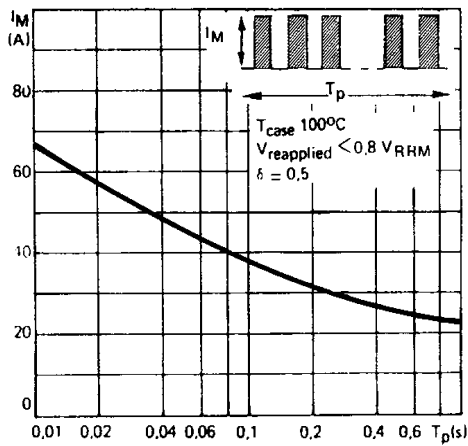


Fig. 4: Thermal impedance versus pulse width.

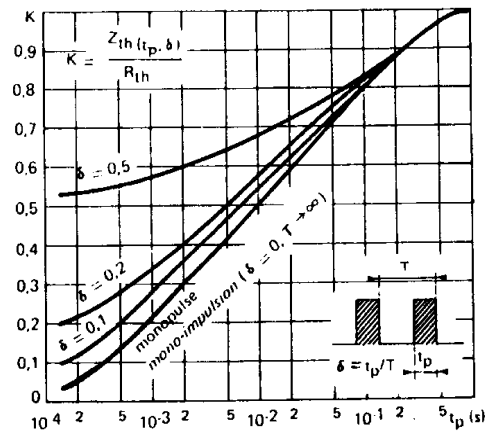


Fig. 5: Voltage drop versus forward current.

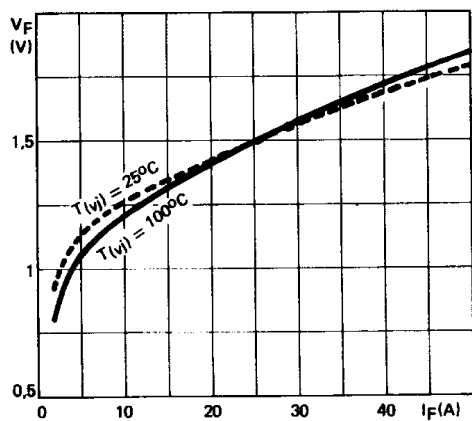


Fig. 6: Capacitance versus applied reverse voltage

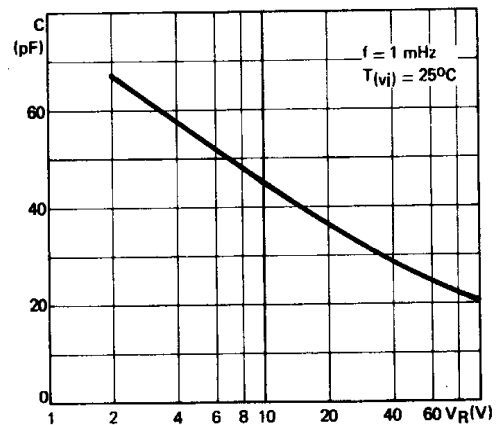


Fig. 7: Recovery charge versus di_F/dt .

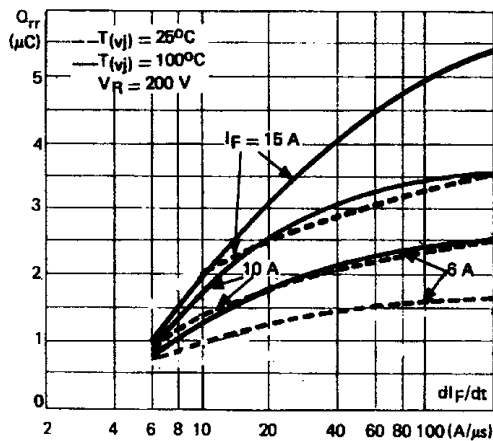
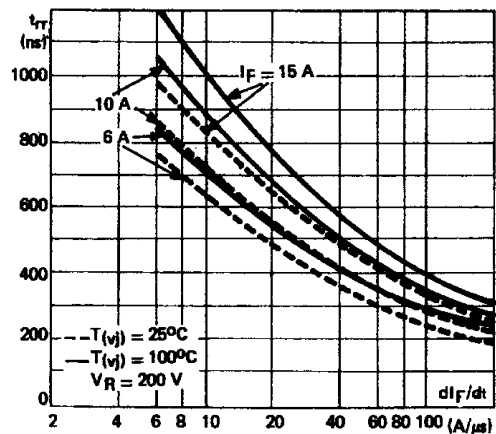
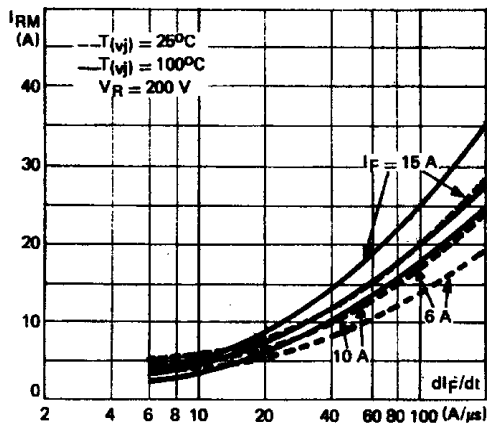


Fig. 8: Recovery time versus di_F/dt .



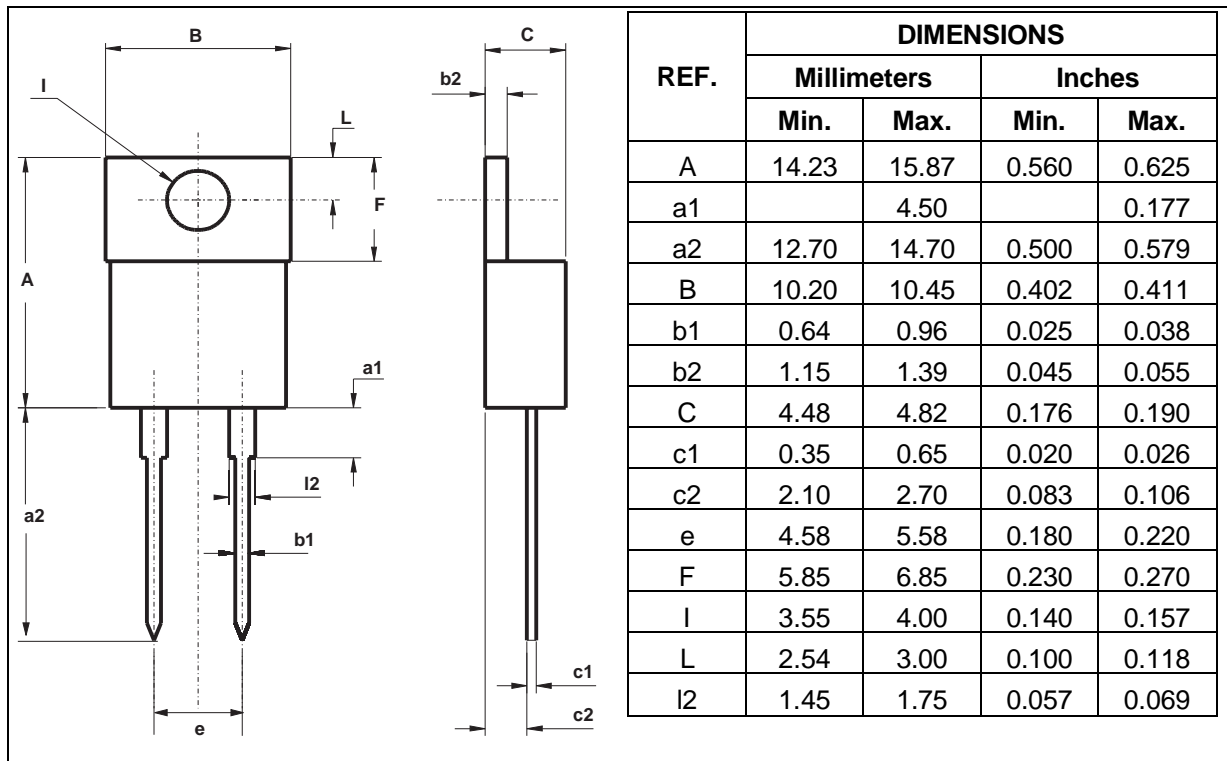
ESM765PI-800

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



PACKAGE MECHANICAL DATA

Insulated TO-220AC



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