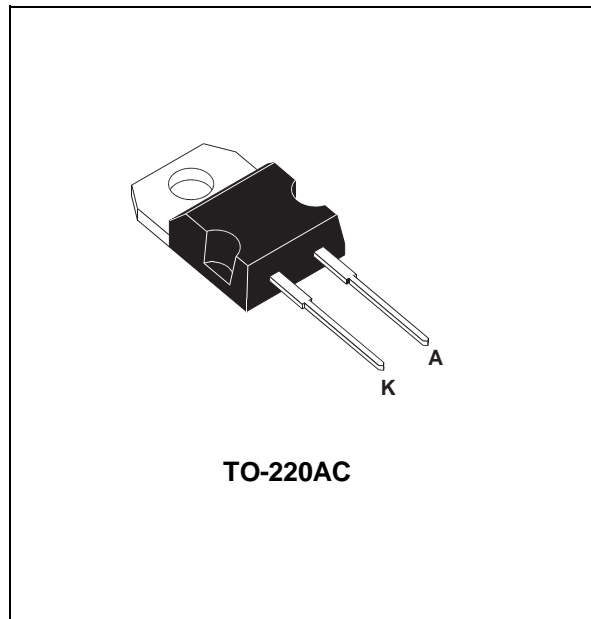


**RECOVERY RECTIFIER DIODES**
**MAIN PRODUCTS CHARACTERISTICS**

<b>I<sub>F(AV)</sub></b>	<b>10 A</b>
<b>V<sub>RRM</sub></b>	<b>800 V</b>
<b>T<sub>j</sub> (max)</b>	<b>150°C</b>
<b>V<sub>F</sub> (max)</b>	<b>1.35 V</b>
<b>t<sub>rr</sub> (max)</b>	<b>300 ns</b>

**FEATURES**

- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF THE t<sub>rr</sub> AND I<sub>RM</sub> AT 100°C UNDER USERS CONDITIONS
- MOTOR CONTROLS AND CONVERTERS
- SWITCH MODE POWER SUPPLIES
- INSULATED PACKAGE: TO-220AC  
Insulating voltage = 2500 V<sub>RMS</sub>


**DESCRIPTION**

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

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage	tp ≤ 20μs	800	V
I <sub>F(RMS)</sub>	RMS forward current		16	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 100°C δ = 0.5	10	A
I <sub>FSM</sub>	Surge non repetitive forward current	T <sub>p</sub> = 10 ms Sinusoidal	120	A
P <sub>tot</sub>	Power dissipation	T <sub>c</sub> = 100°C	20	W
T <sub>stg</sub>	Storage temperature range		- 40 to + 150	°C
T <sub>j</sub>	Maximum operating junction temperature		+ 150	

# ESM765-800

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-c)</sub>	Junction to case	2	°C/W

## STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions	Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>		20	mA
		T <sub>j</sub> = 100°C			1	
V <sub>F</sub> **	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 10 A		1.4	V
		T <sub>j</sub> = 100°C			1.35	

Pulse test : \* t<sub>p</sub> = 5 ms, δ < 2 %  
 \*\* t<sub>p</sub> = 380 μs, δ < 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 <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	dI <sub>F</sub> /dt = - 15A/μs			300	ns
Q <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 10A	dI <sub>F</sub> /dt = - 50A/μs		2.3		μC

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

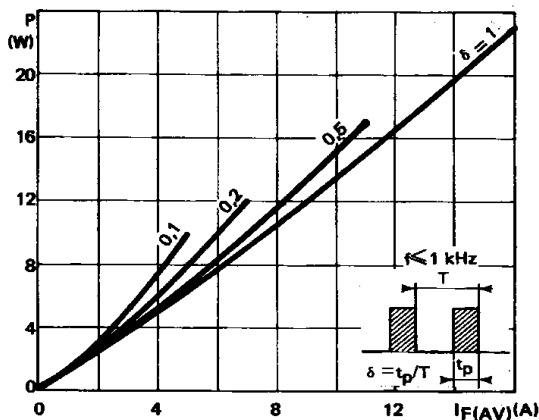
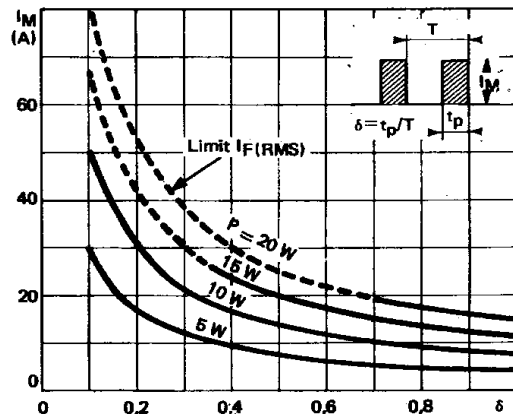
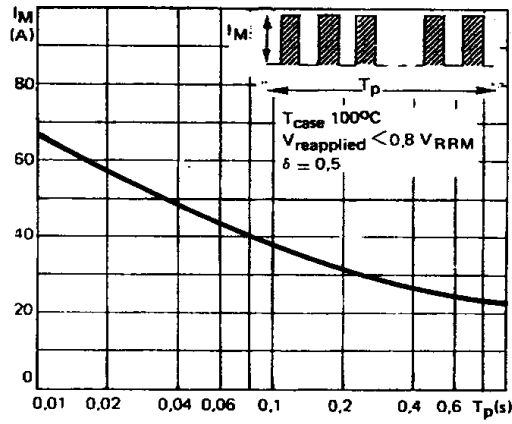


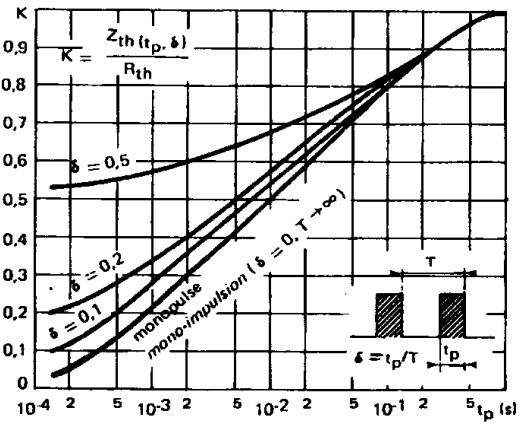
Fig. 2: Peak current versus form factor.



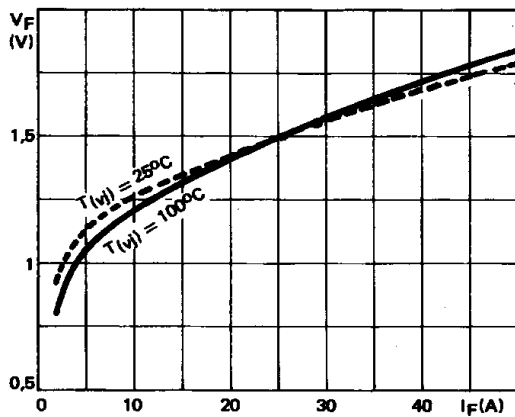
**Fig. 3:** Non repetitive peak surge current versus overload duration.



**Fig. 4:** Thermal impedance versus pulse width.



**Fig. 5:** Voltage drop versus forward current.



**Fig. 6:** Capacitance versus applied reverse voltage.

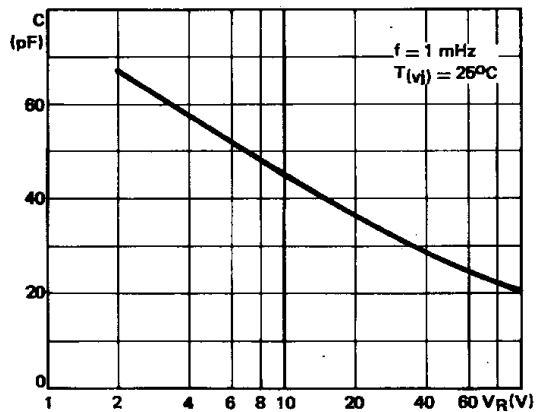


Fig. 7: Recovery charge versus  $di_F/dt$ .

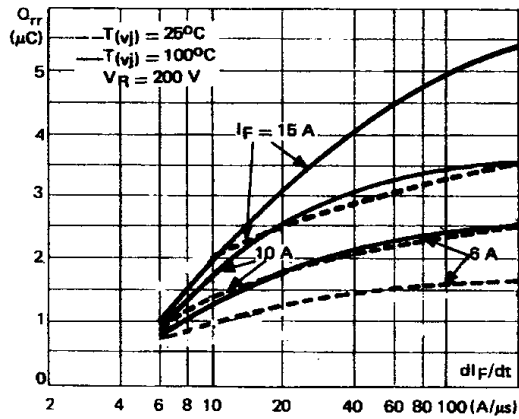


Fig. 8: Recovery time versus  $di_F/dt$ .

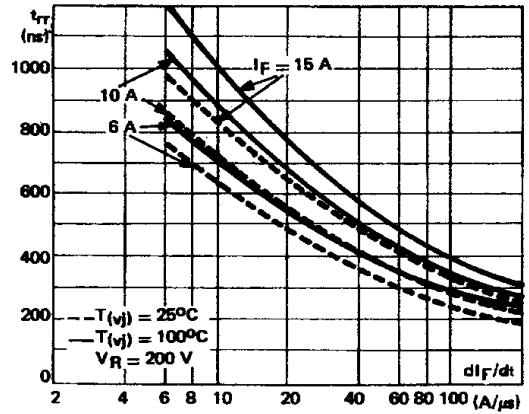
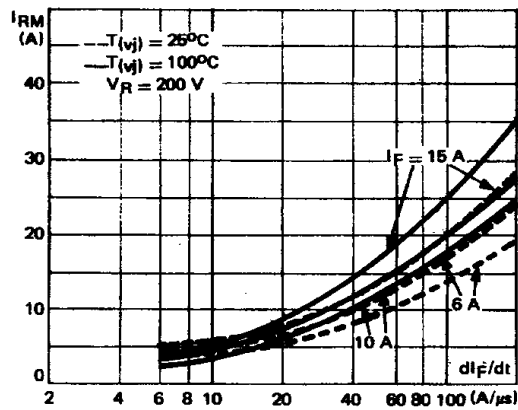
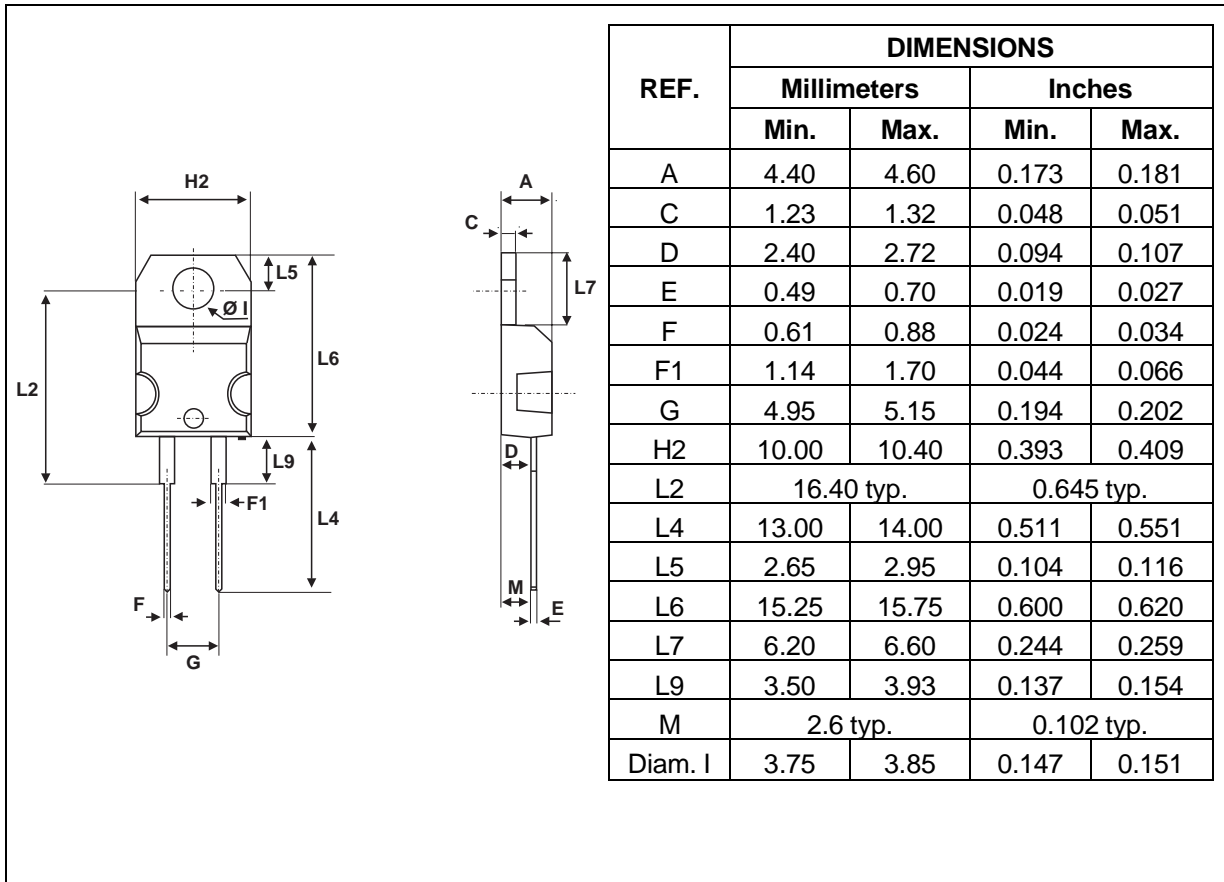


Fig. 9: Peak reverse current versus  $di_F/dt$ .



**PACKAGE MECHANICAL DATA**

TO-220AC



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