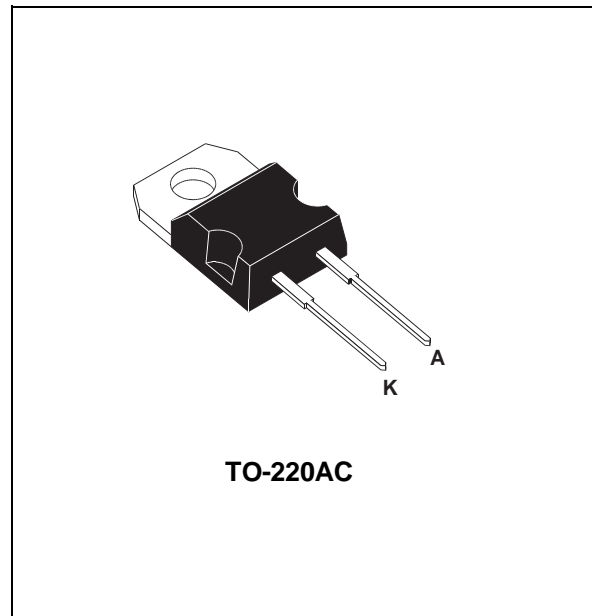


**RECOVERY RECTIFIER DIODES**
**MAIN PRODUCTS CHARACTERISTICS**

<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.

<b>Symbol</b>	<b>Parameter</b>		<b>Value</b>	<b>Unit</b>
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	Tc = 100°C δ = 0.5	10	A
I <sub>FSM</sub>	Surge non repetitive forward current	Tp = 10 ms Sinusoidal	120	A
P <sub>tot</sub>	Power dissipation	Tc = 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
$R_{th(j-c)}$	Junction to case	2	°C/W

## STATIC ELECTRICAL CHARACTERISTICS

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

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		$\mu\text{C}$

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

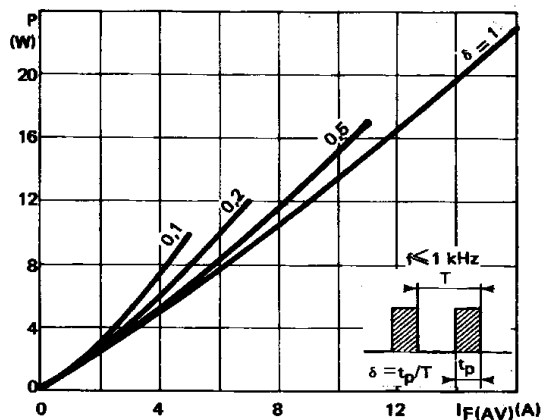


Fig. 2: Peak current versus form factor.

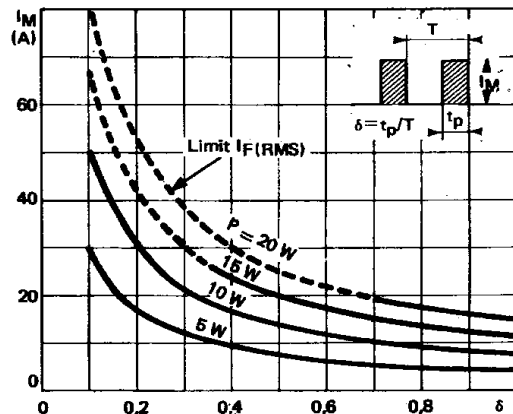


Fig. 3: Non repetitive peak surge current versus overload duration.

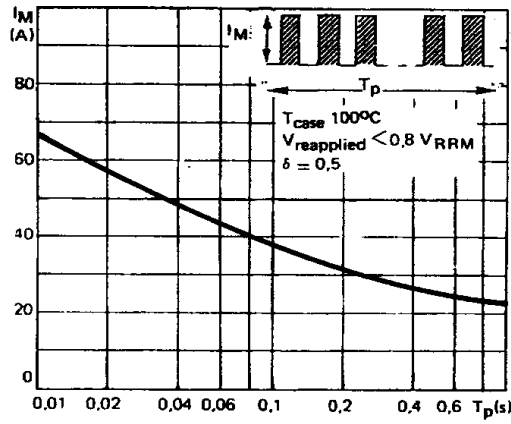


Fig. 4: Thermal impedance versus pulse width.

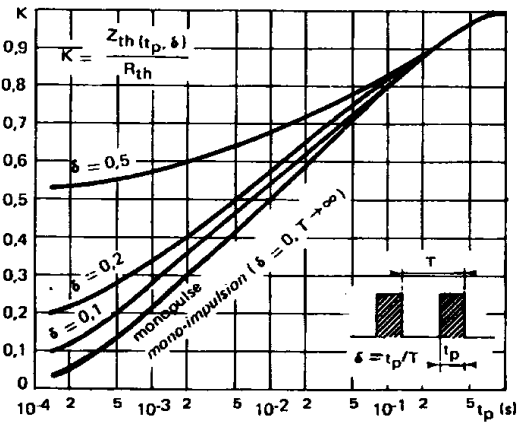


Fig. 5: Voltage drop versus forward current.

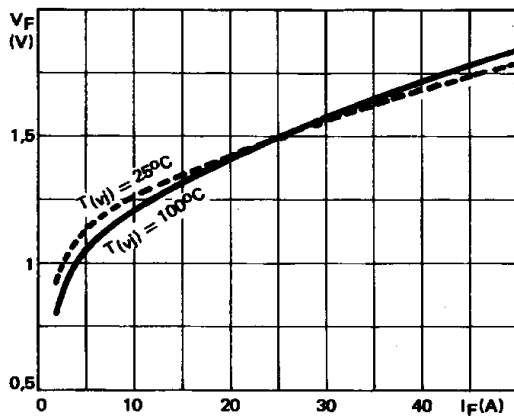


Fig. 6: Capacitance versus applied reverse voltage

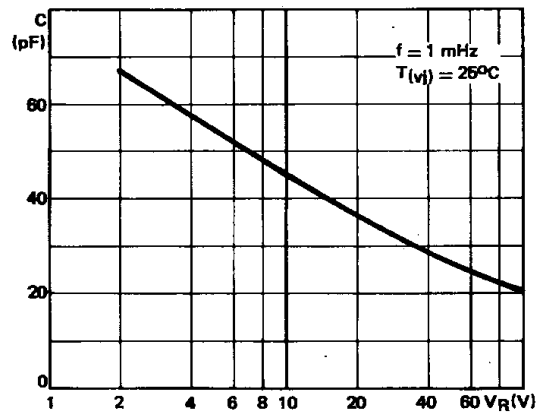


Fig. 7: Recovery charge versus  $di_F/dt$ .

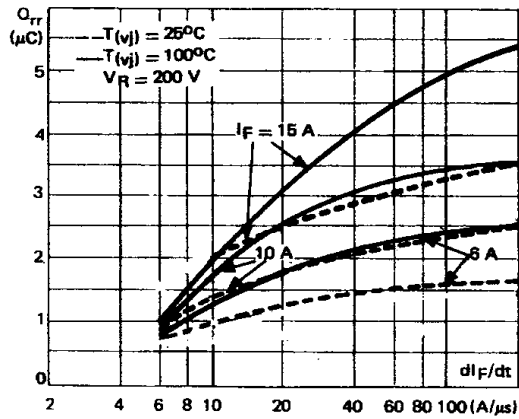


Fig. 8: Recovery time versus  $di_F/dt$ .

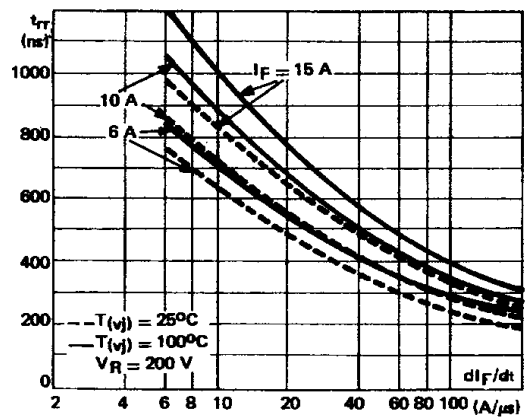
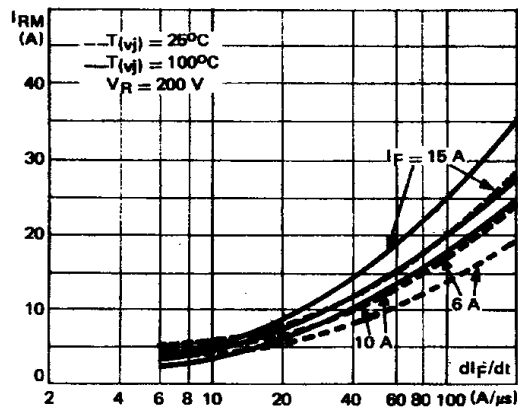
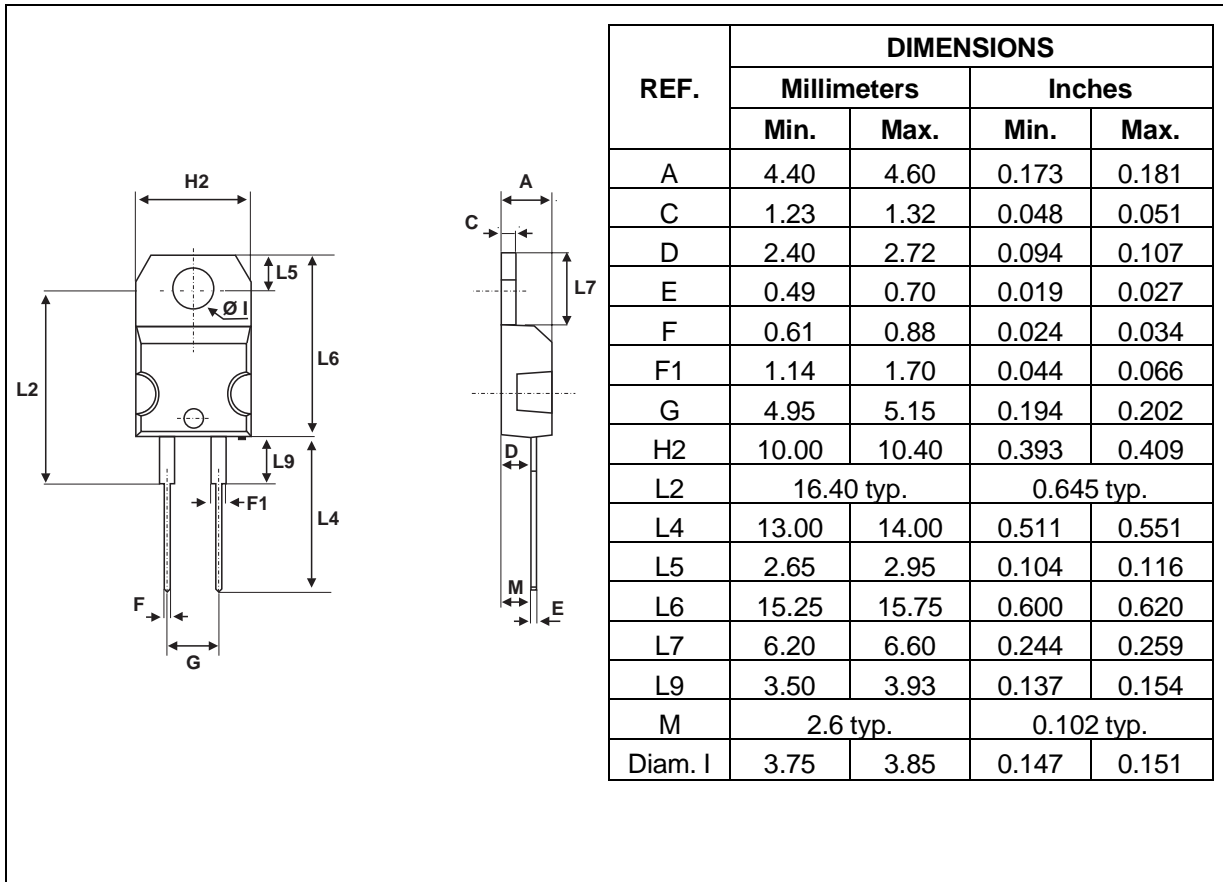


Fig. 9: Peak reverse current versus  $di_F/dt$ .



## PACKAGE MECHANICAL DATA

TO-220AC



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