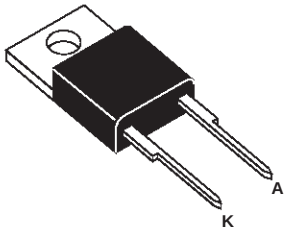
ESM765PI-800

RECOVERY RECTIFIER DIODES

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	800 V
Tj (max)	150°C
V_F (max)	1.35 V
trr (max)	300 ns



Insulated TO-220AC

FEATURES

- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF THE trr 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	tp ≤ 20µs	800	V
$I_{F(RMS)}$	RMS forward current		16	A
$I_{F(AV)}$	Average forward current	Tc = 100°C δ = 0.5	10	A
I_{FSM}	Surge non repetitive forward current	Tp = 10 ms Sinusoidal	120	A
P_{tot}	Power dissipation	Tc = 100°C	20	W
T_{stg}	Storage temperature range		- 40 to + 150	°C
Tj	Maximum operating junction temperature		+ 150	

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	Tj = 25°C	$V_R = V_{RRM}$			20	mA
		Tj = 100°C				1	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 10 A			1.4	V
		Tj = 100°C				1.35	

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 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
trr	T_j = 25°C	I_F = 1A	dI_F/dt = - 15A/µs V_R = 30V			300	ns
Qrr	T_j = 25°C	I_F = 10A	dI_F/dt = - 50A/µs V_R = 200V		2.3		µC

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

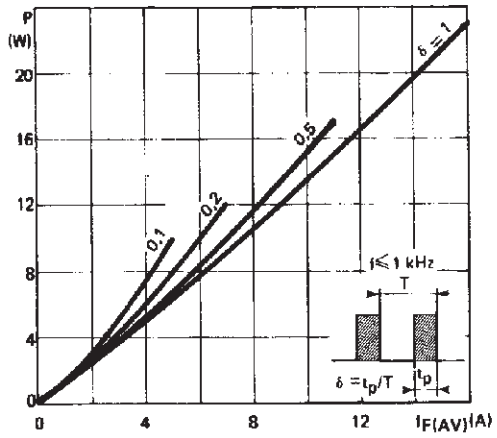


Fig. 2: Peak current versus form factor.

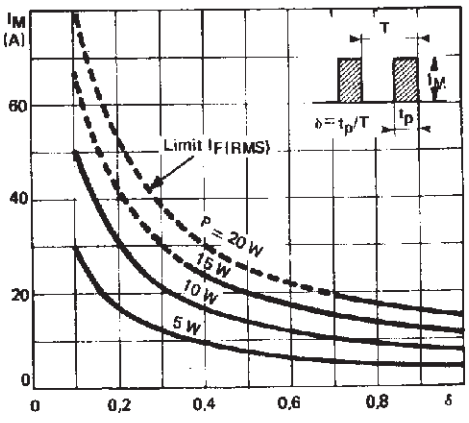


Fig. 3: Non repetitive peak surge current versus overload duration.

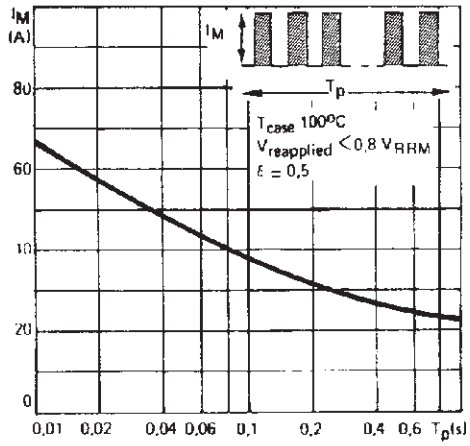


Fig. 4: Thermal impedance versus pulse width.

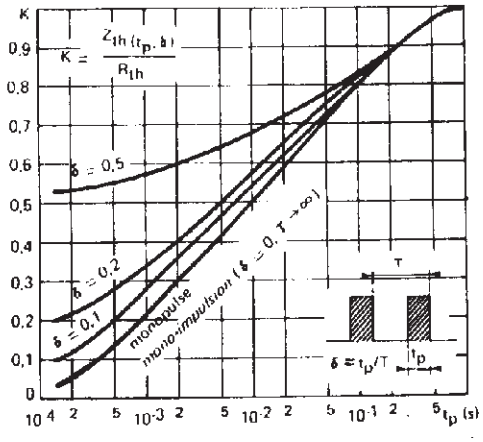


Fig. 5: Voltage drop versus forward current.

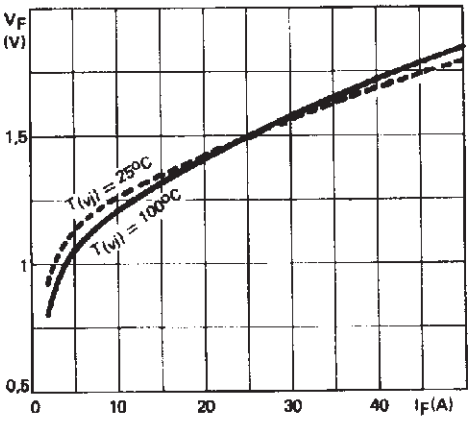


Fig. 6: Capacitance versus applied reverse voltage

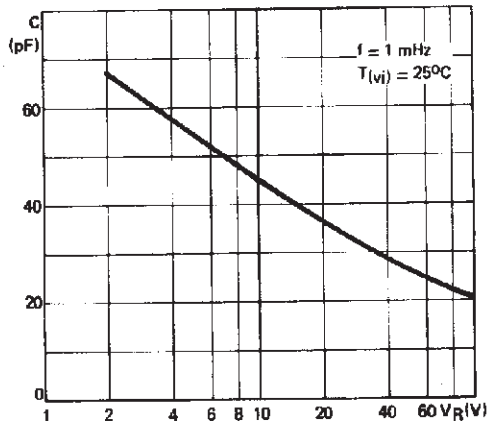


Fig. 7: Recovery charge versus dI_F/dt.

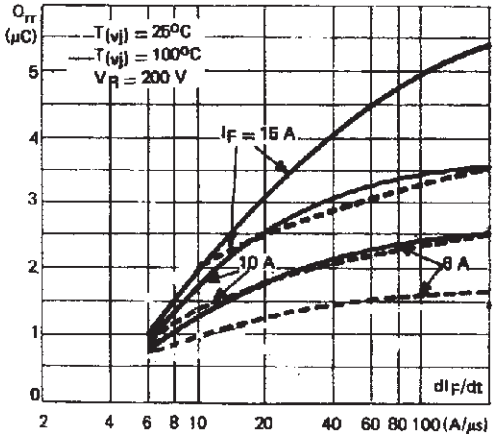


Fig. 8: Recovery time versus dI_F/dt.

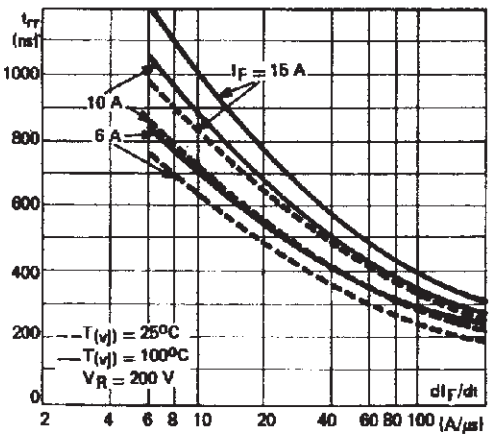
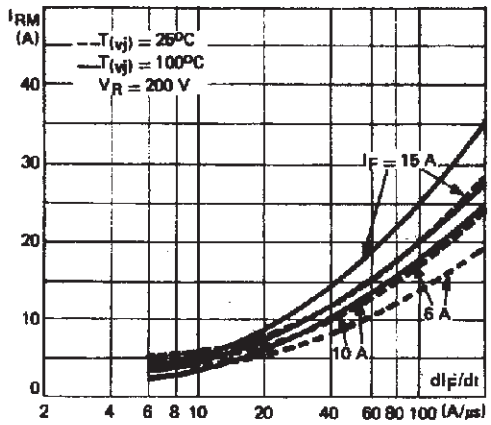


Fig. 9: Peak reverse current versus dI_F/dt.



PACKAGE MECHANICAL DATA

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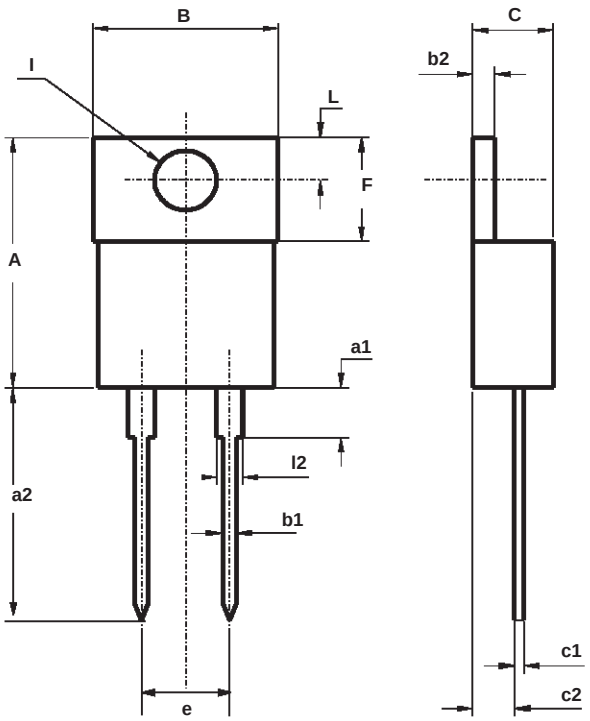

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.23	15.87	0.560	0.625
a1		4.50		0.177
a2	12.70	14.70	0.500	0.579
B	10.20	10.45	0.402	0.411
b1	0.64	0.96	0.025	0.038
b2	1.15	1.39	0.045	0.055
C	4.48	4.82	0.176	0.190
c1	0.35	0.65	0.020	0.026
c2	2.10	2.70	0.083	0.106
e	4.58	5.58	0.180	0.220
F	5.85	6.85	0.230	0.270
I	3.55	4.00	0.140	0.157
L	2.54	3.00	0.100	0.118
l2	1.45	1.75	0.057	0.069