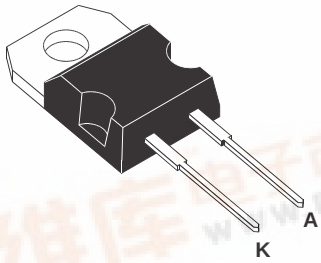
ESM765-800

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



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	2	°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.

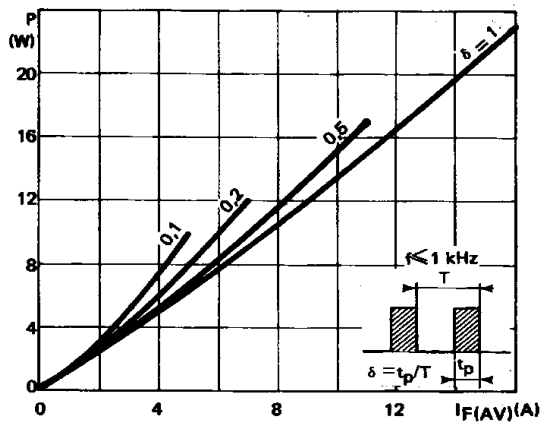


Fig. 2: Peak current versus form factor.

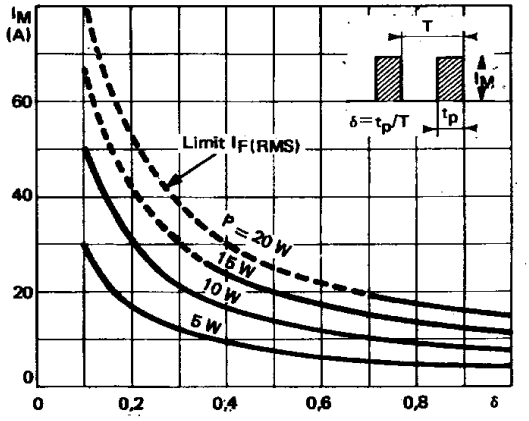


Fig. 3: Non repetitive peak surge current versus overload duration.

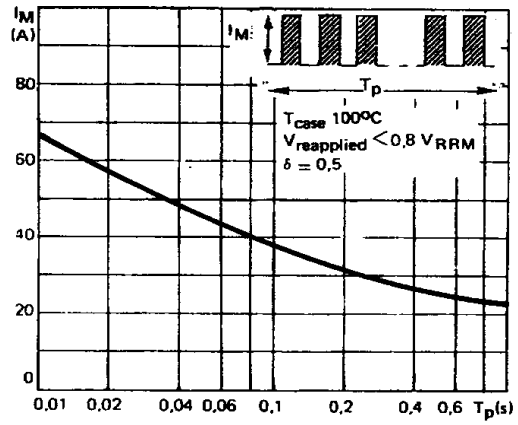


Fig. 4: Thermal impedance versus pulse width.

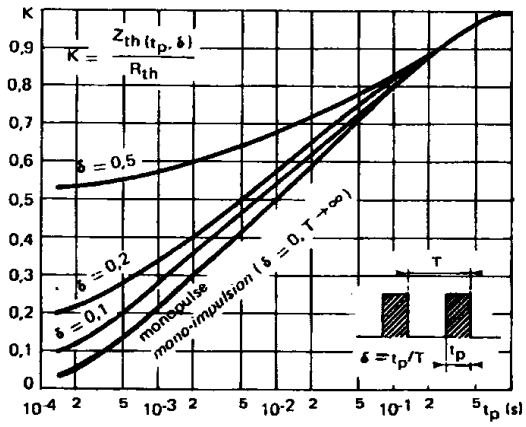


Fig. 5: Voltage drop versus forward current.

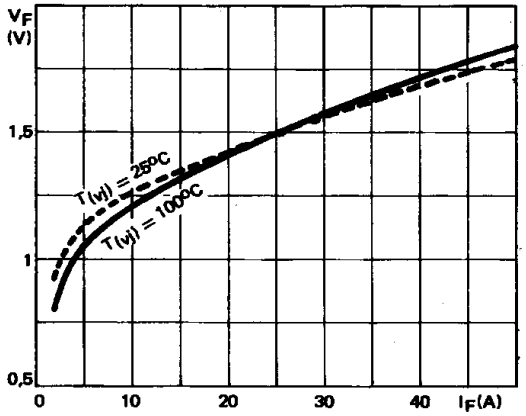


Fig. 6: Capacitance versus applied reverse voltage

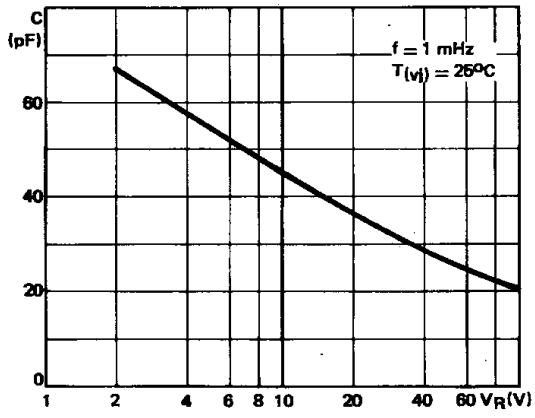


Fig. 7: Recovery charge versus dI_F/dt.

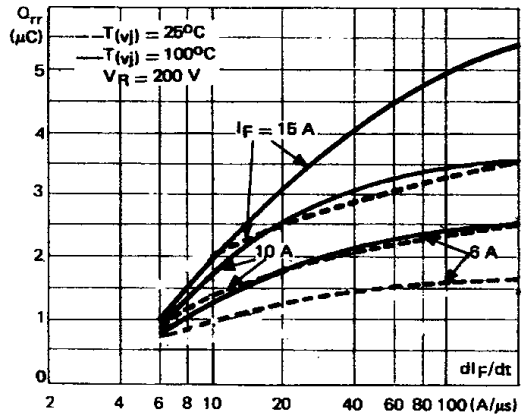


Fig. 8: Recovery time versus dI_F/dt.

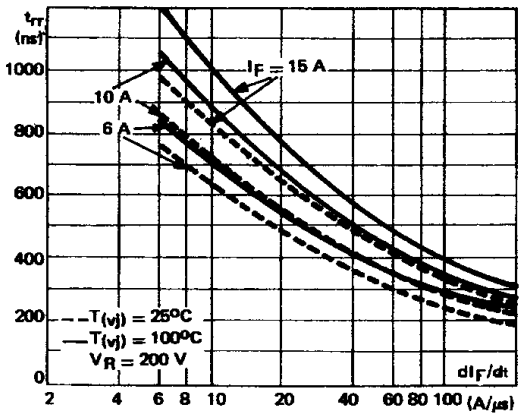
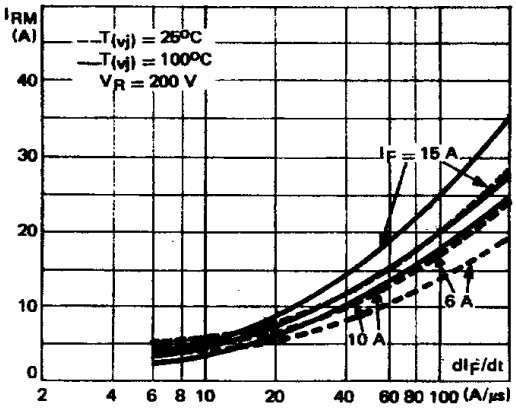
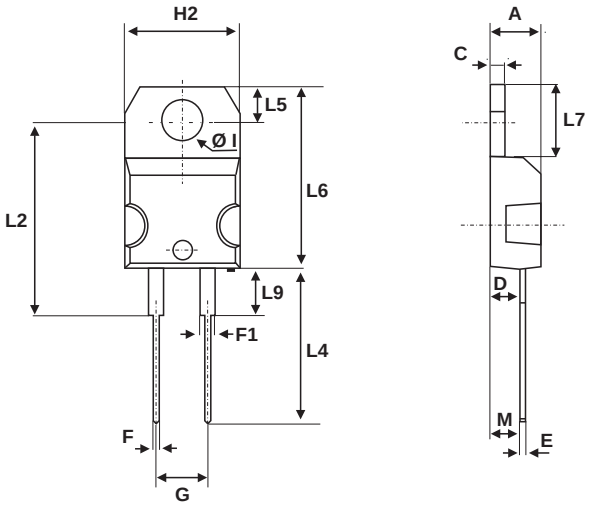


Fig. 9: Peak reverse current versus dI_F/dt.



PACKAGE MECHANICAL DATA

TO-220AC



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151