STPR320

ULTRA-FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	200 V
Tj (max)	150°C
V_F (max)	0.99 V
trr (max)	30 ns

F126

FEATURES

- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY

DESCRIPTION

Low cost single chip rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in F126, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE MAXIMUM (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(AV)}$	Average forward current	Tl=60°C δ = 0.5	3	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	30	A
T_{stg}	Storage temperature range		- 65 to + 150	°C
Tj	Maximum operating junction temperature		150	°C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction lead (L=5mm)	25	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			10	µA
		T_j = 100°C			0.2	0.5	mA
V_F **	Forward voltage drop	T_j = 125°C	I_F = 3 A		0.8	0.99	V
		T_j = 125°C	I_F = 6 A		0.95	1.20	
		T_j = 25°C	I_F = 6 A			1.25	

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.78 \times I_{F(AV)} + 0.070 \times I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Test conditions			Min.	Typ.	Max.	Unit
trr	T_j = 25°C	I_F = 0.5A I_R = 1A	Irr = 0.25A			30	ns
tfr	T_j = 25°C	I_F = 3A $V_{FR} = 1.1 \times V_F$ max	dI_F/dt = 50 A/µs		20		ns
V_{FP}	T_j = 25°C	I_F = 3A	dI_F/dt = 50 A/µs		3		V

Fig. 1 : Average forward power dissipation versus average forward current.

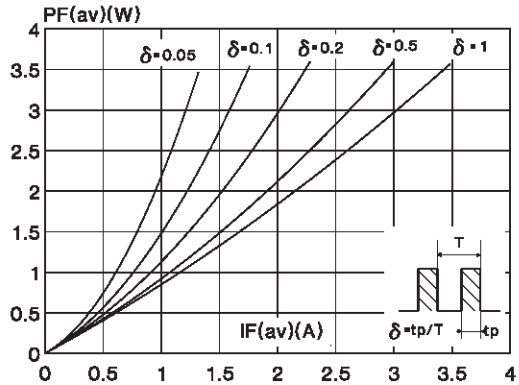


Fig. 2 : Peak current versus form factor.

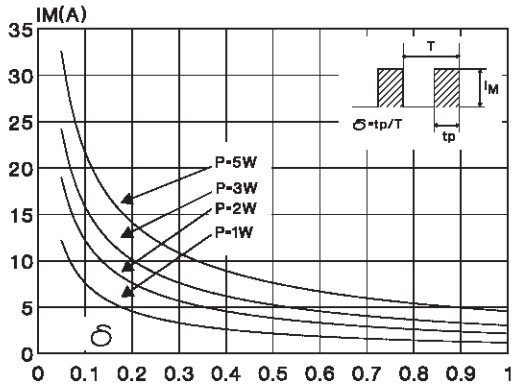


Fig. 3: Average current versus ambient temperature (δ : 0.5)
* circuit board e (Cu) = 35µm, S (cu) = 12mm^2
$L_{(LEADS)}$ = 20mm

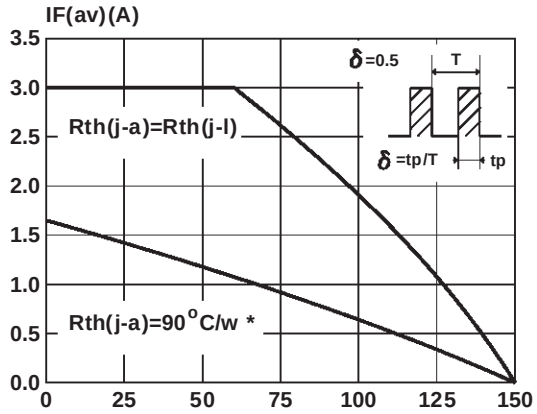


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values).

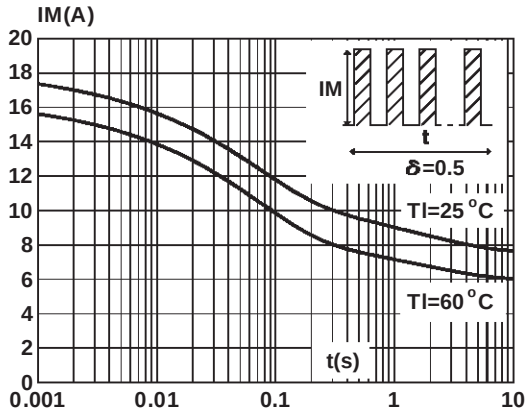


Fig. 5: Relative variation of thermal transient impedance junction to case versus pulse duration.

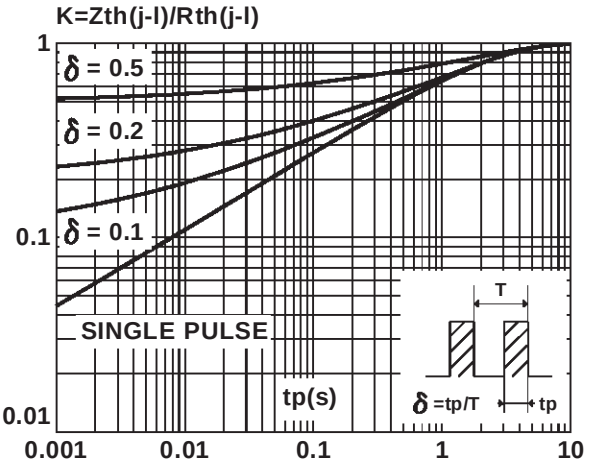


Fig. 6: Forward voltage drop versus forward current (maximum values).

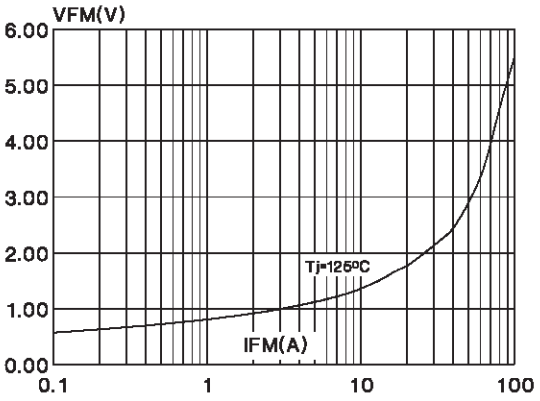


Fig 7: Junction capacitance versus reverse voltage applied (typical values).

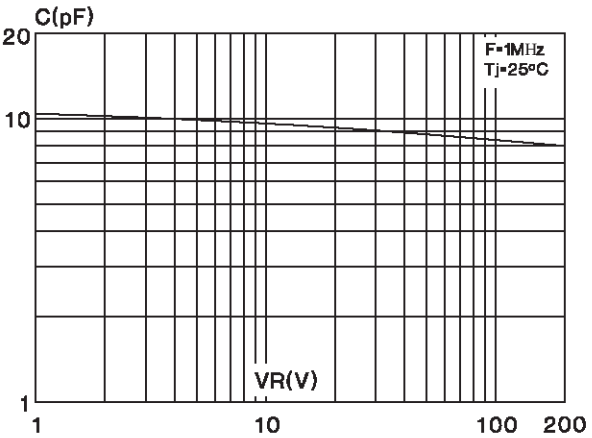


Fig. 8: Recovery charges versus dI_F/dt.

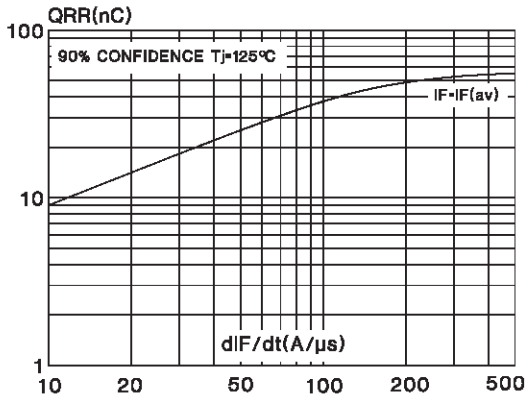


Fig. 9: Peak reverse current versus dI_F/dt.

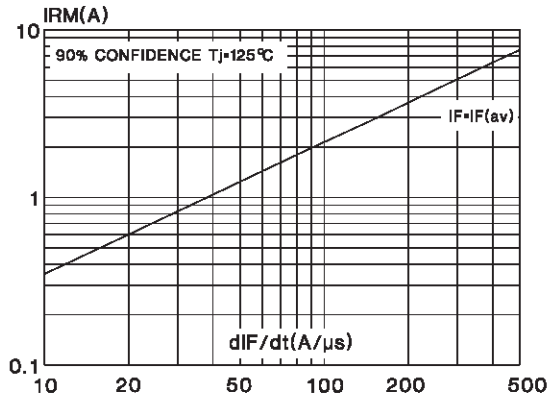
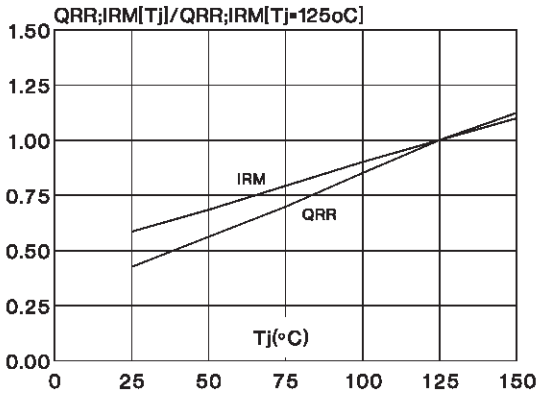
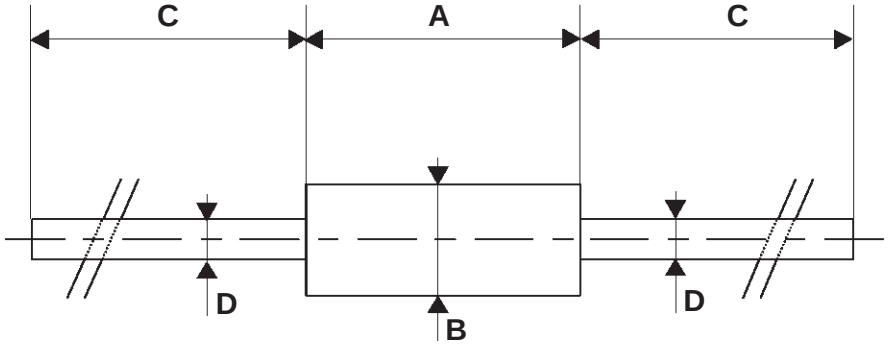


Fig. 10: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

F126



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.05	6.20	6.35	0.238	0.244	0.250
B	2.95	3.00	3.05	0.116	0.118	0.120
C	26		31	1.024		1.220
D	0.76	0.81	0.86	0.030	0.032	0.034

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPR320	STPR320	F126	0.4g	1000	Ammopack

- Cooling method : by conduction (C)
- Epoxy meets UL94,V0