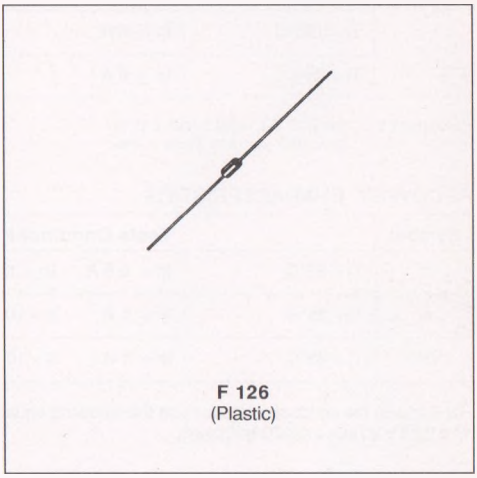
SGS-THOMSON MICROELECTRONICS

STPR310
STPR320

ULTRA FAST RECOVERY RECTIFIER DIODES

FEATURES

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



F 126
(Plastic)

DESCRIPTION

Low cost single chip rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in F 126, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{F(AV)}$	Average Forward Current	Tl = 60°C δ = 0.5	3	A
I_{FSM}	Surge Non Repetitive Forward Current	Tp = 10 ms Sinusoidal	30	A
Tstg Tj	Storage and Junction Temperature Range		- 65 to + 150 - 65 to + 150	°C

Symbol	Parameter	STPR		Unit
		310	320	
V_{RRM}	Repetitive Peak Reverse Voltage	100	200	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
Rth (j-l)*	Junction-leads	25	°C/W

* ou infinite heatsink with L = 5mm lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	T_j = 25°C	$V_R = V_{RRM}$			10	µA
	T_j = 100°C				0.5	mA
V_F **	T_j = 125°C	I_F = 3 A			0.99	V
	T_j = 125°C	I_F = 6 A			1.20	
	T_j = 25°C	I_F = 6 A			1.25	

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

RECOVERY CHARACTERISTICS

Symbol	Tests Conditions				Min.	Typ.	Max.	Unit
trr	T_j = 25°C	I_F = 0.5 A	I_R = 1A	Irr = 0.25 A			30	ns
tfr	T_j = 25°C	I_F = 1 A	tr = 10 ns	$V_{FR} = 1.1 \times V_F$		20		ns
V_{FP}	T_j = 25°C	I_F = 1 A	tr = 10 ns			3		V

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

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

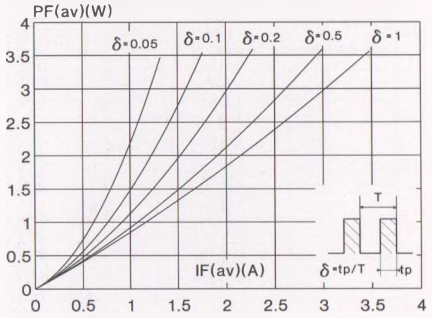


Fig.2 : Peak current versus form factor.

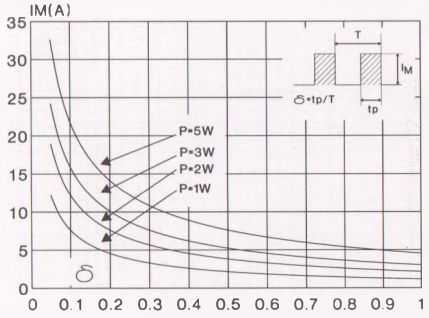


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5)
* circuit board e (Cu) = 35µm, S (cu) = 12mm^2
$L_{(LEADS)}$= 20mm

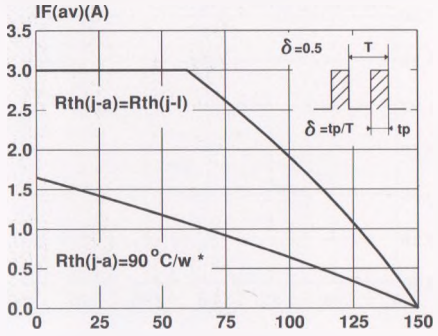


Fig.4 : Non repetitive surge peak forward current versus overload duration. (Maximum values)

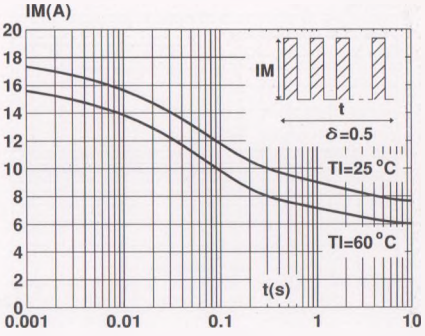


Fig.5 : Relative variation of thermal transient impedance junction to case versus pulse duration.

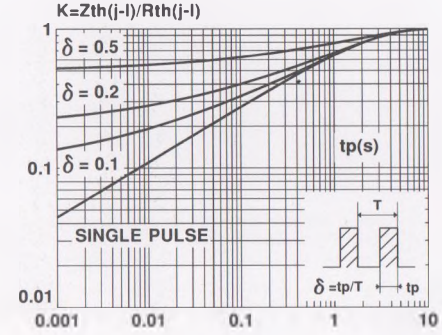


Fig.6 : Forward voltage drop versus forward current. (Maximum values)

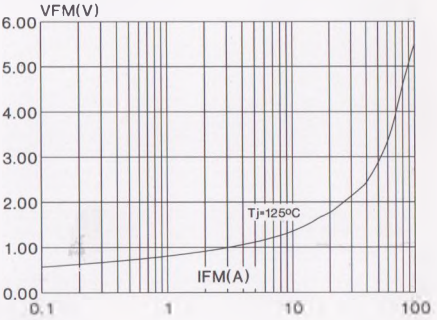


Fig.7 : Junction capacitance versus reverse voltage applied. (Typical values)

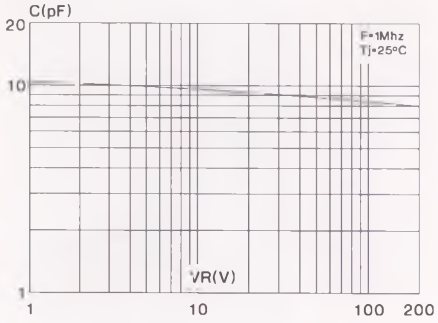


Fig.8 : Recovery charge versus dIF/dt.

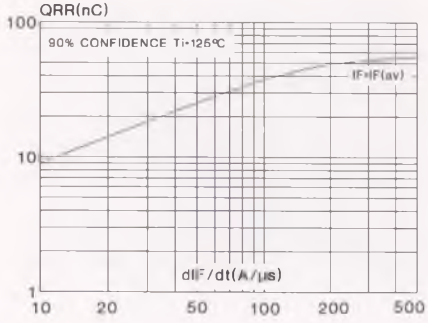


Fig.9 : Peak reverse current versus dIF/dt.

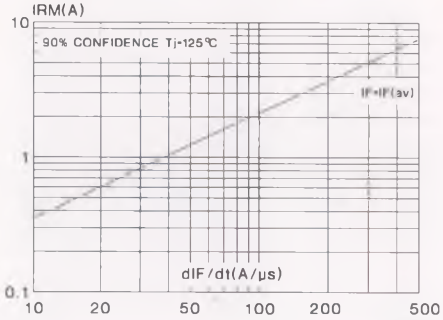


Fig.10 : Dynamic parameters versus junction temperature.