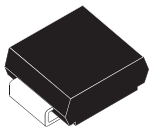
STPR120A

HIGH EFFICIENCY FAST RECOVERY DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	200 V
t_{rr} (max)	35 ns



SMA

FEATURES AND BENEFITS

- VERY LOW SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNT DEVICE
- FAST RECTIFIER EPITAXIAL DIODE

DESCRIPTION

Single chip rectifier suited to Switched Mode Power Supplies and high frequency DC/DC converters.

Packaged in SMA, this surface mount 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
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(RMS)}$	RMS forward current		8	A
$I_{F(AV)}$	Average forward current	T_{Lead} = 125°C δ = 0.5	1	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	30	A
T_{stg}	Storage temperature range		- 65 to + 150	°C
Tj	Maximum junction temperature		150	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to lead	30	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			3	µA
		Tj = 125°C			180	400	
V_F **	Forward voltage drop	Tj = 25°C	I_F = 1 A			0.94	V
		Tj = 150°C	I_F = 1 A		0.69	0.74	

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

RECOVERY CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
trr	Tj = 25°C	I_F = 0.50 A I_{rr} = 0.25 A I_R = 1 A			25	ns
		I_F = 1 A dI_F/dt = 50 A/µs $V_R = V_{RRM}$		25	35	
t_{FR}	Tj = 25°C	I_F = 1 A dI_F/dt = 100 A/µs Measured at 1 V			25	
V_{FP}	Tj = 25°C	I_F = 1 A dI_F/dt = 100 A/µs			5	V

To evaluate the maximum conduction losses use the following equation :
$P = 0.62 \times I_{F(AV)} + 0.12 \times I_{F^2(RMS)}$

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

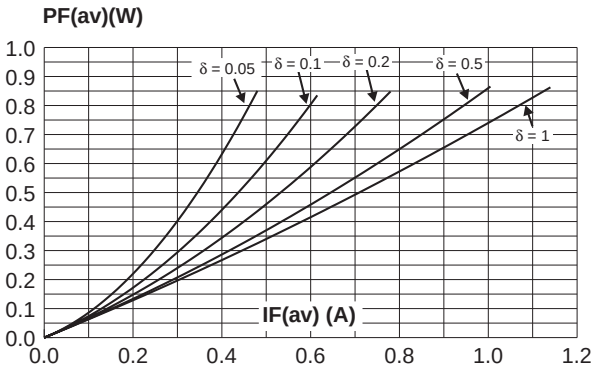


Fig. 2: Peak current versus form factor.

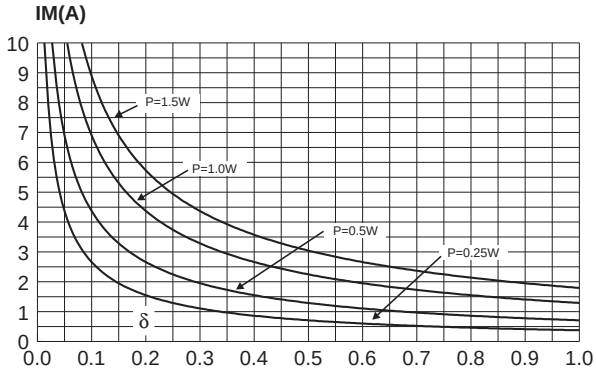


Fig. 3: Average forward current versus ambient temperature (δ=0.5).

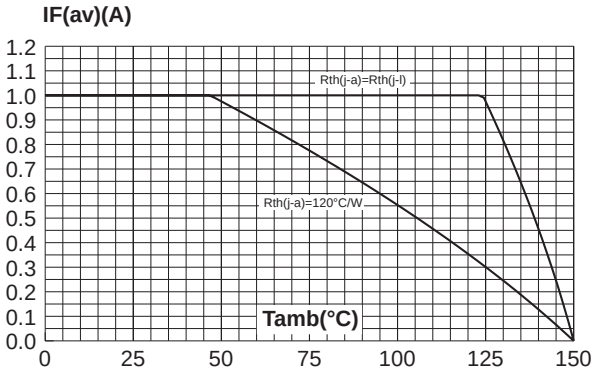


Fig. 4: Non repetitive surge peak forward current versus overload duration.

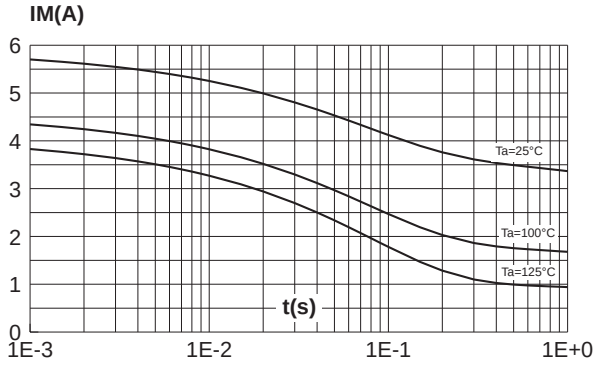


Fig. 5: Variation of thermal impedance junction to ambient versus pulse duration (Recommended pad layout, epoxy FR4, e(Cu)=35µm).

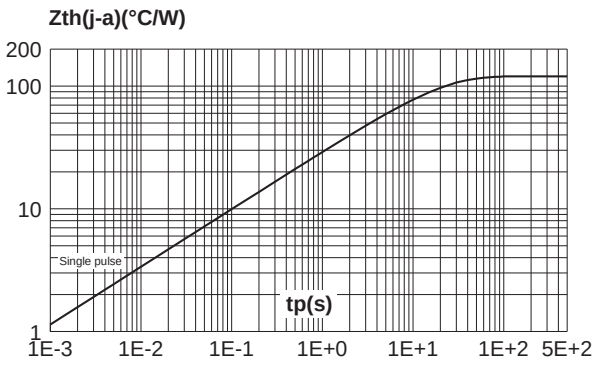


Fig. 6: Forward voltage drop versus forward current (maximum values).

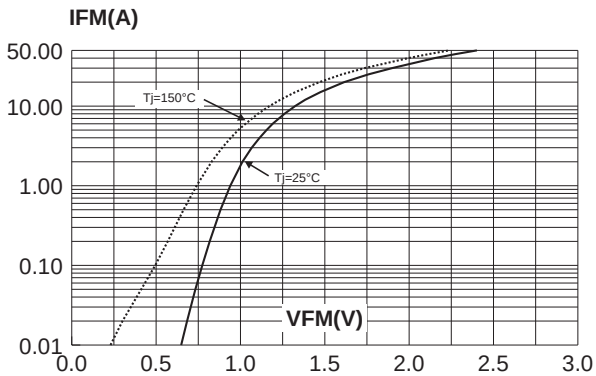


Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

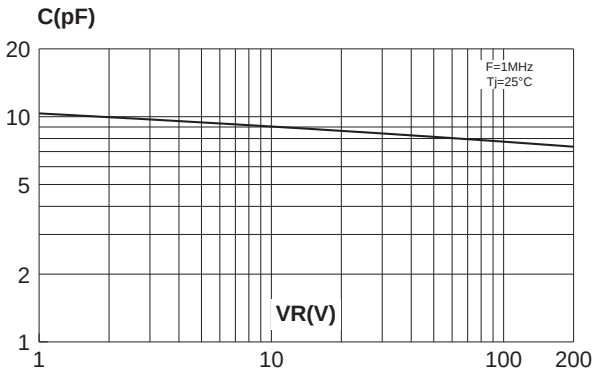


Fig. 8: Recovery charges versus d_{IF}/dt

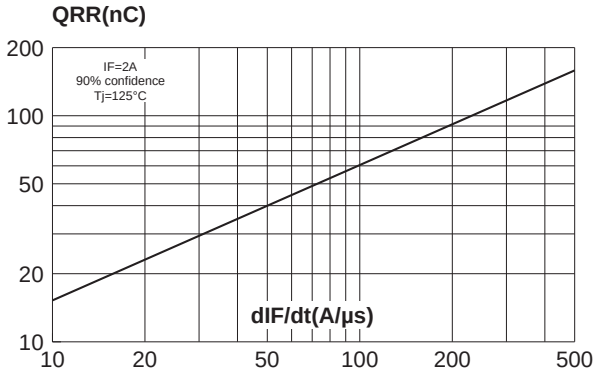


Fig. 9: Peak reverse recovery current versus d_{IF}/dt.

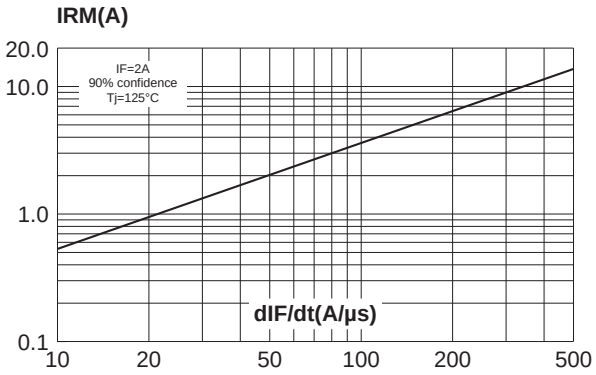
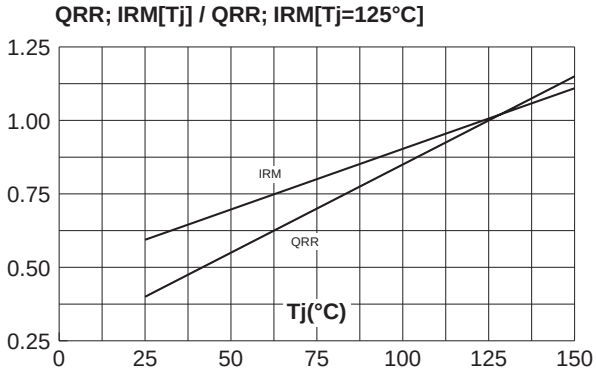
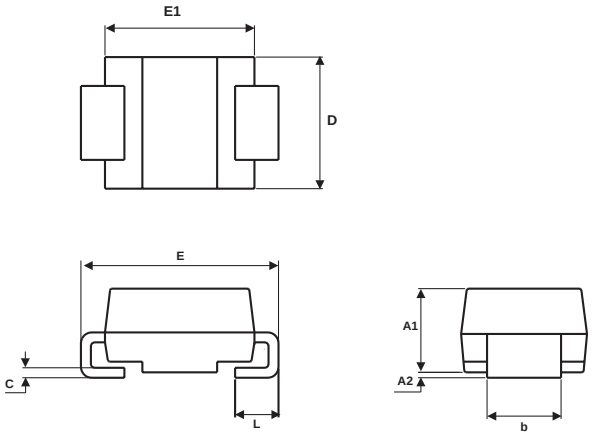


Fig. 10: Dynamic parameters versus junction temperature.



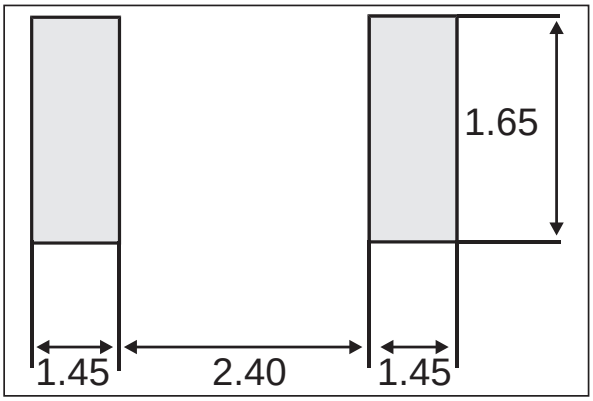
PACKAGE MECHANICAL DATA

SMA



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



- **Marking** : R12
- Cathode band is inked
- Epoxy meets UL94-V0
- Weight: 0.06g