

## HIGH EFFICIENCY FAST RECOVERY DIODE

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>1 A</b>
<b>V<sub>RRM</sub></b>	<b>200 V</b>
<b>t<sub>rr</sub> (max)</b>	<b>35 ns</b>

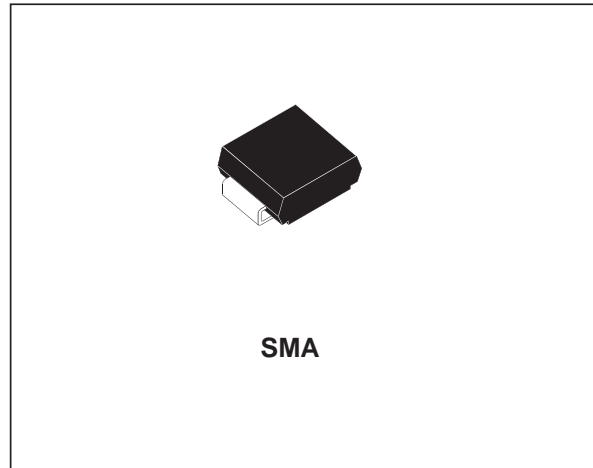
### FEATURES AND BENEFITS

- 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 <sub>RRM</sub>	Repetitive peak reverse voltage		200	V
I <sub>F(RMS)</sub>	RMS forward current		8	A
I <sub>F(AV)</sub>	Average forward current	T <sub>Lead</sub> = 125°C δ = 0.5	1	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms Sinusoidal	30	A
T <sub>stg</sub>	Storage temperature range		- 65 to + 150	°C
T <sub>j</sub>	Maximum junction temperature		150	°C

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-l)</sub>	Junction to lead	30	°C/W

## STPR120A

### STATIC ELECTRICAL CHARACTERISTICS

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

Pulse test : \*  $t_p = 5\text{ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

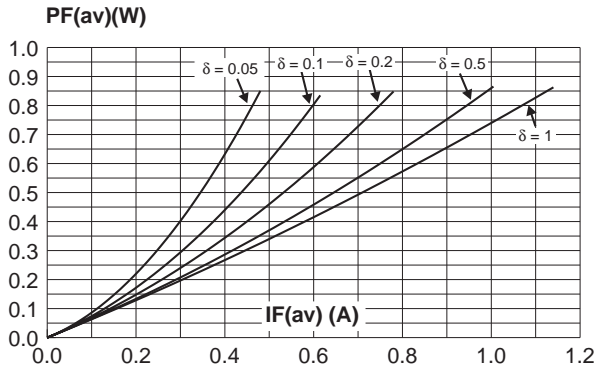
### RECOVERY CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	$T_j = 25^\circ\text{C}$	$I_F = 0.50\text{ A}$ $I_R = 1\text{ A}$			25	ns
		$I_F = 1\text{ A}$ $V_R = V_{RRM}$		25	35	
$t_{FR}$	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ Measured at 1 V			25	
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$			5	V

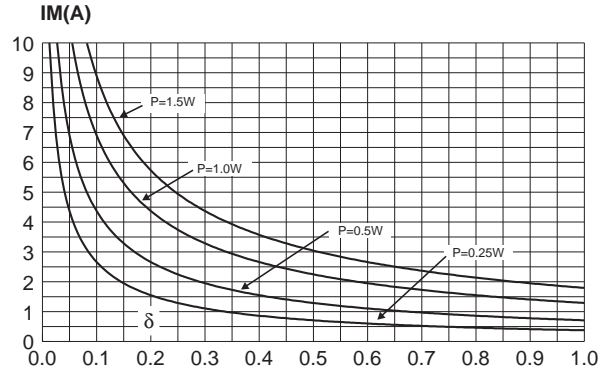
To evaluate the maximum conduction losses use the following equation :

$$P = 0.62 \times I_{F(AV)} + 0.12 \times I_{F(RMS)}^2$$

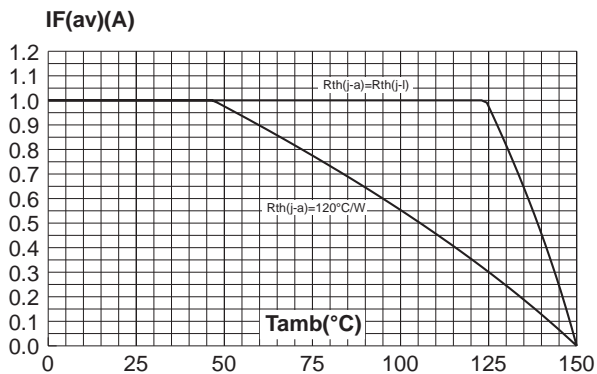
**Fig. 1:** Average forward power dissipation versus average forward current.



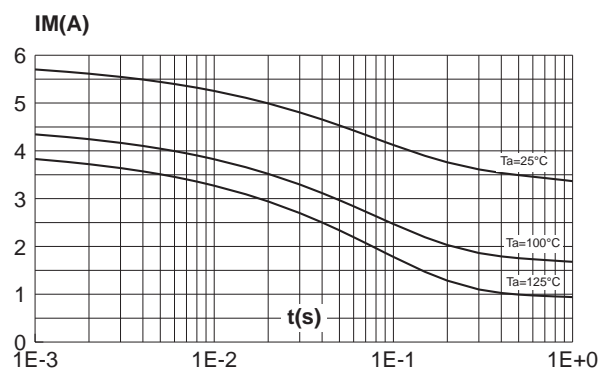
**Fig. 2:** Peak current versus form factor.



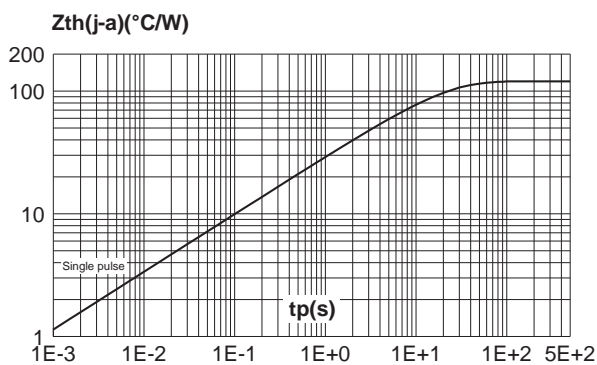
**Fig. 3:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



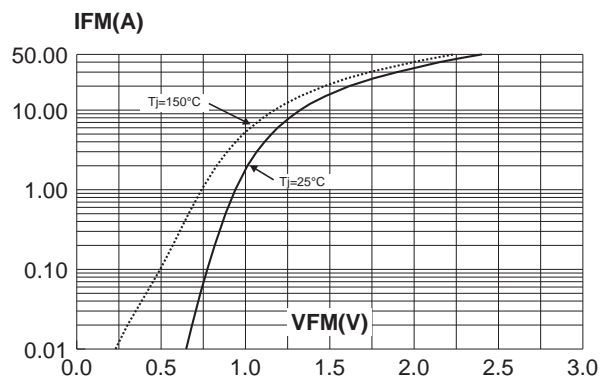
**Fig. 4:** Non repetitive surge peak forward current versus overload duration.



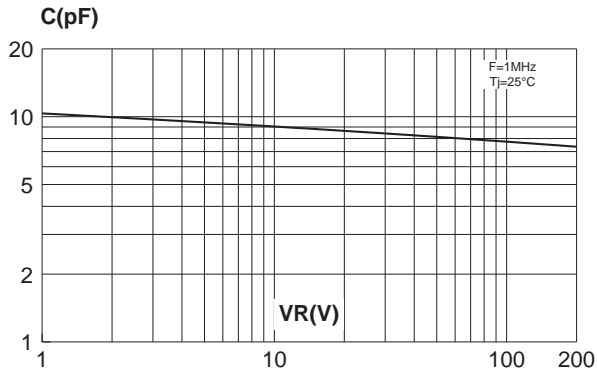
**Fig. 5:** Variation of thermal impedance junction to ambient versus pulse duration (Recommended pad layout, epoxy FR4,  $e(Cu)=35\mu m$ ).



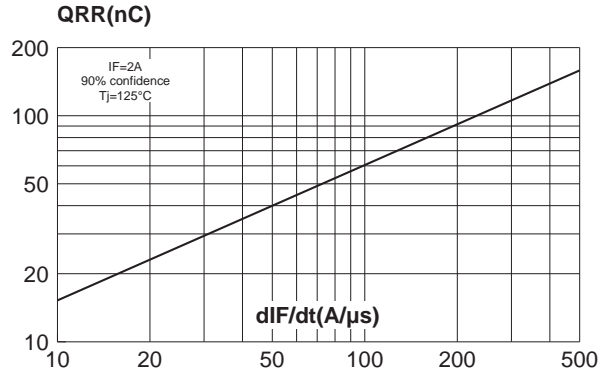
**Fig. 6:** Forward voltage drop versus forward current (maximum values).



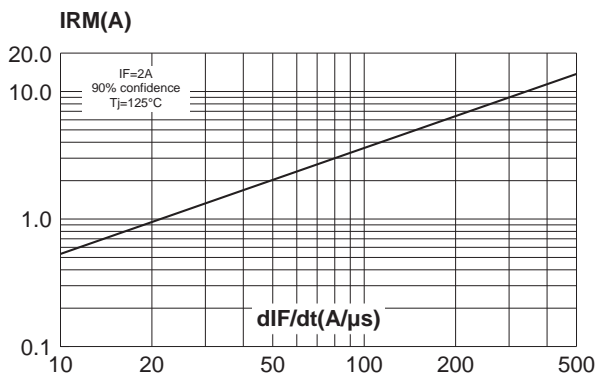
**Fig. 7:** Junction capacitance versus reverse voltage applied (typical values).



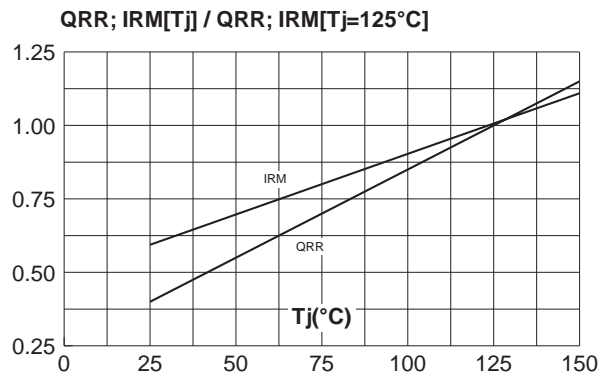
**Fig. 8:** Recovery charges versus  $dI_F/dt$



**Fig. 9:** Peak reverse recovery current versus  $dI_F/dt$ .

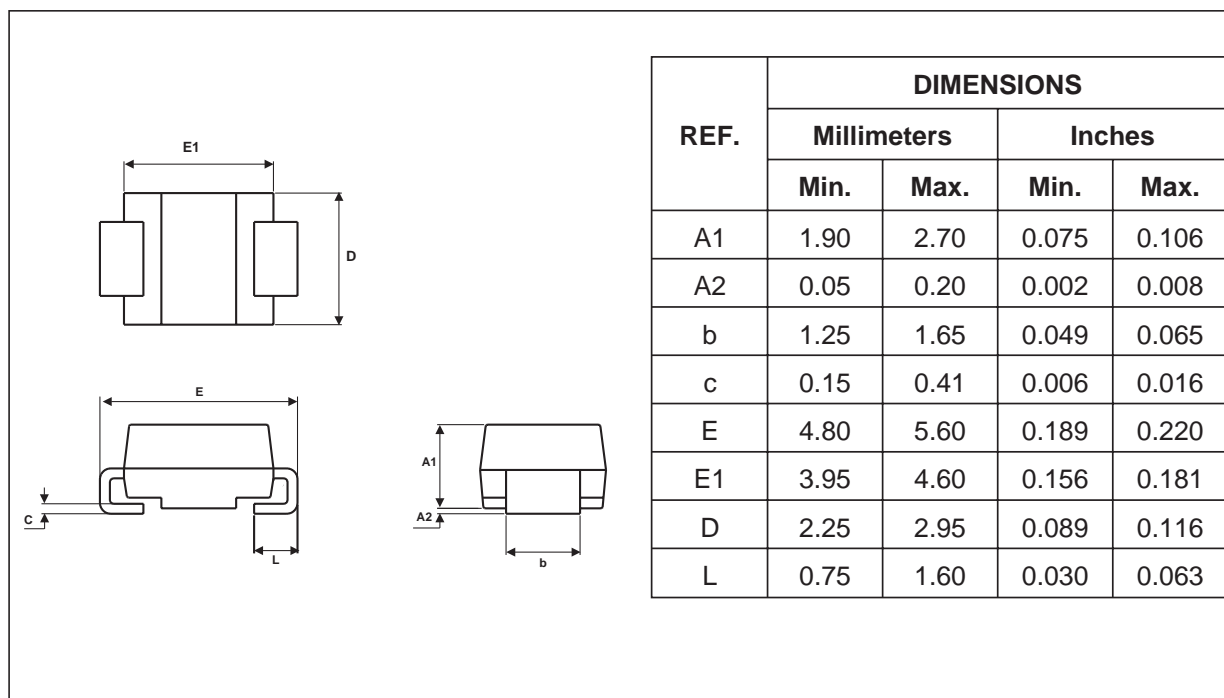


**Fig. 10:** Dynamic parameters versus junction temperature.

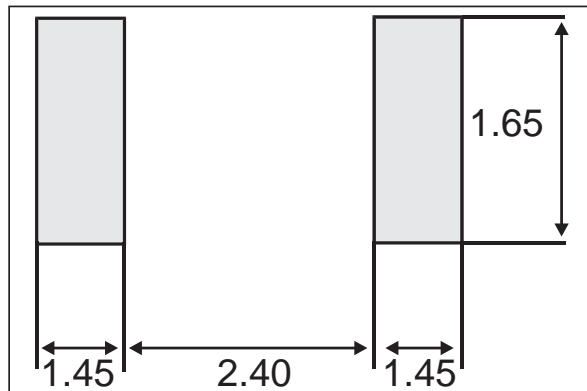


## PACKAGE MECHANICAL DATA

## SMA



## FOOT PRINT (in millimeters)



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

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