



Surface Mount Ultra Fast Rectifier



SMA (DO-214AC)

FEATURES

- Low profile package
• Ideal for automated placement
• Glass passivated pallet chip junction
• Ultrafast reverse recovery time
• Low switching losses, high efficiency
• High forward surge capability
• Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
• AEC-Q101 qualified available
- Automotive ordering code: base P/NHE3 or P/NHM3
• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT HALOGEN FREE Available

Table with 2 columns: Parameter and Value. Includes I\_F(AV), V\_RRM, I\_FSM, t\_tr, V\_F at I\_F, T\_J max., Package, and Diode variations.

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMA (DO-214AC)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade
Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified
Base P/NHM3\_X - halogen-free, RoHS-compliant and AEC-Q101 qualified
('X' denotes revision code e.g. A, B,....)
Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test
Polarity: color band denotes cathode end

Table with 10 columns: PARAMETER, SYMBOL, US1A, US1B, US1D, US1G, US1J, US1K, US1M, UNIT. Contains maximum ratings for various parameters like V\_RRM, V\_RMS, V\_DC, I\_F(AV), I\_FSM, and temperature range.



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)										
PARAMETER	TEST CONDITIONS	SYMBOL	US1A	US1B	US1D	US1G	US1J	US1K	US1M	UNIT
Maximum instantaneous forward voltage	1.0 A	$V_F^{(1)}$	1.0			1.7				V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$	$I_R$	10							$\mu\text{A}$
	$T_A = 100\text{ }^\circ\text{C}$		50							
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	50			75			ns	
Typical junction capacitance	4.0 V, 1 MHz	$C_J$	15			10			pF	

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	US1A	US1B	US1D	US1G	US1J	US1K	US1M	UNIT	
Maximum thermal resistance	$R_{\theta JA}^{(1)}$	75							$^\circ\text{C/W}$	
	$R_{\theta JL}^{(1)}$	27								

**Note**

(1) PCB mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad area

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
US1J-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel
US1J-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
US1JHE3_A/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
US1JHE3_A/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel
US1J-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel
US1J-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
US1JHM3_A/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
US1JHM3_A/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

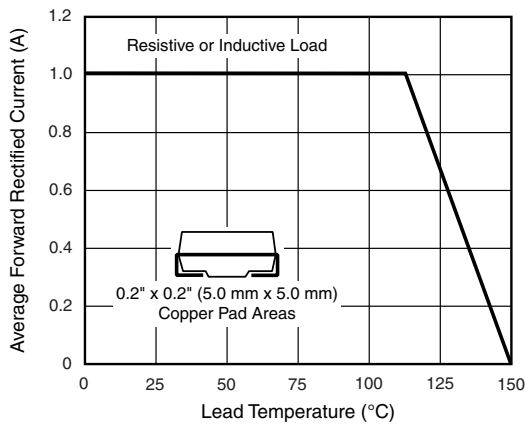


Fig. 1 - Forward Current Derating Curve

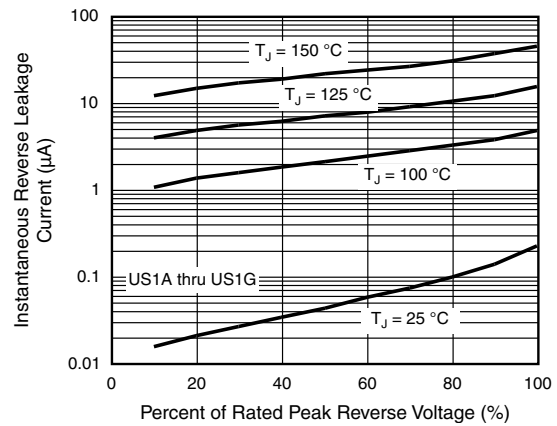


Fig. 4 - Typical Reverse Leakage Characteristics

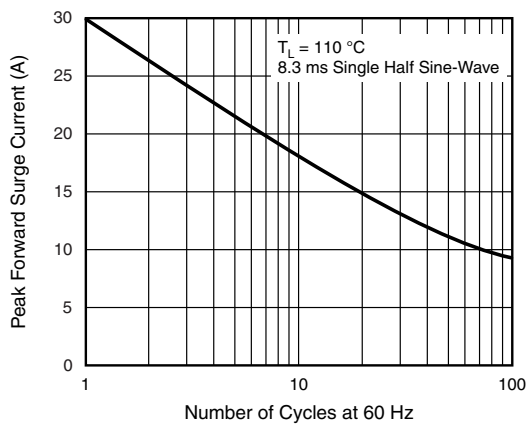


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

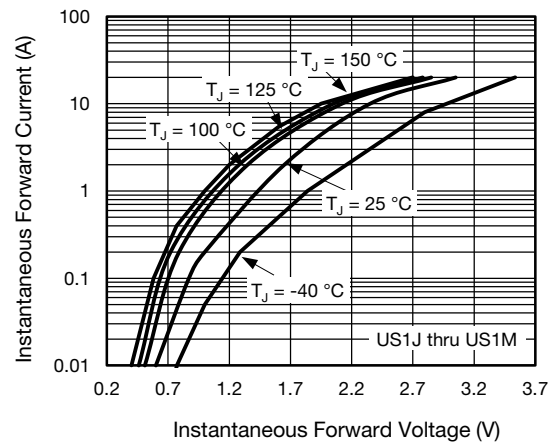


Fig. 5 - Typical Instantaneous Forward Characteristics

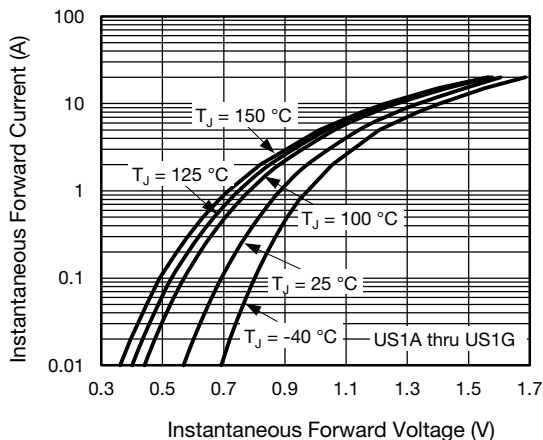


Fig. 3 - Typical Instantaneous Forward Characteristics

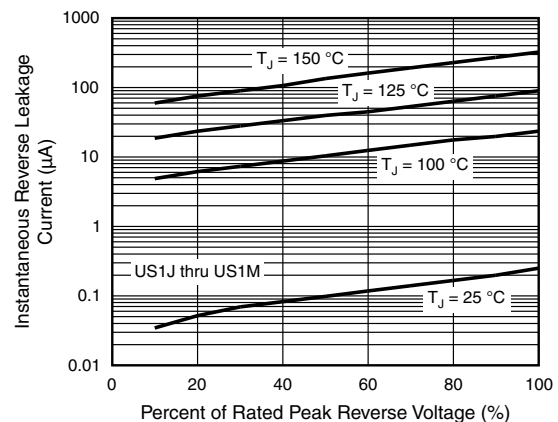


Fig. 6 - Typical Reverse Leakage Characteristics

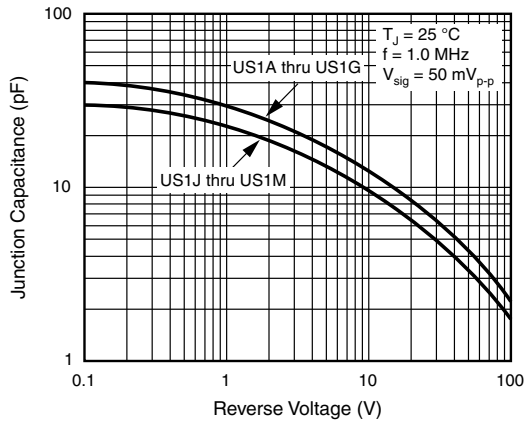


Fig. 7 - Typical Junction Capacitance

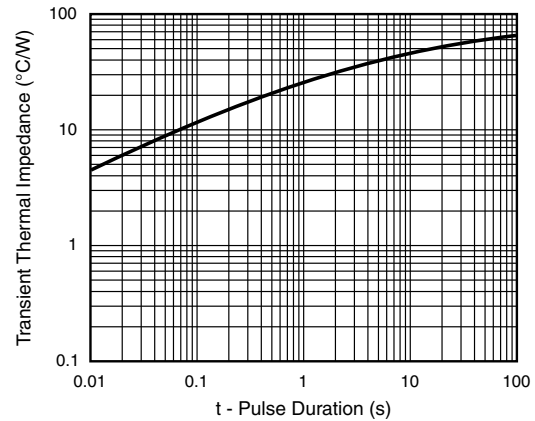
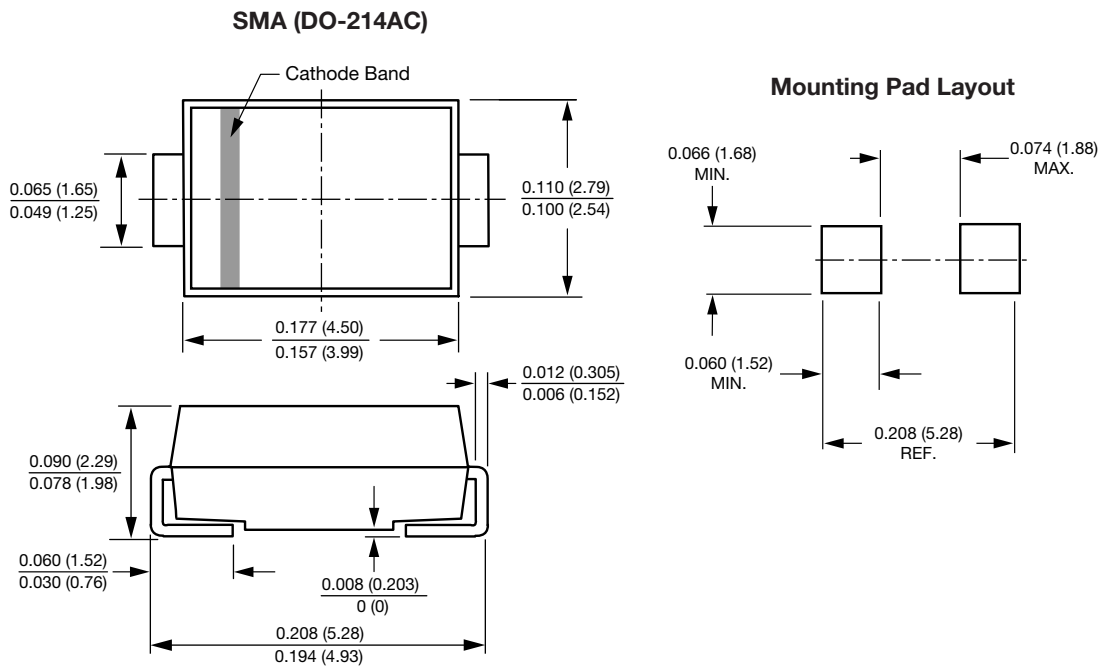


Fig. 8 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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