

Surface Mount Ultrafast Rectifier

Major Ratings and Characteristics

$I_{F(AV)}$	1.0 A
V_{RRM}	50 V to 1000 V
I_{FSM}	30 A
t_{rr}	50 ns, 75 ns
V_F	1.0 V, 1.7 V
$T_j \text{ max.}$	150 °C



DO-214AC (SMA)

Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020C
- Solder Dip 260 °C, 40 seconds



Mechanical Data

Case: DO-214AC (SMA)

Epoxy meets UL-94V-0 Flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Color band denotes cathode end

Typical Applications

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

Maximum Ratings

$T_A = 25\text{ °C}$ unless otherwise specified

Parameter	Symbol	US1A	US1B	US1D	US1G	US1J	US1K	US1M	Units
Device Marking Code		UA	UB	UD	UG	UJ	UK	UM	
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current at $T_L = 110\text{ °C}$	$I_{F(AV)}$	1.0							A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30							A
Operating and storage temperature range	T_J, T_{STG}	- 55 to + 150							°C

US1A thru US1M



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Electrical Characteristics

$T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Test condition	Symbol	US1A	US1B	US1D	US1G	US1J	US1K	US1M	Units
Maximum instantaneous forward voltage	at 1.0 A ⁽¹⁾	V_F	1.0				1.7			V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 100\text{ }^\circ\text{C}$	I_R	10 50							μA
Maximum reverse recovery time	at $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	50				75			ns
Typical junction capacitance	at 4.0 V, 1 MHz	C_J	15				10			pF

Notes:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

Thermal Characteristics

$T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	US1A	US1B	US1D	US1G	US1J	US1K	US1M	Units
Maximum thermal resistance ⁽¹⁾	$R_{\theta JA}$ $R_{\theta JL}$	75 27							$^\circ\text{C/W}$

Notes:

(1) P.C.B. mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pad area

Ratings and Characteristics Curves

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

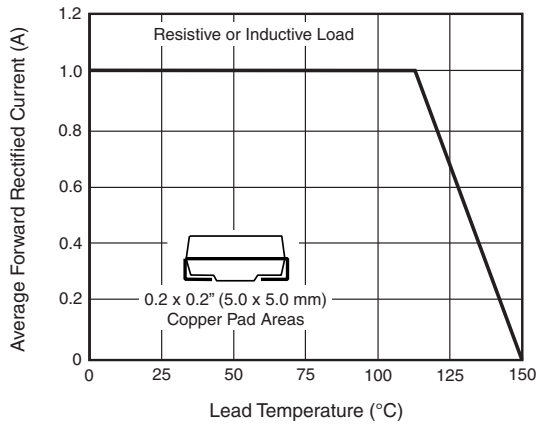


Figure 1. Forward Current Derating Curve

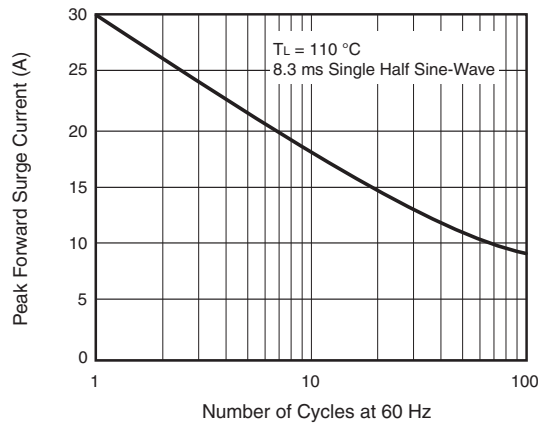


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

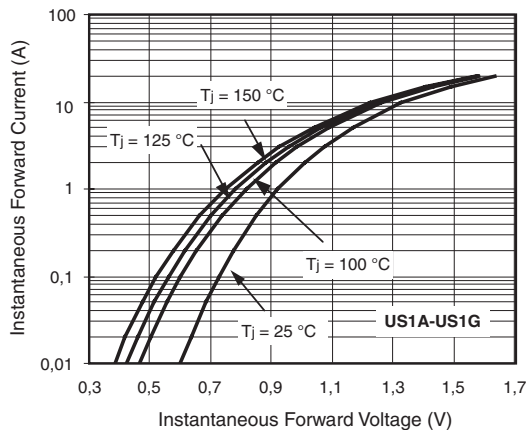


Figure 3. Typical Instantaneous Forward Characteristics

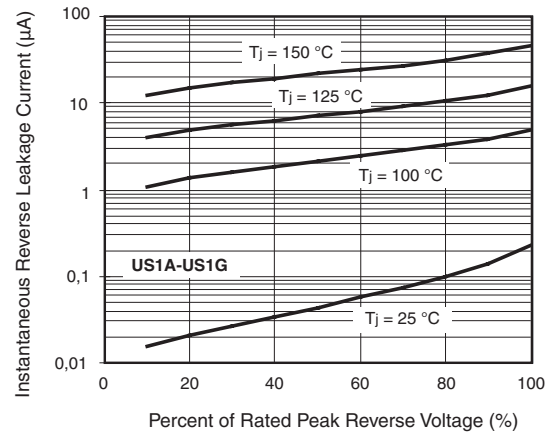


Figure 4. Typical Reverse Leakage Characteristics

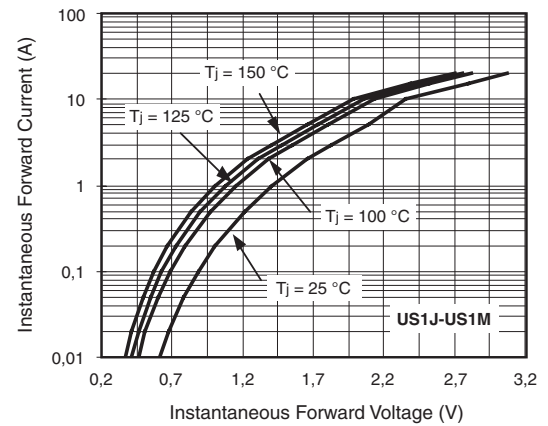


Figure 5. Typical Instantaneous Forward Characteristics

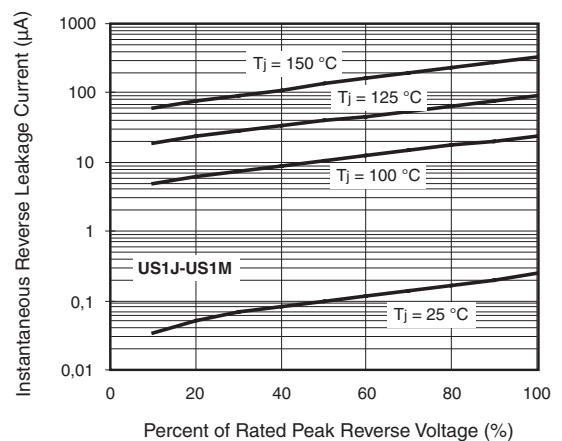


Figure 6. Typical Reverse Leakage Characteristics

US1A thru US1M

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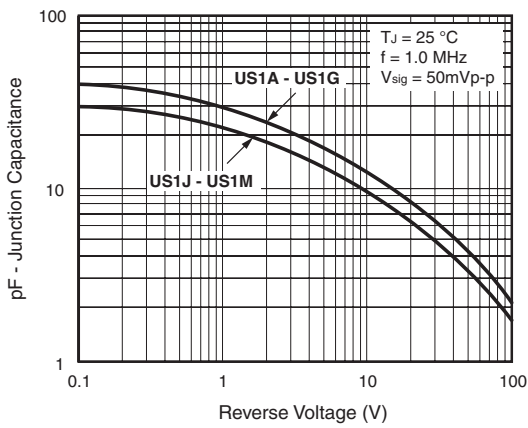


Figure 7. Typical Junction Capacitance

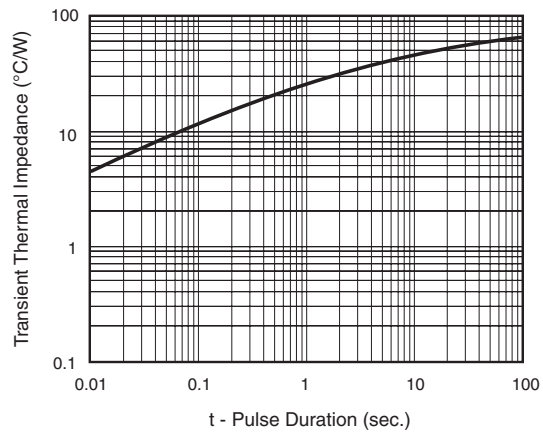
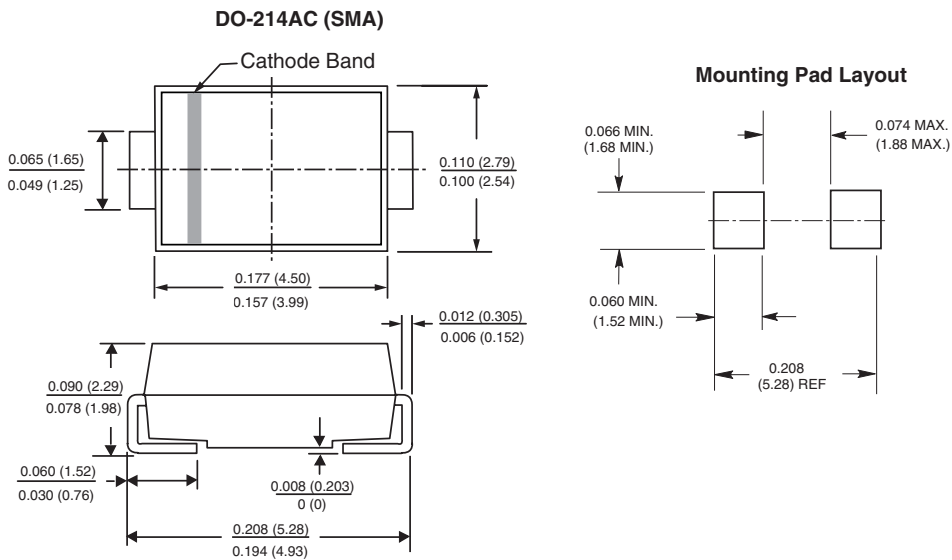


Figure 8. Typical Transient Thermal Impedance

Package outline dimensions in inches (millimeters)





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