



Surface Mount Ultrafast Plastic Rectifiers

Major Ratings and Characteristics

$I_{F(AV)}$	1 A
V_{RRM}	100 V, 150 V, 200 V
t_{rr}	25 ns
V_F	0.90 V
$T_J \text{ max.}$	175 °C



DO-214AC (SMA)

Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power loss
- Meets MSL level 1 per J-STS-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 secondary rectification and freewheeling for ultrafast switching speeds ac-to-ac and dc-to-dc converters in high temperature conditions for both consumer and automotive applications

Maximum Ratings

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

Parameter	Symbol	ESH1B	ESH1C	ESH1D	Unit
Device marking code		EHB	EHC	EHD	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum RMS voltage	V_{RMS}	70	105	140	V
Maximum DC blocking voltage	V_{DC}	100	150	200	V
Maximum average forward rectified current at $T_L = 150\text{ °C}$	$I_{F(AV)}$	1.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load (JEDEC Method)	I_{FSM}	50			A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175			°C

Electrical Characteristics

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

Parameter	Test condition	Symbol	Value	Unit
Maximum instantaneous forward voltage	at $I_F = 0.7\text{ A}^{(1)}$ at $I_F = 1\text{ A}$	V_F	0.87 0.90	V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	I_R	1.0 25	μA
Maximum reverse current	at $V_R = 20\text{ V}$, $T_J = 150\text{ }^\circ\text{C}$	I_R	50	μA
Maximum reverse recovery time	at $I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	25	ns
Typical reverse recovery time	at $I_F = 0.6\text{ A}$, $V_R = 30\text{ V}$ di/dt = $50\text{ A}/\mu\text{s}$, $I_{rr} = 10\%$ IRM $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	t_{rr}	25 35	ns
Typical stored charge	at $I_F = 0.6\text{ A}$, $V_R = 30\text{ V}$ di/dt = $50\text{ A}/\mu\text{s}$, $I_{rr} = 10\%$ IRM $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	Q_{rr}	10 15	nC
Typical junction capacitance	at 4.0 V , 1 MHz	C_J	25	pF

Note:

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

Thermal Characteristics

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

Parameter	Symbol	ESH1B	ESH1C	ESH1D	Unit
Typical thermal resistance ⁽¹⁾	$R_{\theta JA}$ $R_{\theta JL}$		85 30		$^\circ\text{C}/\text{W}$

Note:

(1) Units mounted on P.C.B. with $5.0 \times 5.0\text{ mm}$ (0.013 mm thick) land areas.

Ratings and Characteristics Curves

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

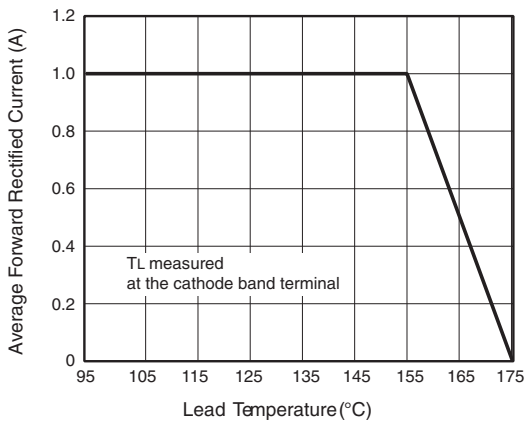


Figure 1. Maximum Forward Current Derating Curve

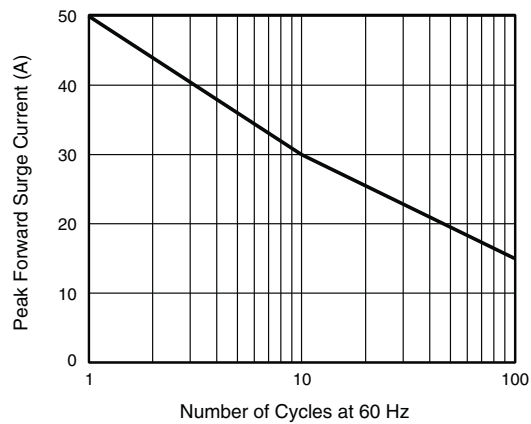


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

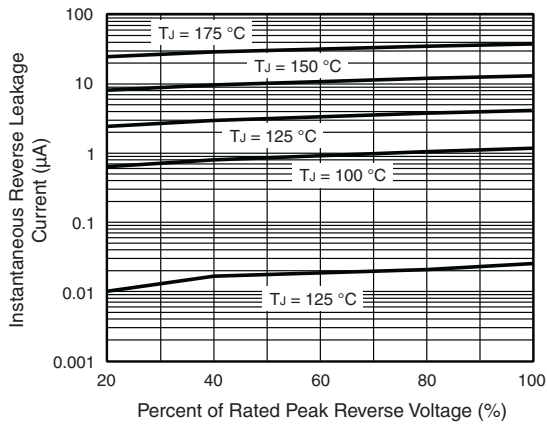


Figure 3. Typical Reverse Leakage Characteristics

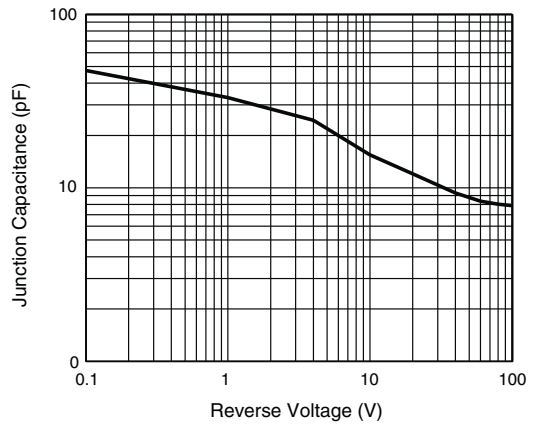


Figure 5. Typical Junction Capacitance

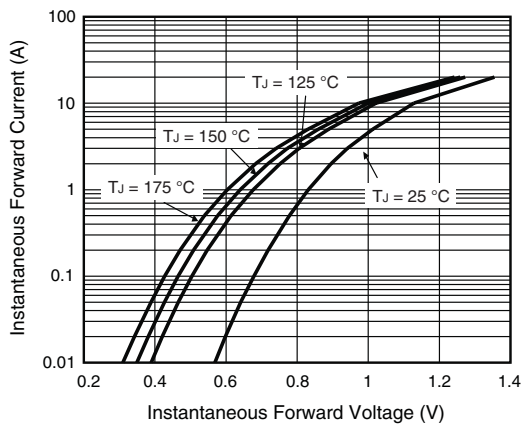


Figure 4. Typical Instantaneous Forward Characteristics

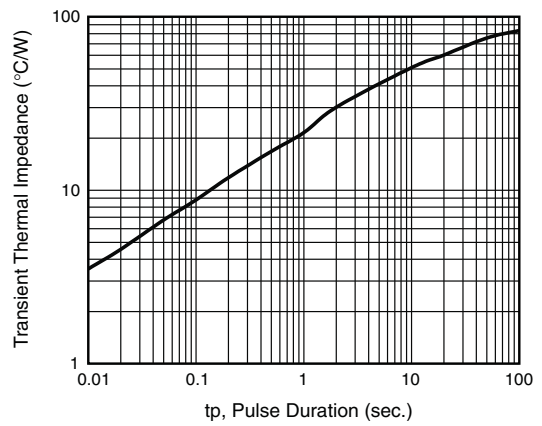
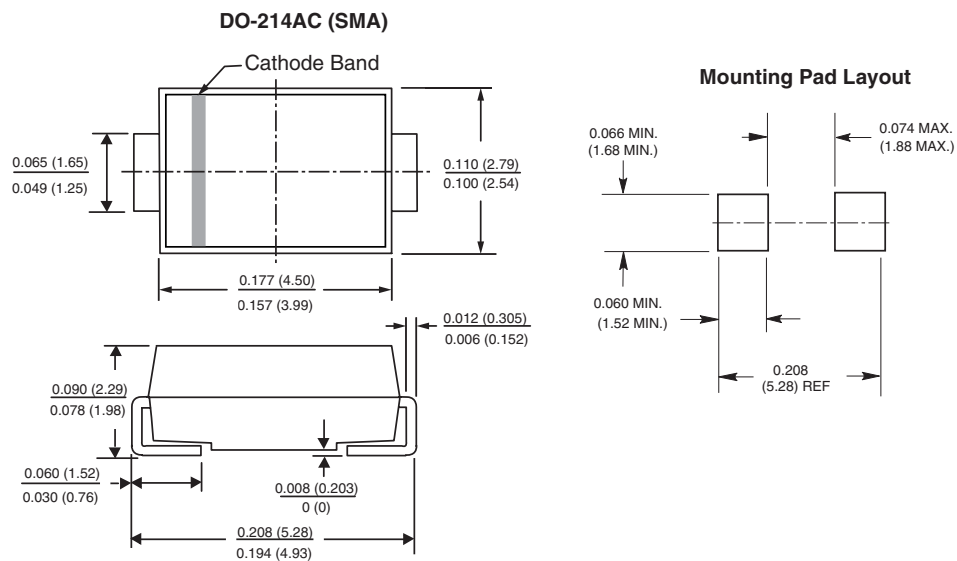


Figure 6. Typical Transient Thermal Impedance

Package dimensions in inches (millimeters)





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