

Surface-Mount Ultrafast Plastic Rectifier


SMC (DO-214AB)

Cathode  Anode

FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power loss
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converter and inverter for both consumer, and automotive.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	3.0 A
V_{RRM}	100 V, 150 V, 200 V
t_{rr}	25 ns
V_F	0.90 V
T_J max.	175 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

MECHANICAL DATA

Case: SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	ESH3B	ESH3C	ESH3D	UNIT
Device marking code		EHB	EHC	EHD	
Maximum repetitive peak reverse voltage	V _{RMM}	100	150	200	V
Maximum RMS voltage	V _{RMS}	70	105	140	
Maximum DC blocking voltage	V _{DC}	100	150	200	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	3.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	125			
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 noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	$I_F = 3\text{ A}$		$V_F^{(1)}$	0.90	V
Maximum DC reverse current at rated DC blocking voltage		$T_A = 25\text{ }^{\circ}\text{C}$	I_R	5.0	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		150	
Maximum reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	25	ns
Typical reverse recovery time	$I_F = 3\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$	$T_J = 25\text{ }^{\circ}\text{C}$	t_{rr}	40	
		$T_J = 100\text{ }^{\circ}\text{C}$		55	
Typical stored charge	$I_F = 3\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$	$T_J = 25\text{ }^{\circ}\text{C}$	Q_{rr}	25	nC
		$T_J = 100\text{ }^{\circ}\text{C}$		60	
Typical junction capacitance	4.0 V, 1 MHz		C_J	70	pF

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

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ESH3B	ESH3C	ESH3D	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	50			°C/W
	R _{θJL} ⁽¹⁾	15			

Note

(1) Units mounted on PCB with 12.0 mm x 12.0 mm land areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ESH3D-M3/57T	0.211	57T	850	7" diameter plastic tape and reel
ESH3D-M3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel

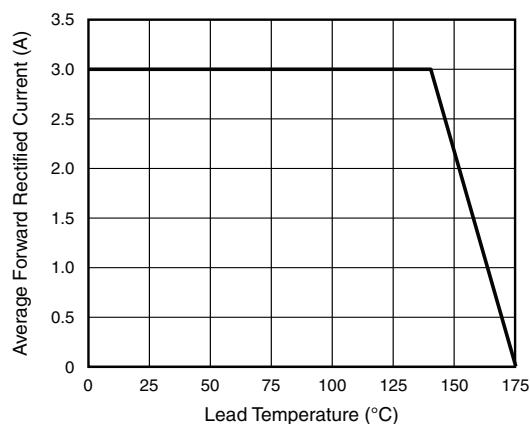
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

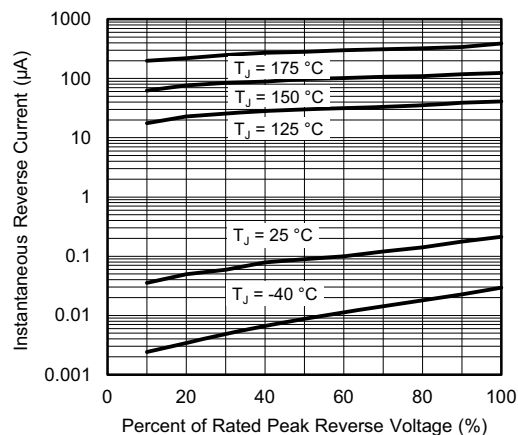


Fig. 4 - Typical Reverse Leakage Characteristics

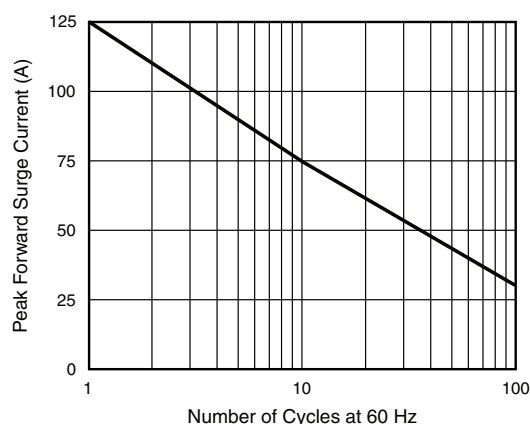


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

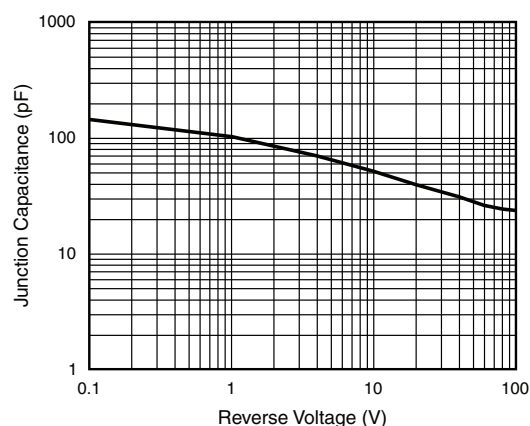


Fig. 5 - Typical Junction Capacitance

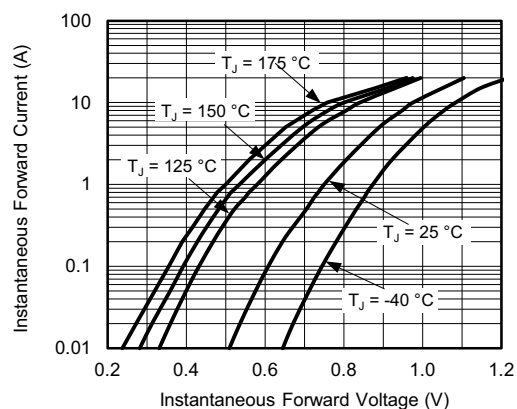


Fig. 3 - Typical Instantaneous Forward Characteristics

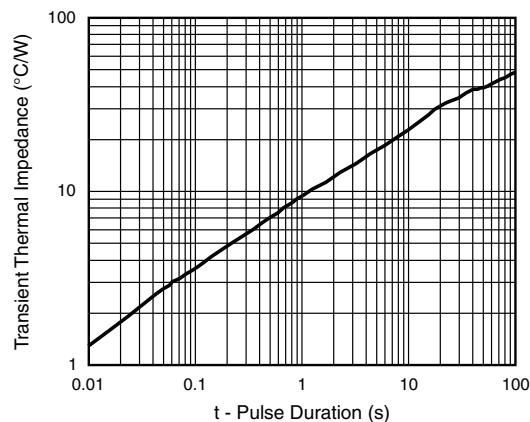
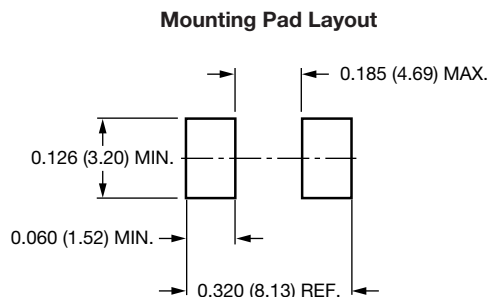
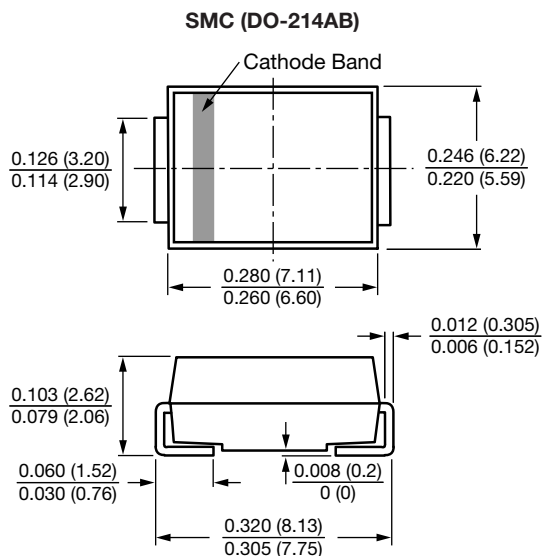


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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