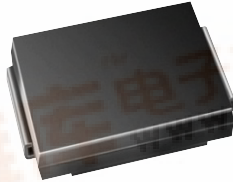




ESH3B, ESH3C & ESH3D

Vishay General Semiconductor

Surface Mount Ultrafast Plastic Rectifiers



DO-214AB (SMC)

FEATURES

- Glass passivated 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
- Solder dip 260 °C, 40 s
- Component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AB (SMC)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3 A
V_{RRM}	100 V, 150 V, 200 V
t_{tr}	25 ns
V_F	0.90 V
$T_J \text{ max.}$	175 °C

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_{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 (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			A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175			°C



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	I _F = 3 A		V _F	0.90	V
Maximum DC reverse current at rated DC blocking voltage		T _A = 25 °C T _A = 125 °C	I _R	5.0 150	μA
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1 A, I _{rr} = 0.25 A		t _{rr}	25	ns
Typical reverse recovery time	I _F = 3 A, V _R = 30 V, di/dt = 50 A/μs, I _{rr} = 10 % I _{RM}	T _J = 25 °C T _J = 100 °C	t _{rr}	40 55	ns
Typical stored charge	I _F = 3 A, V _R = 30 V, di/dt = 50 A/μs, I _{rr} = 10 % I _{RM}	T _J = 25 °C T _J = 100 °C	Q _{rr}	25 60	nC
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 ⁽¹⁾	R _{θJA} R _{θJL}		50 15		°C/W

Note:

(1) Units mounted on P.C.B. with 12.0 x 12.0 mm land areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ESH3D-E3/57T	0.211	57T	850	7" diameter plastic tape and reel
ESH3D-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
ESH3DHE3/57T ⁽¹⁾	0.211	57T	850	7" diameter plastic tape and reel
ESH3DHE3/9AT ⁽¹⁾	0.211	9AT	3500	13" diameter plastic tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

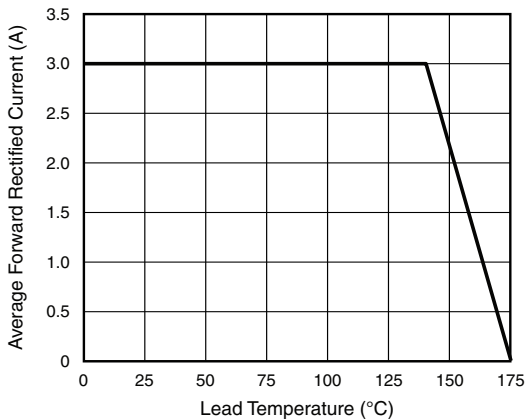


Figure 1. Maximum Forward Current Derating Curve

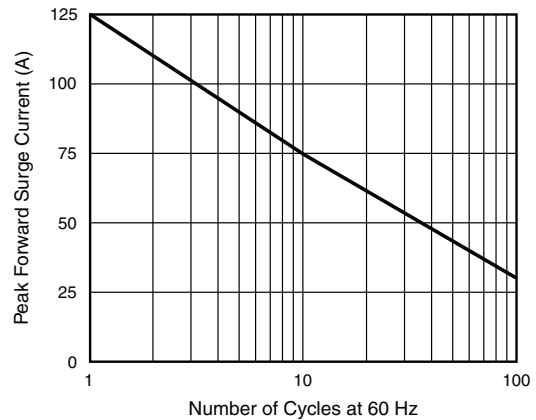


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current



New Product

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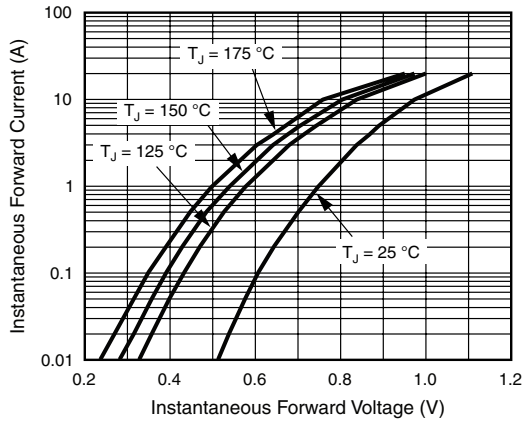


Figure 3. Typical Instantaneous Forward Characteristics

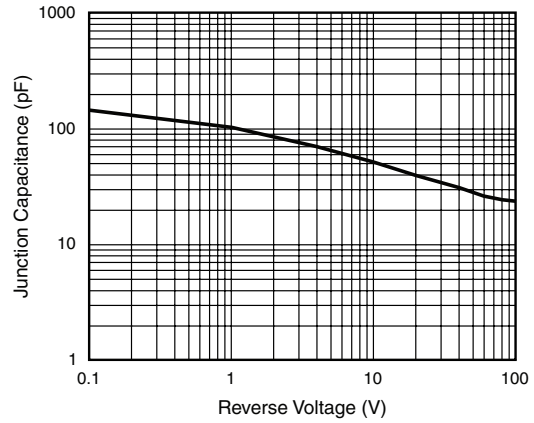


Figure 5. Typical Junction Capacitance

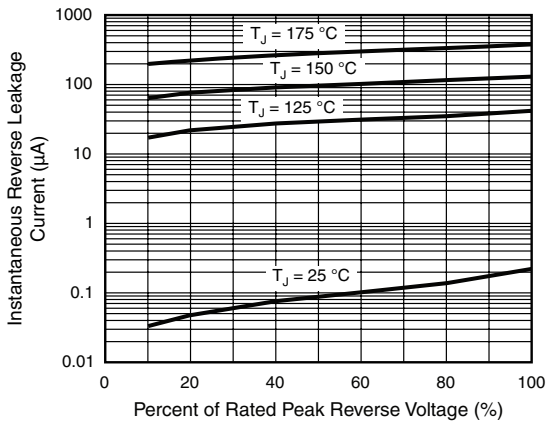


Figure 4. Typical Reverse Leakage Characteristics

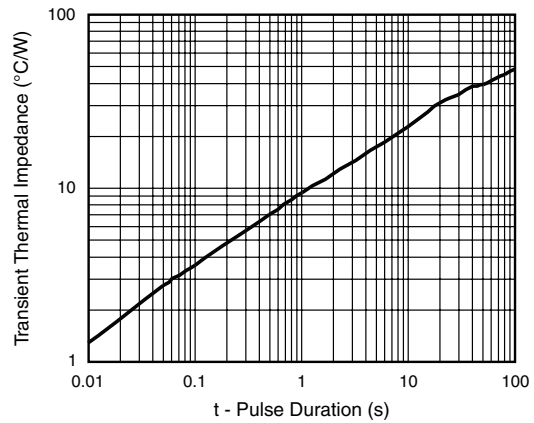
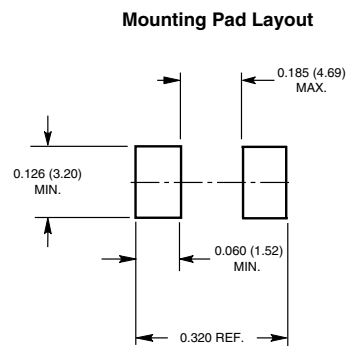
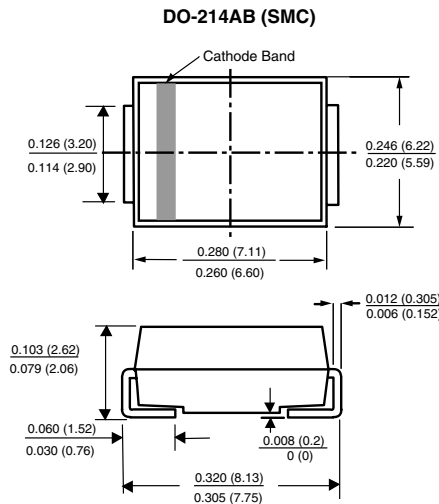


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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All product specifications and data are subject to change without notice.

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