ESH3B, ESH3C & ESH3D

Vishay General Semiconductor

Surface Mount Ultrafast Plastic Rectifier



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
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications

RoHS COMPLIANT

AUTOMOTIVE GRADE Available

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

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)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade
Base P/NHE3 - RoHS compliant, automotive grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °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	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)	$R_{\theta JA}$ $R_{\theta JL}$	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

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

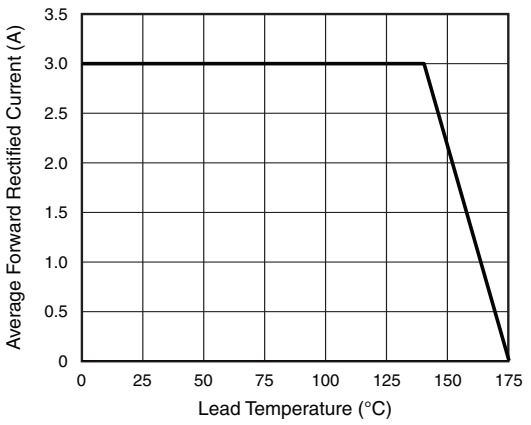


Fig. 1 - Maximum Forward Current Derating Curve

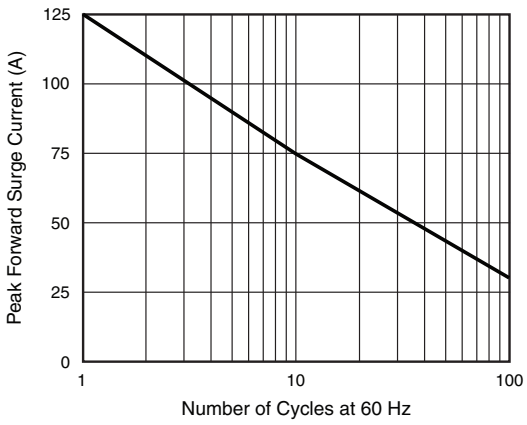


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

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Document Number: 84648
Revision: 21-Jul-09

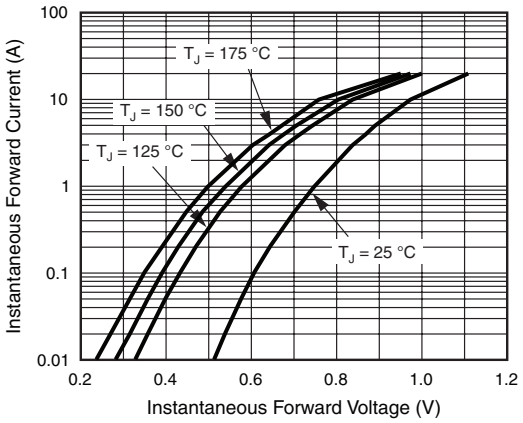


Fig. 3 - Typical Instantaneous Forward Characteristics

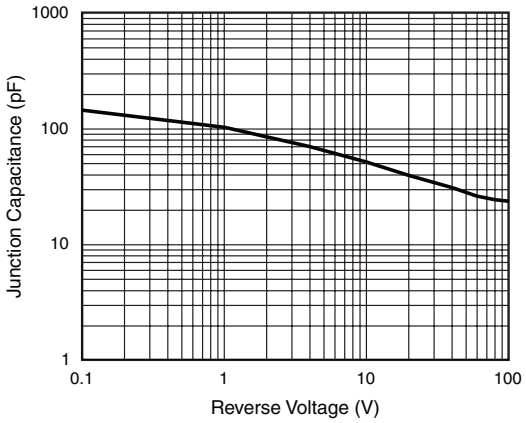


Fig. 5 - Typical Junction Capacitance

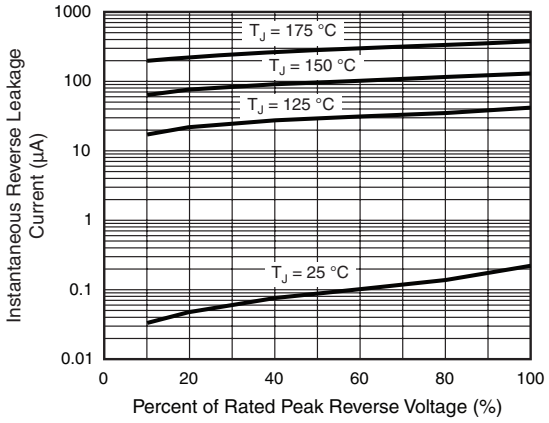


Fig. 4 - Typical Reverse Leakage Characteristics

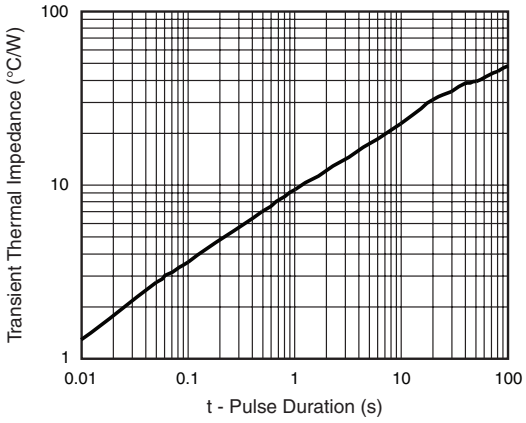
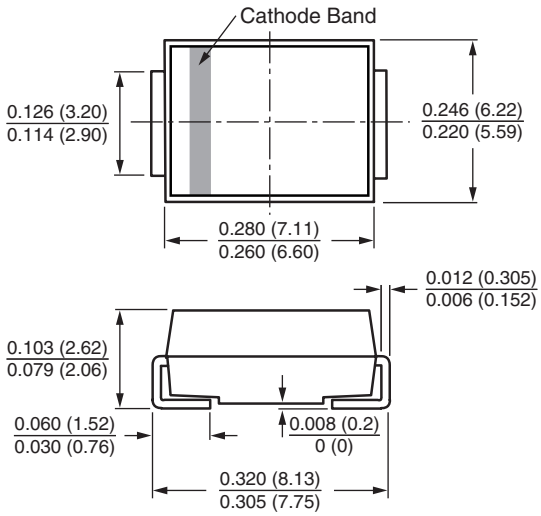


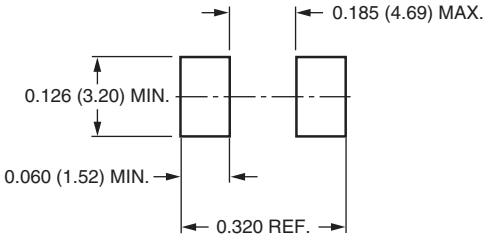
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout



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