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Surface Mount Ultrafast Plastic Rectifier


DO-214AB (SMC)

FEATURES

- Glass passivated pallet 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AB (SMC)

Molding compound meets UL 94 V-0 flammability rating
 Base P/N-E3 - RoHS-compliant, industrial grade
 Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified
 (“_X” denotes revision code e.g. A, B,)

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

E3 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

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

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	
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 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	I _F = 3 A		V _F ⁽¹⁾	0.90	V
Maximum DC reverse current at rated DC blocking voltage	T _A = 25 °C		I _R	5.0	μA
	T _A = 125 °C			150	
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	40	
			T _J = 100 °C	55	
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	25	nC
			T _J = 100 °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-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_A/H ⁽¹⁾	0.211	H	850	7" diameter plastic tape and reel
ESH3DHE3_A/I ⁽¹⁾	0.211	I	3500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

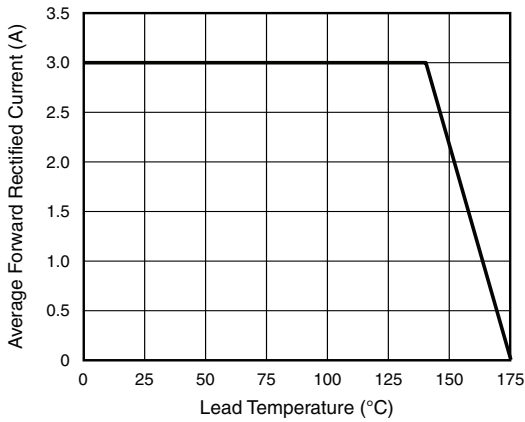


Fig. 1 - Maximum Forward Current Derating Curve

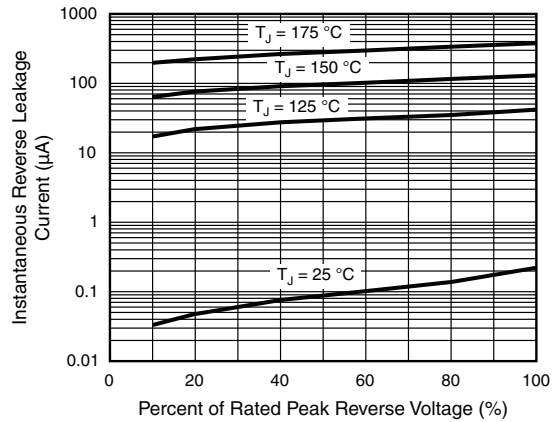


Fig. 4 - Typical Reverse Leakage Characteristics

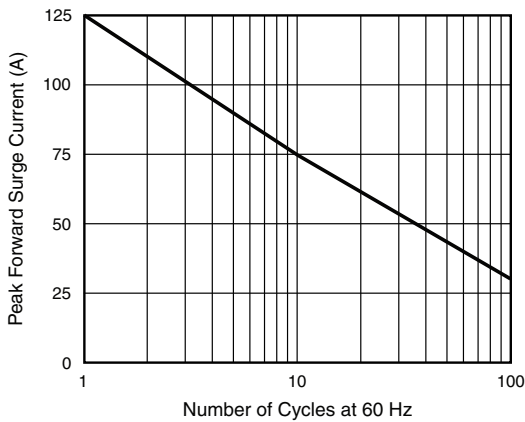


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

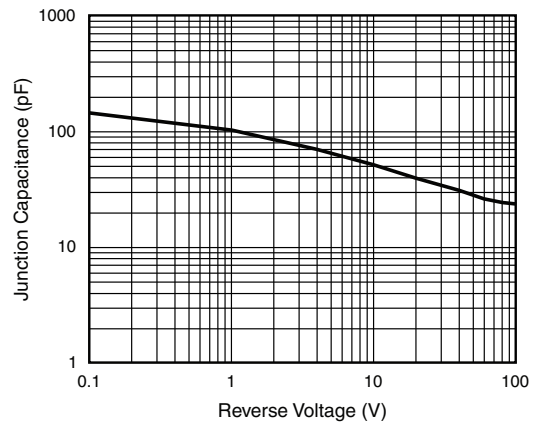


Fig. 5 - Typical Junction Capacitance

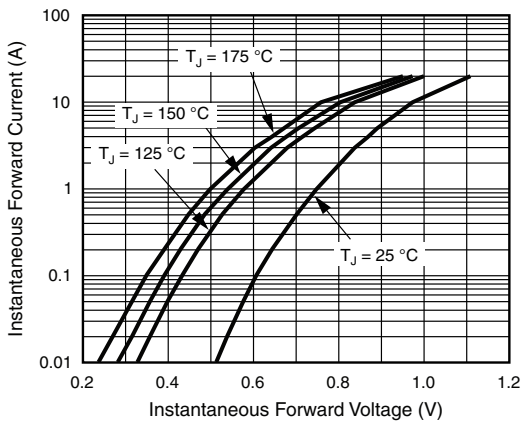


Fig. 3 - Typical Instantaneous Forward Characteristics

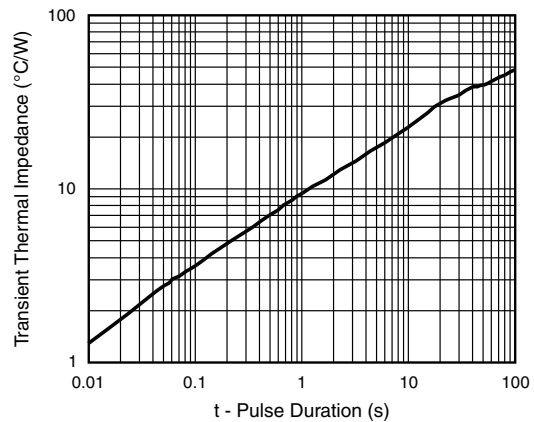
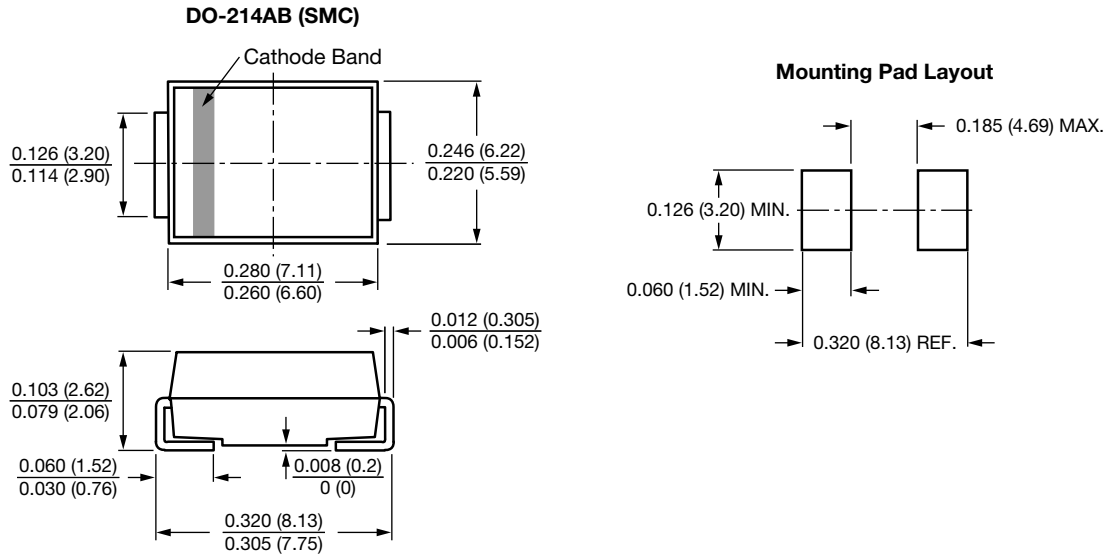


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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