

Surface Mount Ultrafast Plastic Rectifier


DO-214AB (SMC)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	50 V, 100 V, 150 V, 200 V
I_{FSM}	100 A
t_{rr}	20 ns
V_F	0.90 V
$T_J \text{ max.}$	150 °C
Package	DO-214AB (SMC)
Diode variations	Single die

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power losses
- 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 converters and inverters for consumer, computer, and telecommunication.

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_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

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Device marking code		EA	EB	EC	ED	
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current at $T_L = 100\text{ °C}$	$I_{F(AV)}$	3.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	100				A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150				°C

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Maximum instantaneous forward voltage	3.0 A	$V_F^{(1)}$		0.90			V
Maximum DC reverse current at rated DC blocking voltage		I_R			$T_A = 25\text{ }^\circ\text{C}$	10	μA
					$T_A = 100\text{ }^\circ\text{C}$	500	
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	t_{rr}		20			ns
Maximum reverse recovery time	$I_F = 3.0\text{ A}, V_R = 30\text{ V}, dl/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$	t_{rr}			$T_J = 25\text{ }^\circ\text{C}$	30	ns
					$T_J = 100\text{ }^\circ\text{C}$	50	
Maximum stored charge	$I_F = 3.0\text{ A}, V_R = 30\text{ V}, dl/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$	Q_{rr}			$T_J = 25\text{ }^\circ\text{C}$	15	nC
					$T_J = 100\text{ }^\circ\text{C}$	35	
Typical junction capacitance	4.0 V, 1 MHz	C_J		45			pF

Note

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

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$		47			$^\circ\text{C}/\text{W}$
	$R_{\theta JL}^{(1)}$		12			

Note

(1) Units mounted on PCB with 0.31" x 0.31" (8.0 mm x 8.0 mm) copper pad areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ES3D-E3/57T	0.211	57T	850	7" diameter plastic tape and reel
ES3D-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
ES3DHE3_A/H ⁽¹⁾	0.211	H	850	7" diameter plastic tape and reel
ES3DHE3_A/I ⁽¹⁾	0.211	I	3500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

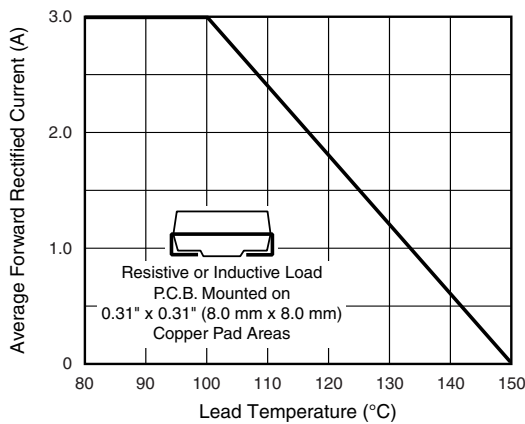
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

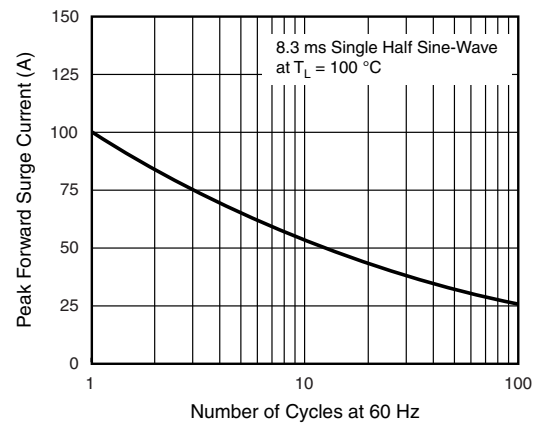


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

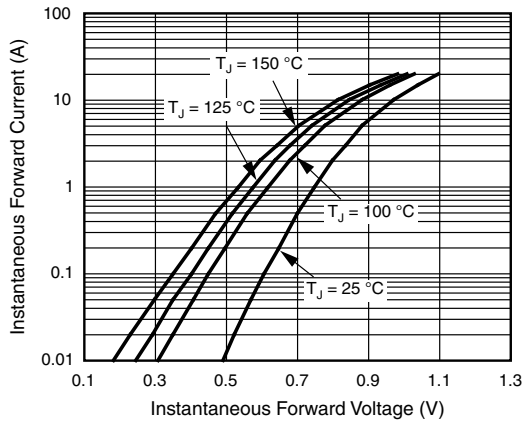


Fig. 3 - Typical Instantaneous Forward Characteristics

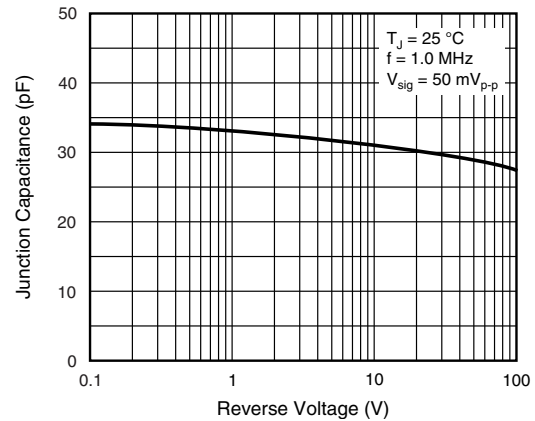


Fig. 5 - Typical Junction Capacitance

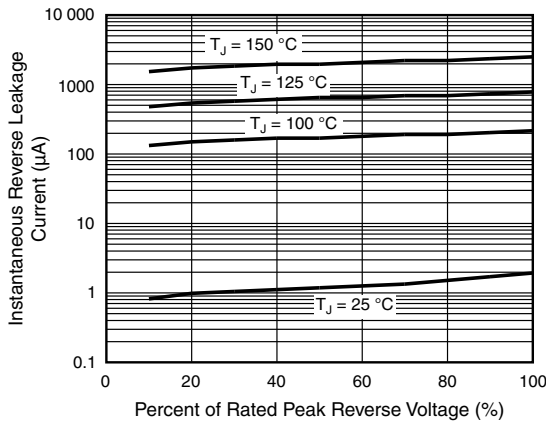
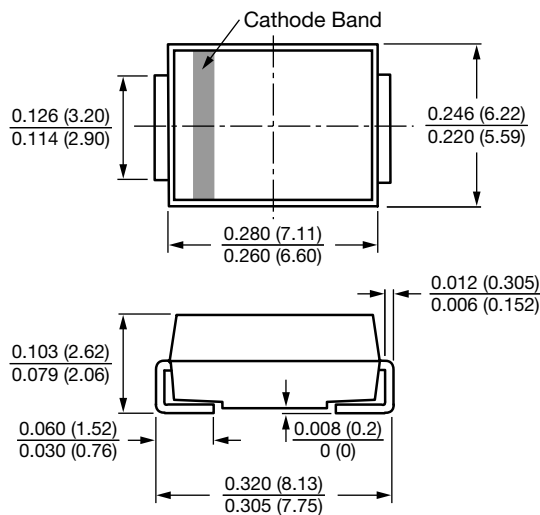


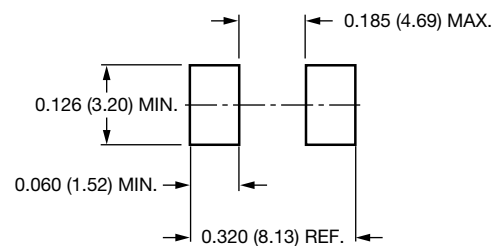
Fig. 4 - Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout





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