

Vishay General Semiconductor

Surface Mount Ultrafast Plastic Rectifier



DO-214AA (SMB)

PRIMARY CHARACTERISTICS						
I _{F(AV)}	2.0 A					
V _{RRM}	50 V, 100 V, 150 V, 200 V					
I _{FSM}	50 A					
t _{rr}	20 ns					
V _F	0.90 V					
T _J max.	150 °C					
Package	DO-214AA (SMB)					
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

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive, and telecommunication.

MECHANICAL DATA

Case: DO-214AA (SMB)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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 (TA = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	ES2A	ES2B	ES2C	ES2D	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 $T_L = 110 ^{\circ}\text{C}$	I _{F(AV)}	2.0				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	50			Α	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150				°C



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ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	ES2A	ES2B	ES2C	ES2D	UNIT
Maximum instantaneous forward voltage	2.0 A		V _F ⁽¹⁾	0.90				V
Maximum DC reverse current at		T _A = 25 °C	10				μА	
rated DC blocking voltage		T _A = 100 °C	I _R					
Max. reverse recovery time	$I_F = 0.5 A, I_R = 1.0 A,$ $I_{rr} = 0.25 A$		t _{rr}	20				ns
	$I_F = 2.0 \text{ A}, V_R = 30 \text{ V},$	T _J = 25 °C	30					
Maximum reverse recovery time	dl/dt = 50 A/µs, I _r = 10 % I _{RM}	T _J = 100 °C	= 100 °C		50			ns
	$I_F = 2.0 \text{ A}, V_R = 30 \text{ V}, T_J = 25 \text{ °C}$			10				nC
Maximum stored charge	dl/dt = 50 A/µs, I _r = 10 % I _{RM}	T _J = 100 °C	Q _{rr}	25				
Typical junction capacitance	4.0 V, 1 MHz		CJ	18			pF	

Note

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

THERMAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)						
PARAMETER SYMBOL ES2A ES2B ES2C ES2D U					UNIT	
Typical thermal resistance	R _{0JA} (1)	75				°C/W
Typical thermal resistance		20			C/VV	

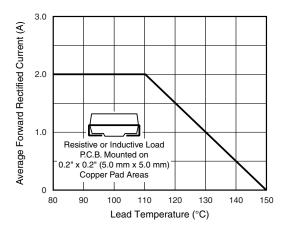
Note

⁽¹⁾ Units mounted on PCB 5.0 mm x 5.0 mm (0.013 mm thick) land areas

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
ES2D-E3/52T	0.096	52T	750	7" diameter plastic tape and reel			
ES2D-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel			
ES2DHE3/52T (1)	0.096	52T	750	7" diameter plastic tape and reel			
ES2DHE3/5BT (1)	0.096	5BT	3200	13" diameter plastic tape and reel			

Note

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





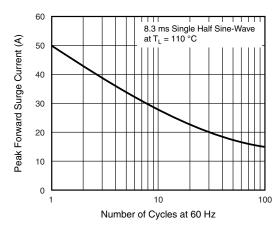


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

⁽¹⁾ AEC-Q101 qualified



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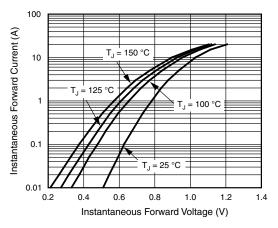


Fig. 3 - Typical Instantaneous Forward Characteristics

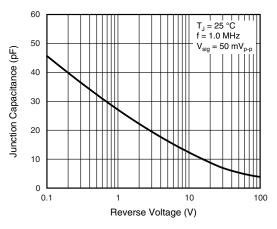


Fig. 5 - Typical Junction Capacitance

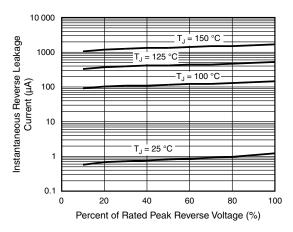
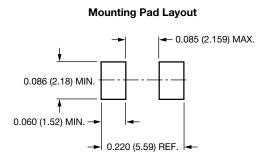


Fig. 4 - Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB) Cathode Band 0.155 (3.94) 0.130 (3.30) 0.180 (4.57) 0.160 (4.06) 0.012 (0.305) 0.006 (0.152) 0.096 (2.44) 0.084 (2.13) 0.008 (0.2) 0.060 (1.52) 0.030 (0.76) 0 (0) 0.220 (5.59) 0.205 (5.21)





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