

Vishay General Semiconductor

RoHS

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 pallet 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 available
 - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

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 Base P/NHE3_X - RoHS-compliant, 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 (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 °C	I _{F(AV)}	2.0					
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	50					
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150					

ES2A, ES2B, ES2C, ES2D

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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 rated		T _A = 25 °C			10				
DC blocking voltage		T _A = 100 °C	I _R	350				μA	
Max. reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	20			ns		
Maximum rayaraa raaayany tima	$I_F = 2.0 \text{ A}, V_R = 30 \text{ V},$ $dI/dt = 50 \text{ A/}\mu\text{s}, I_r = 10 \% I_{RM}$	T _J = 25 °C	+	30				ns	
Maximum reverse recovery time		T _J = 100 °C	t _{rr}	50					
Maximum stored charge	$I_F = 2.0 \text{ A}, V_R = 30 \text{ V},$ $dI/dt = 50 \text{ A/µs}, I_r = 10 \% I_{RM}$	T _J = 25 °C	0	10				nC	
		T _J = 100 °C	Q _{rr}		2	5		110	
Typical junction capacitance	4.0 V, 1 MHz		CJ		1	8		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	UNIT
Typical thermal resistance	R ₀ JA (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			
ES2DHE3_A/H (1)	0.096	Н	750	7" diameter plastic tape and reel			
ES2DHE3_A/I (1)	0.096	I	3200	13" diameter plastic tape and reel			

Note

(1) AEC-Q101 qualified

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

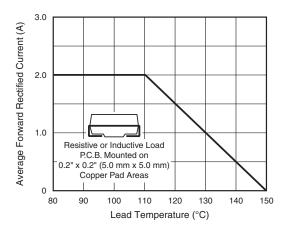


Fig. 1 - Maximum Forward Current Derating Curve

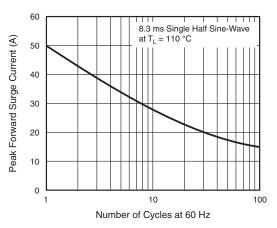


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

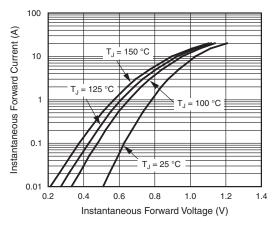


Fig. 3 - Typical Instantaneous Forward Characteristics

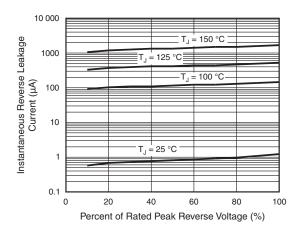


Fig. 4 - Typical Reverse Leakage Characteristics

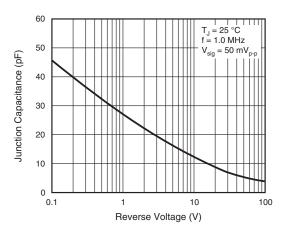


Fig. 5 - Typical Junction Capacitance

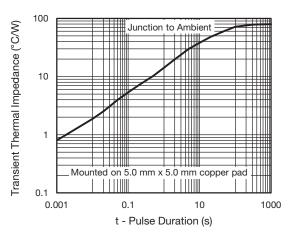


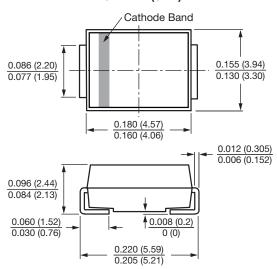
Fig. 6 - Transient Thermal Impedance



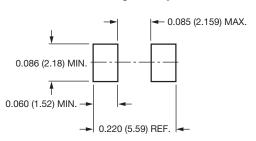
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout





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