RoHS



## Vishay General Semiconductor

# **Surface Mount Ultrafast Plastic Rectifier**



DO-214AB (SMC)

PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub> 3.0 A					
$V_{RRM}$	50 V to 200 V				
I <sub>FSM</sub>	100 A				
t <sub>rr</sub>	20 ns				
V <sub>F</sub>	0.90 V				
T <sub>J</sub> max.	150 °C				

#### **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 <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

## 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 - RoHS-compliant, AEC-Q101 qualified 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 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °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 <sub>RMS</sub>	35	70	105	140	V
Maximum DC blocking voltage	$V_{DC}$	50	100	150	200	V
Maximum average forward rectified current at $T_L = 100  ^{\circ}C$	I <sub>F(AV)</sub>	3.0				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	100				А
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150				°C



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Maximum instantaneous forward voltage	3.0 A		V <sub>F</sub> <sup>(1)</sup>	0.90				٧
Maximum DC reverse current at rated DC blocking voltage		T <sub>A</sub> = 25 °C T <sub>A</sub> = 100 °C	<u> </u>				μΑ	
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	20			ns	
Maximum reverse recovery time	$I_F = 3.0 \text{ A}, V_R = 30 \text{ V},$	T <sub>J</sub> = 25 °C	+	30				
Maximum reverse recovery time	$dI/dt = 50 A/\mu s$ , $I_{rr} = 10 \% I_{RM}$	T <sub>J</sub> = 100 °C	t <sub>rr</sub>	50				ns
Maximum stored charge	$I_F = 3.0 A, V_R = 30 V,$	T <sub>J</sub> = 25 °C	Q <sub>rr</sub>	15			nC	
	$dI/dt = 50 \text{ A/µs}, I_{rr} = 10 \% I_{RM}$ $T_J = 100 ^{\circ}C$		Q <sub>rr</sub>	35			110	
Typical junction capacitance	4.0 V, 1 MHz		CJ	45				pF

#### Note

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	OL ES3A ES3B ES3C ES3D UN				
Tunical thermal registance	R <sub>0JA</sub> (1)	47				
Typical thermal resistance	R <sub>0JL</sub> (1)		°C/W			

### Note

<sup>(1)</sup> 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			
ES3DHE3/57T (1)	0.211	57T	850	7" diameter plastic tape and reel			
ES3DHE3/9AT (1)	0.211	9AT	3500	13" diameter plastic tape and reel			
ES3DHE3_A/H (1)	0.211	Н	850	7" diameter plastic tape and reel			
ES3DHE3_A/I (1)	0.211	I	3500	13" diameter plastic tape and reel			

## Note

## **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

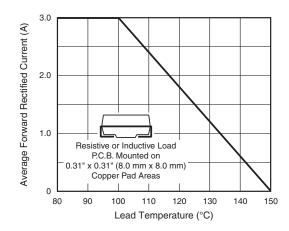


Fig. 1 - Maximum Forward Current Derating Curve

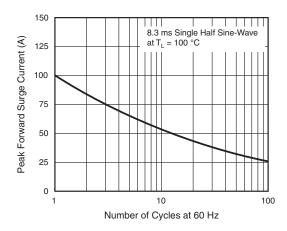


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

<sup>(1)</sup> AEC-Q101 qualified



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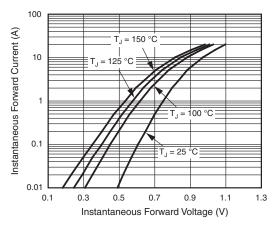


Fig. 3 - Typical Instantaneous Forward Characteristics

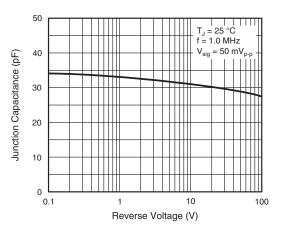


Fig. 5 - Typical Junction Capacitance

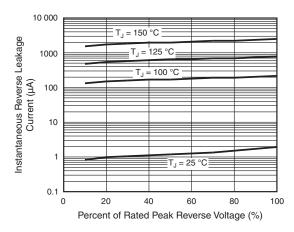
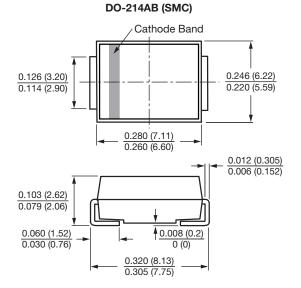
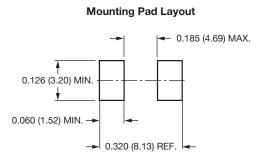


Fig. 4 - Typical Reverse Leakage Characteristics

# PACKAGE OUTLINE DIMENSIONS in inches (millimeters)







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Vishay

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