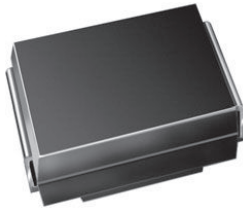




**THE DATASHEET OF  
ESH2C-E3/5BT**



## Surface-Mount Ultrafast Plastic Rectifier


**SMB (DO-214AA)**

 Cathode  Anode

### FEATURES

- Glass passivated pellet 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 available  
- Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
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 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
$V_{RRM}$	100 V, 150 V, 200 V
$t_r$	25 ns
$V_F$ at $I_F = 2$ A	0.93 V
$T_J$ max.	175 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	ESH2B	ESH2C	ESH2D	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	V
Maximum DC blocking voltage	$V_{DC}$	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	2.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	60			A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175			°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT	
Maximum instantaneous forward voltage	$I_F = 2\text{ A}$		$V_F^{(1)}$	0.93	V	
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$		$I_R$	2.0	$\mu\text{A}$	
	$T_A = 125\text{ }^\circ\text{C}$			50		
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$		$t_{rr}$	25	ns	
Typical reverse recovery time	$I_F = 2\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$		$t_{rr}$	$T_J = 25\text{ }^\circ\text{C}$	35	ns
				$T_J = 100\text{ }^\circ\text{C}$	55	
Typical stored charge	$I_F = 2\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$		$Q_{rr}$	$T_J = 25\text{ }^\circ\text{C}$	20	nC
				$T_J = 100\text{ }^\circ\text{C}$	35	
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	30	pF	

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ESH2B	ESH2C	ESH2D	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	65			$^\circ\text{C}/\text{W}$
	$R_{\theta JL}^{(1)}$	20			

**Note**

(1) Units mounted on PCB with 8.0 mm x 8.0 mm land areas

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ESH2D-E3/52T	0.096	52T	750	7" diameter plastic tape and reel
ESH2D-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
ESH2DHE3_A/H <sup>(1)</sup>	0.096	H	750	7" diameter plastic tape and reel
ESH2DHE3_A/I <sup>(1)</sup>	0.096	I	3200	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)

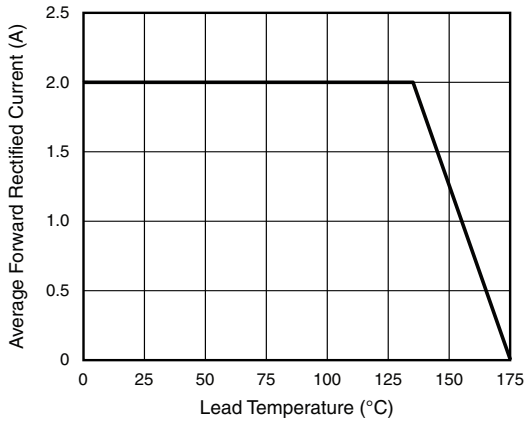


Fig. 1 - Maximum Forward Current Derating Curve

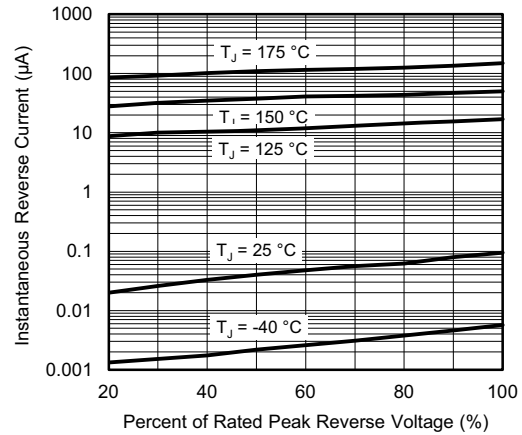


Fig. 4 - Typical Reverse Leakage Characteristics

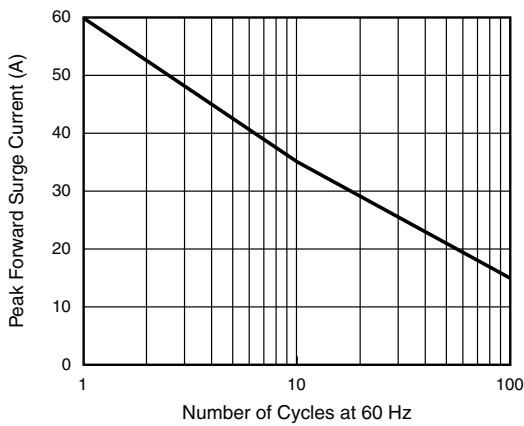


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

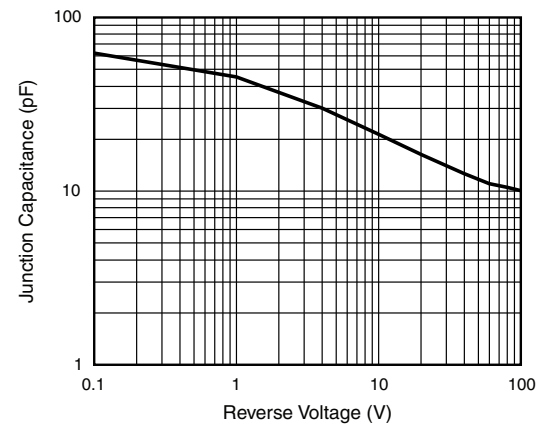


Fig. 5 - Typical Junction Capacitance

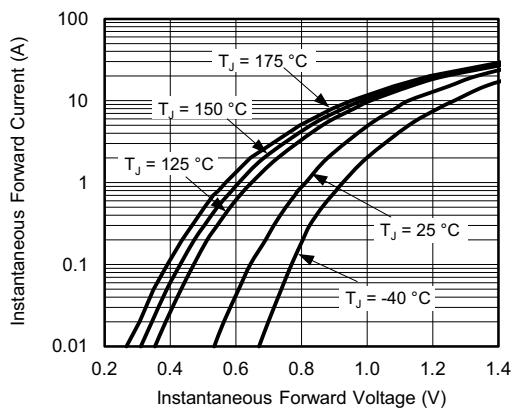


Fig. 3 - Typical Instantaneous Forward Characteristics

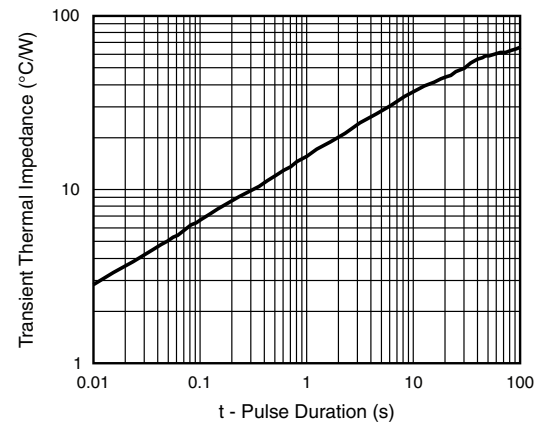
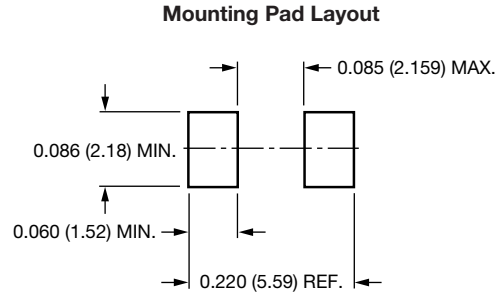
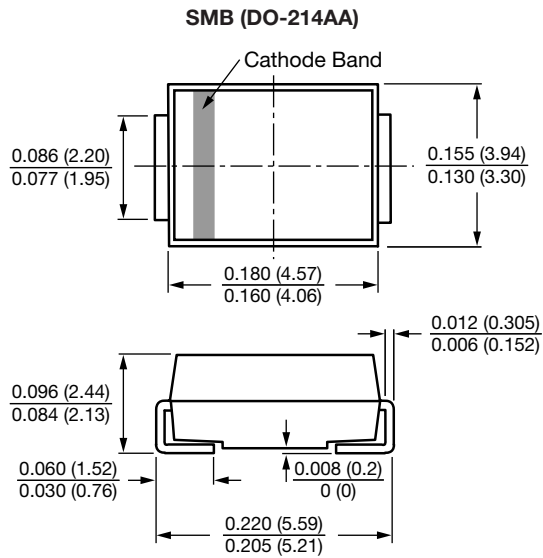


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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