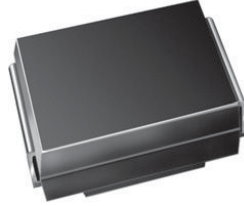




**THE DATASHEET OF  
ESH2D-E3/52T**



## Surface Mount Ultrafast Plastic Rectifier


**SMB (DO-214AA)**

### 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

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

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
$t_{rr}$	25 ns
$V_F$ at $I_F = 2$ A	0.93 V
$T_J$ max.	175 °C
Package	DO-214AA (SMB)
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



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 2 A		V <sub>F</sub> <sup>(1)</sup>	0.93	V
Maximum DC reverse current at rated DC blocking voltage	T <sub>A</sub> = 25 °C		I <sub>R</sub>	2.0	μA
	T <sub>A</sub> = 125 °C			50	
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	25	ns
Typical reverse recovery time	I <sub>F</sub> = 2 A, V <sub>R</sub> = 30 V, di/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub>		T <sub>J</sub> = 25 °C	35	ns
			T <sub>J</sub> = 100 °C	55	
Typical stored charge	I <sub>F</sub> = 2 A, V <sub>R</sub> = 30 V, di/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub>		T <sub>J</sub> = 25 °C	20	nC
			T <sub>J</sub> = 100 °C	35	
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	30	pF

Note

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ESH2B	ESH2C	ESH2D	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	65			°C/W
	R <sub>θJL</sub> <sup>(1)</sup>	20			

Note

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

ORDERING INFORMATION (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)

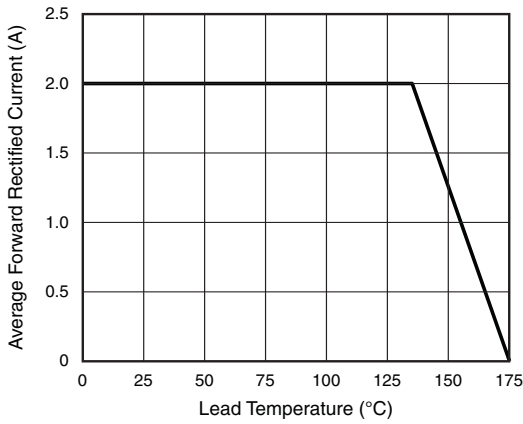


Fig. 1 - Maximum Forward Current Derating Curve

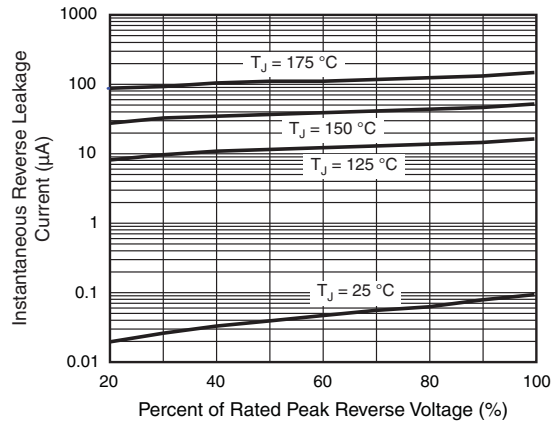


Fig. 4 - Typical Reverse Leakage Characteristics

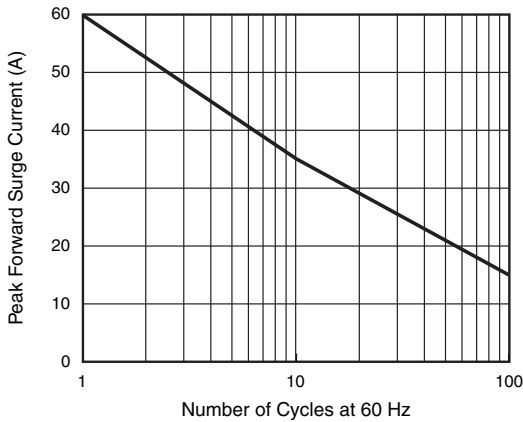


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

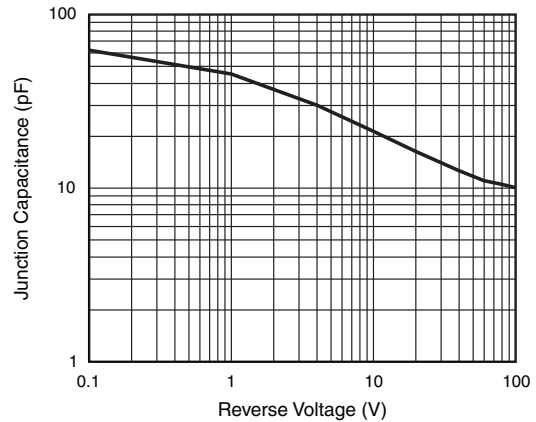


Fig. 5 - Typical Junction Capacitance

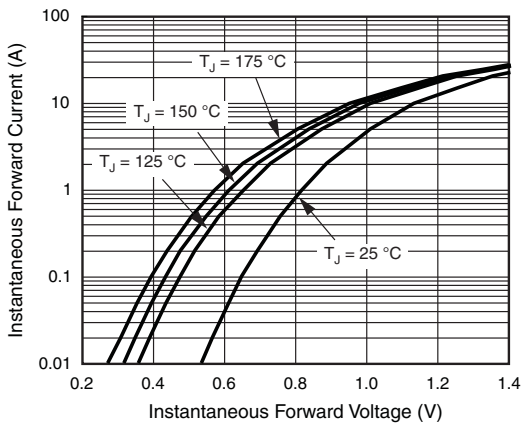


Fig. 3 - Typical Instantaneous Forward Characteristics

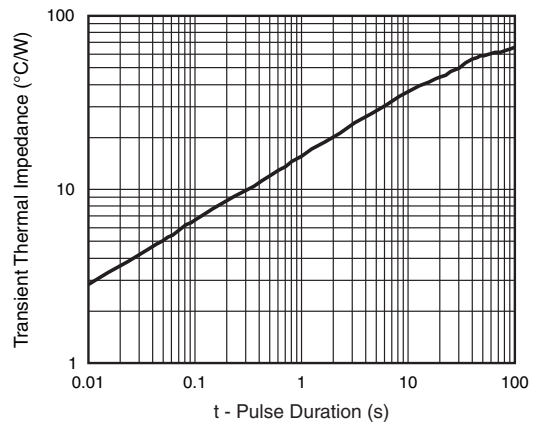
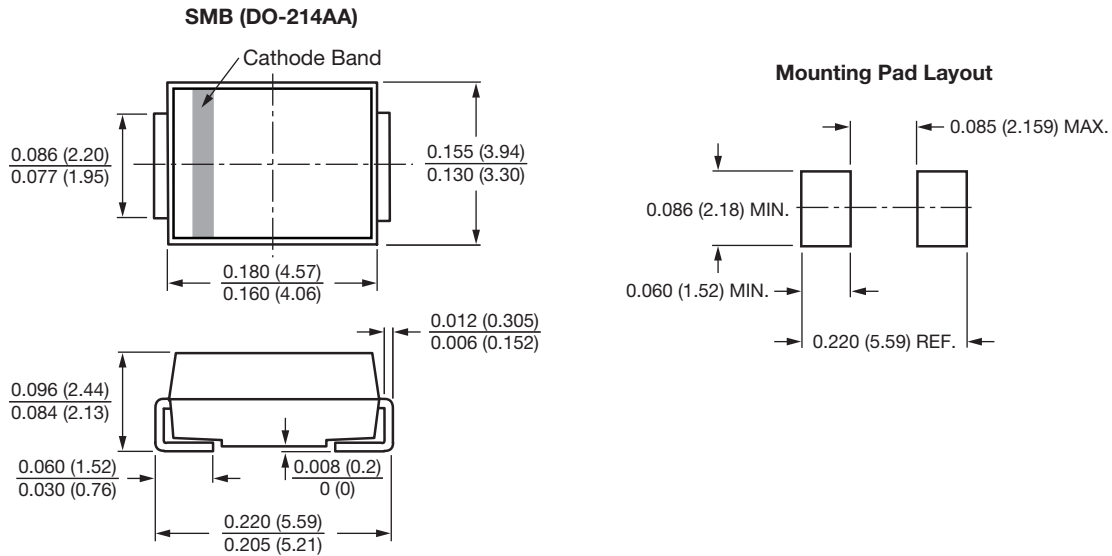


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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