

## Surface Mount Ultrafast Plastic Rectifier



DO-214AA (SMB)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 A
$V_{RRM}$	100 V, 150 V, 200 V
$t_{rr}$	25 ns
$V_F$	0.93 V
$T_J \text{ max.}$	175 °C

### FEATURES

- Glass passivated 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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



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)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for commercial grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 <sup>(1)</sup>	I <sub>F</sub> = 2 A	V <sub>F</sub>	0.93	V
Maximum DC reverse current at rated DC blocking voltage	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	2.0 50	μA
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 T <sub>J</sub> = 100 °C	35 55	ns
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 T <sub>J</sub> = 100 °C	20 35	nC
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 <sup>(1)</sup>	R <sub>θJA</sub> R <sub>θJL</sub>		65 20		°C/W

**Note:**

(1) Units mounted on P.C.B. with 8.0 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
ESH2DHE3/52T <sup>(1)</sup>	0.096	52T	750	7" diameter plastic tape and reel
ESH2DHE3/5BT <sup>(1)</sup>	0.096	5BT	3200	13" diameter plastic tape and reel

**Note:**

(1) Automotive grade AEC Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

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

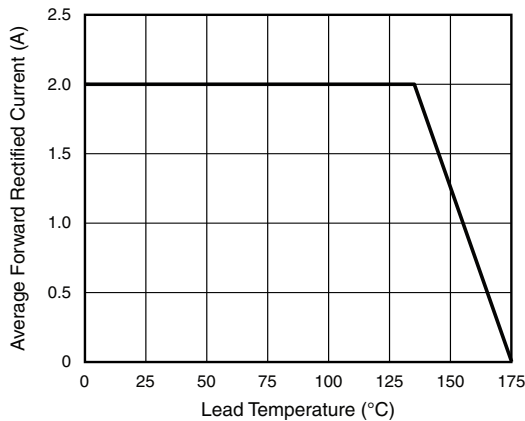


Figure 1. Maximum Forward Current Derating Curve

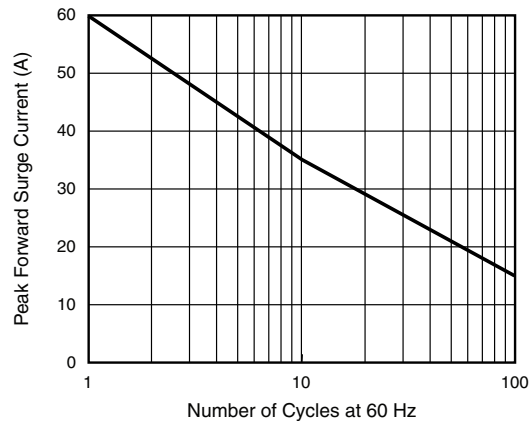


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

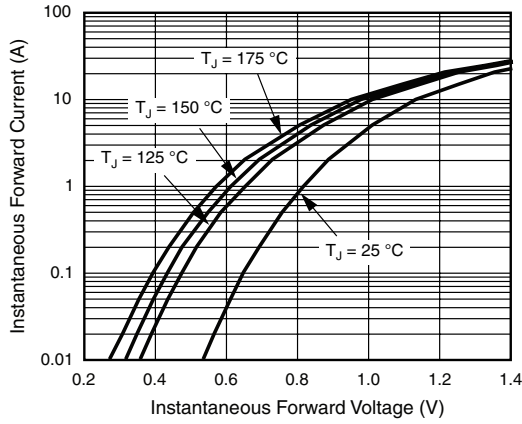


Figure 3. Typical Instantaneous Forward Characteristics

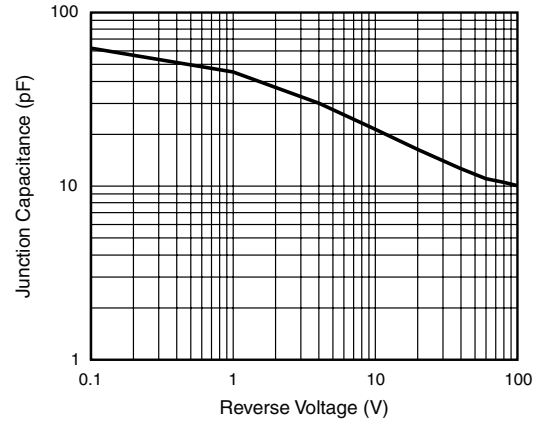


Figure 5. Typical Junction Capacitance

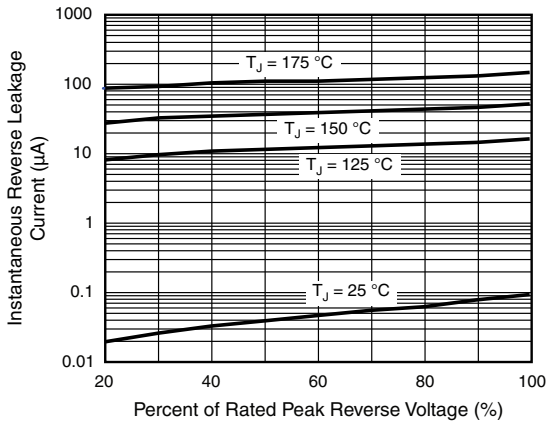


Figure 4. Typical Reverse Leakage Characteristics

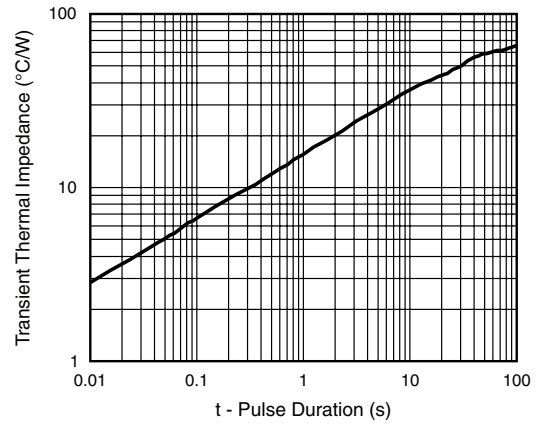
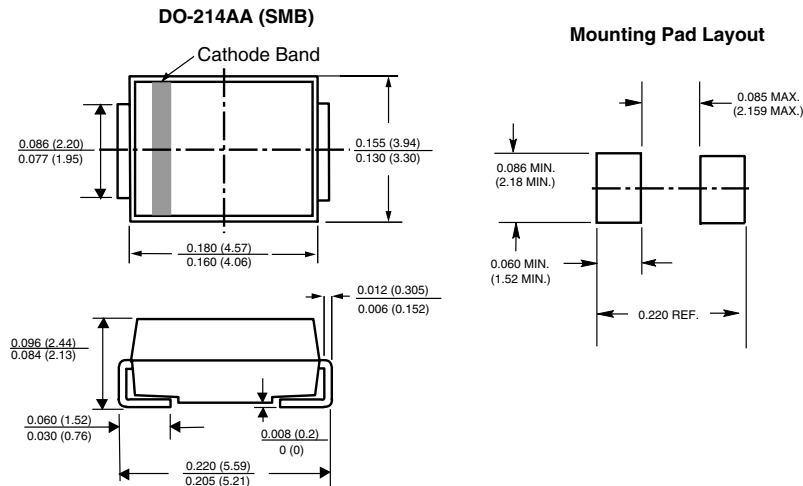


Figure 6. Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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