

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AB (SMC)**

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	50 V to 200 V
$I_{FSM}$	100 A
$t_{tr}$	20 ns
$V_F$	0.90 V
$T_j \text{ max.}$	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-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


**TYPICAL APPLICATIONS**

For use in high frequency rectification and free-wheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

**MECHANICAL DATA**

**Case:** DO-214AB (SMC)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** Color band denotes cathode end

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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	at 3.0 A	$V_F$		0.90			V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 100\text{ }^\circ\text{C}$	$I_R$		10 500			$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$		20			ns
Maximum reverse recovery time	$I_F = 3.0\text{ A}$ , $V_R = 30\text{ V}$ , $di/dt = 50\text{ A}/\mu\text{s}$ , $I_{rr} = 10\% I_{RM}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 100\text{ }^\circ\text{C}$	$t_{rr}$		30 50			ns
Maximum stored charge	$I_F = 3.0\text{ A}$ , $V_R = 30\text{ V}$ , $di/dt = 50\text{ A}/\mu\text{s}$ , $I_{rr} = 10\% I_{RM}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 100\text{ }^\circ\text{C}$	$Q_{rr}$		15 35			nC
Typical junction capacitance	at 4.0 V, 1 MHz	$C_J$		45			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	ES3A	ES3B	ES3C	ES3D	UNIT
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$ $R_{\theta JL}$		47 12			$^\circ\text{C}/\text{W}$

**Note:**

(1) Units mounted on P.C.B. with 0.31 x 0.31" (8.0 x 8.0 mm) copper pad areas

<b>ORDERING INFORMATION</b> (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 & Reel
ES3D-E3/9AT	0.211	9AT	3500	13" Diameter Plastic Tape & Reel
ES3DHE3/57T <sup>(1)</sup>	0.211	57T	850	7" Diameter Plastic Tape & Reel
ES3DHE3/9AT <sup>(1)</sup>	0.211	9AT	3500	13" Diameter Plastic Tape & Reel

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

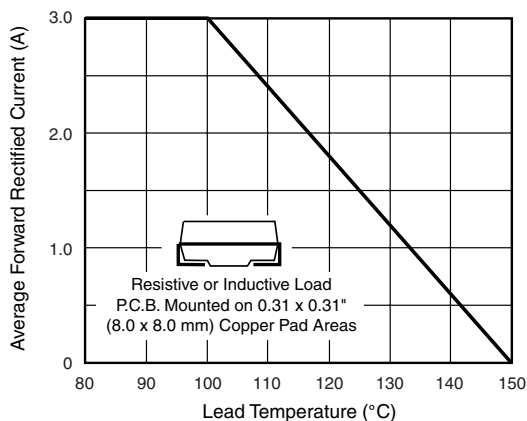


Figure 1. Maximum Forward Current Derating Curve

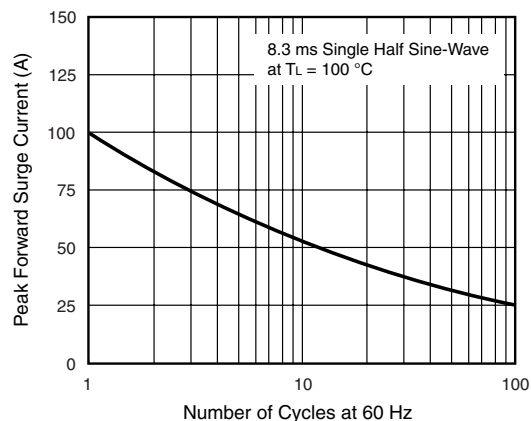


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

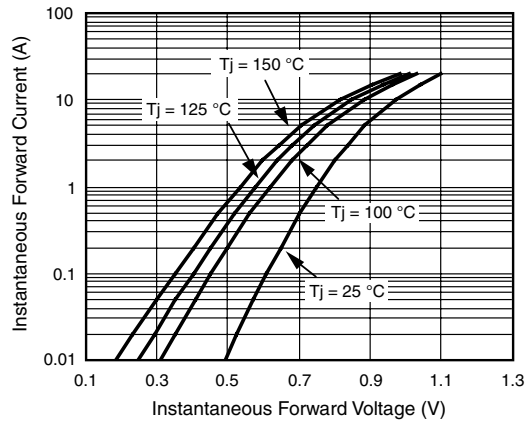


Figure 3. Typical Instantaneous Forward Characteristics

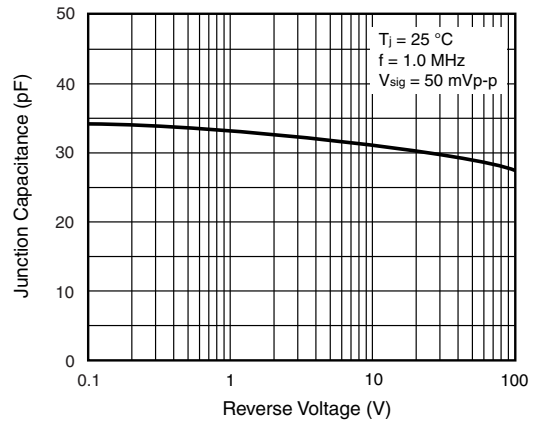


Figure 5. Typical Junction Capacitance

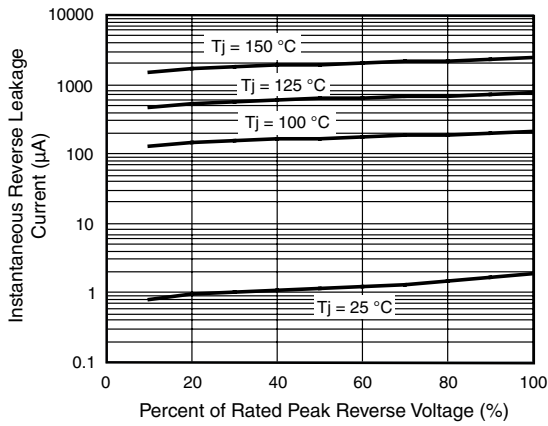
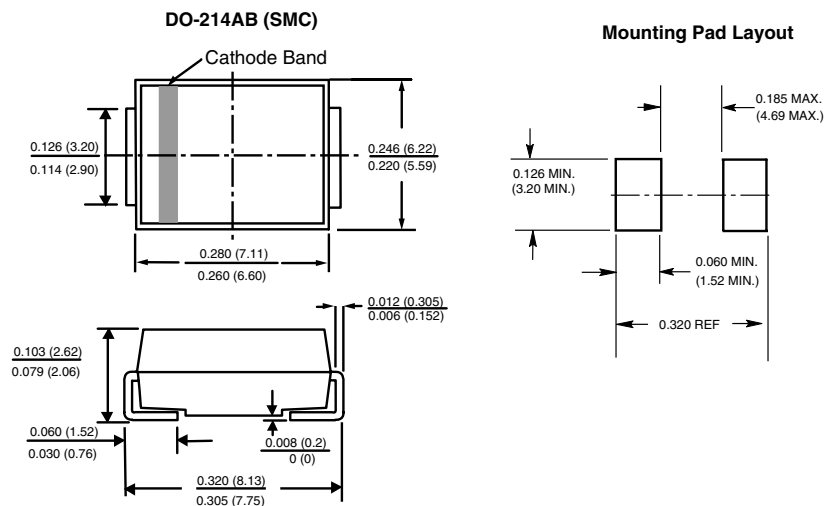


Figure 4. Typical Reverse Leakage Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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