

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AB (SMC)**

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	300 V, 400 V
$I_{FSM}$	100 A
$t_{rr}$	35 ns
$V_F$	1.1 V
$T_J \text{ max.}$	150 °C

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- 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 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-002 and JESD22-B102

E3 suffix for consumer 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	ES3F	ES3G	UNIT
Device marking code		EF	EG	
Maximum repetitive peak reverse voltage	$V_{RRM}$	300	400	V
Working peak reverse voltage	$V_{RWM}$	225	300	V
Maximum RMS voltage	$V_{RMS}$	210	280	V
Maximum average forward rectified current at $T_L = 110\text{ °C}$	$I_{F(AV)}$	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	ES3F	ES3G	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	3.0 A	$V_F$	1.1		V
Maximum DC reverse current at working peak reverse voltage	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 100\text{ }^\circ\text{C}$	$I_R$	10 350		$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	35		ns
Maximum reverse recovery time	$I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$	$t_{rr}$	50		ns
Maximum reverse recovery current	$I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$	$I_{RM}$	3.0		A
Maximum stored charge	$I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$	$Q_{rr}$	50		nC
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	ES3F	ES3G	UNIT
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$ $R_{\theta JL}$	50 15		$^\circ\text{C}/\text{W}$

**Note:**

(1) Units mounted on P.C.B. 5.0 x 5.0 mm (0.013 mm thick) land areas

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ES3G-E3/57T	0.211	57T	850	7" diameter plastic tape and reel
ES3G-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
ES3GHE3/57T <sup>(1)</sup>	0.211	57T	850	7" diameter plastic tape and reel
ES3GHE3/9AT <sup>(1)</sup>	0.211	9AT	3500	13" diameter plastic tape and reel

**Note:**

(1) Automotive grade AEC Q101 qualified

### RATINGS AND CHARACTERISTICS CURVES

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

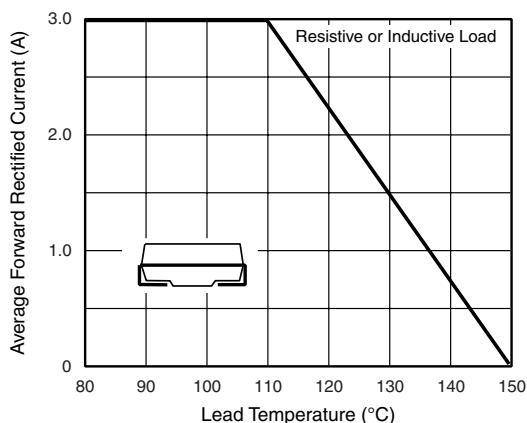


Figure 1. Maximum Forward Current Derating Curve

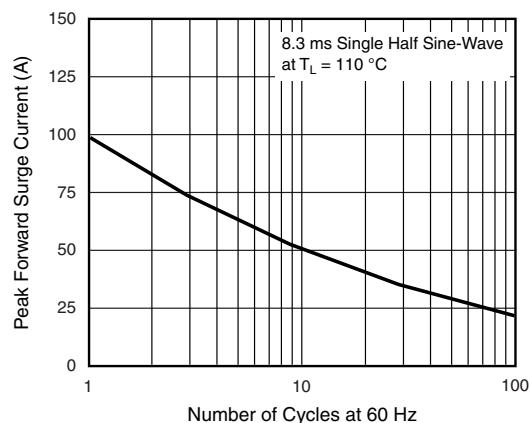


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

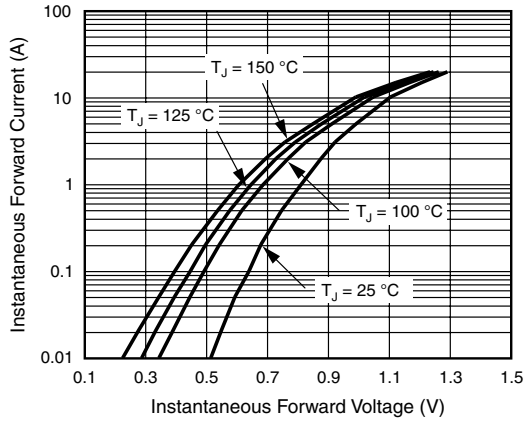


Figure 3. Typical Instantaneous Forward Characteristics

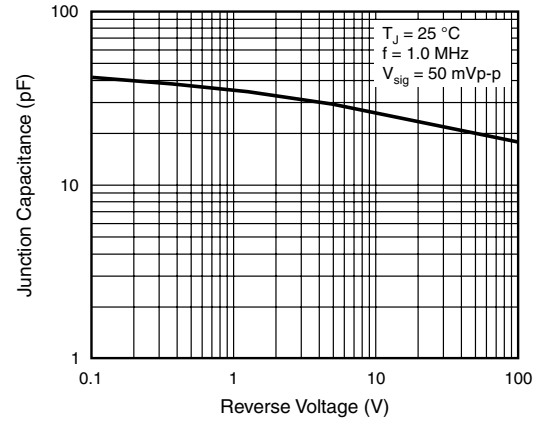


Figure 6. Typical Junction Capacitance

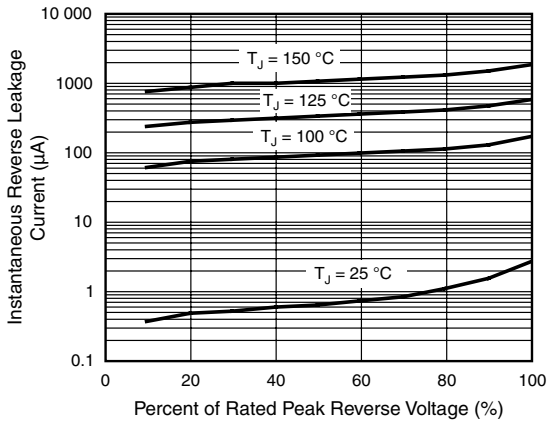


Figure 4. Typical Reverse Leakage Characteristics

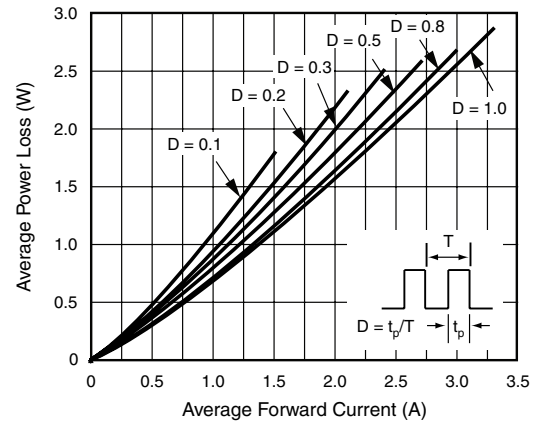


Figure 7. Forward Power Loss Characteristics

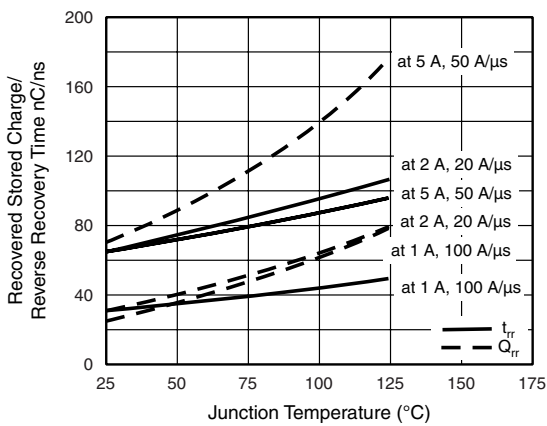
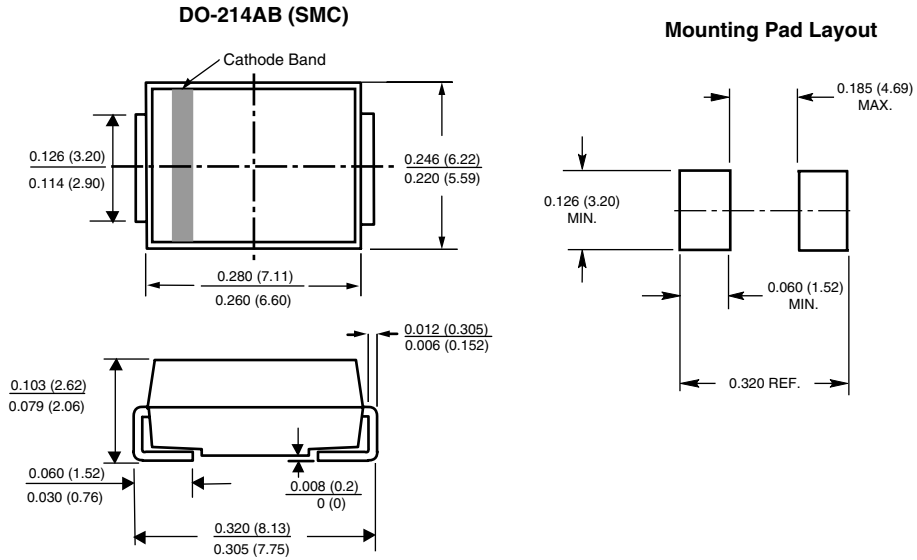


Figure 5. Reverse Switching Characteristics

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





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