

Surface Mount Ultrafast Plastic Rectifier



DO-214AB (SMC)

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

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

MAXIMUM RATINGS ($T_A = 25$ °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 $T_L = 110$ °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

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	ES3F	ES3G	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	3.0 A		V _F	1.1		V
Maximum DC reverse current at working peak reverse voltage		T _A = 25 °C T _A = 100 °C	I _R	10 350		μA
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	35		ns
Maximum reverse recovery time	I _F = 1.0 A, dI/dt = 100 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}		t _{rr}	50		ns
Maximum reverse recovery current	I _F = 1.0 A, dI/dt = 100 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}		I _{RM}	3.0		A
Maximum stored charge	I _F = 1.0 A, dI/dt = 100 A/μs, V _R = 30 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 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	ES3F	ES3G	UNIT
Typical thermal resistance ⁽¹⁾	$R_{\theta JA}$ $R_{\theta JL}$	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

ORDERING INFORMATION (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 ⁽¹⁾	0.211	57T	850	7" diameter plastic tape and reel
ES3GHE3/9AT ⁽¹⁾	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)

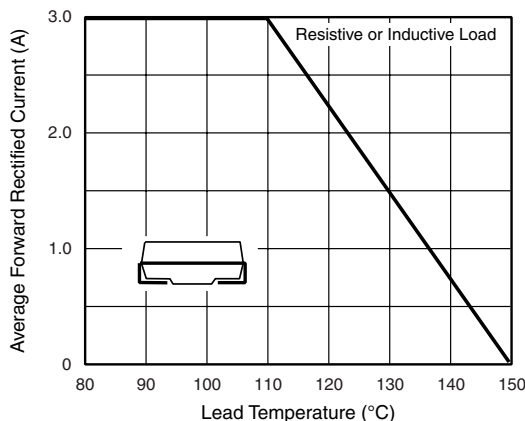


Figure 1. Maximum Forward Current Derating Curve

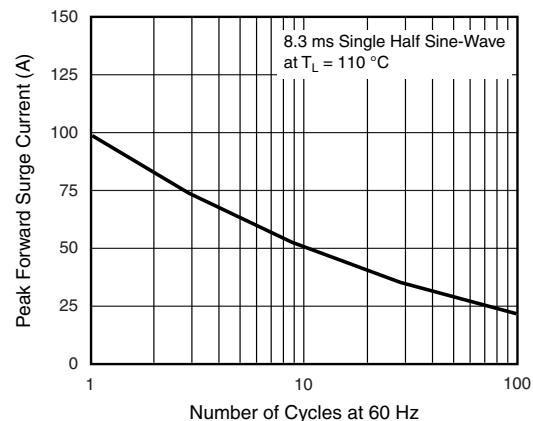


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

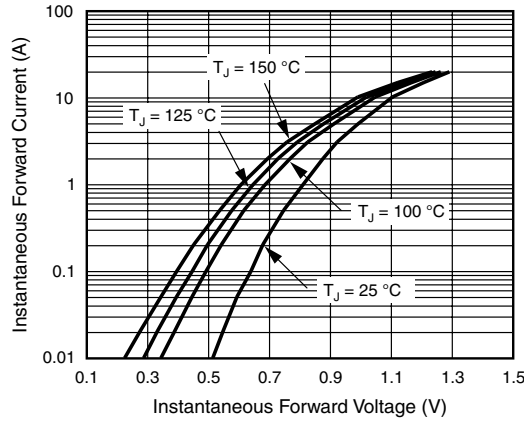


Figure 3. Typical Instantaneous Forward Characteristics

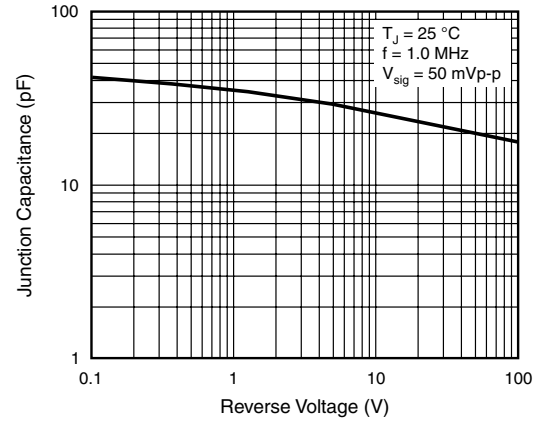


Figure 6. Typical Junction Capacitance

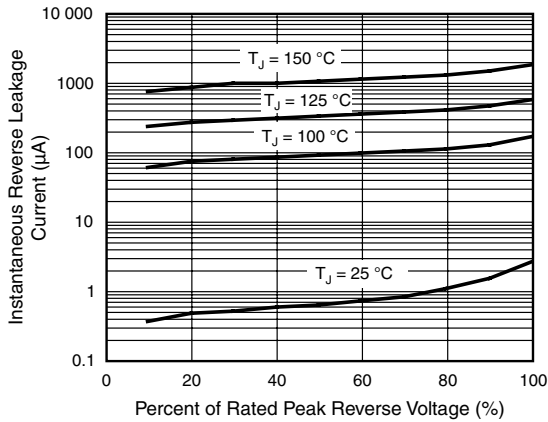


Figure 4. Typical Reverse Leakage Characteristics

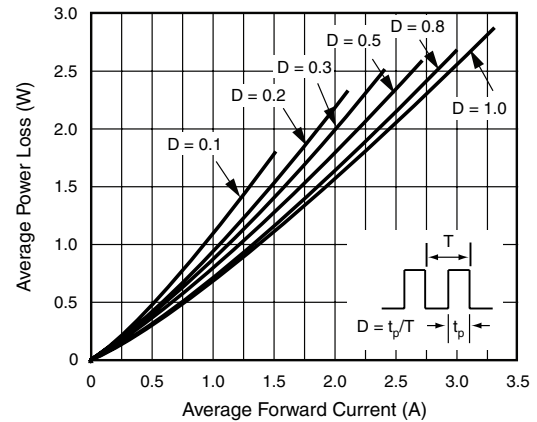


Figure 7. Forward Power Loss Characteristics

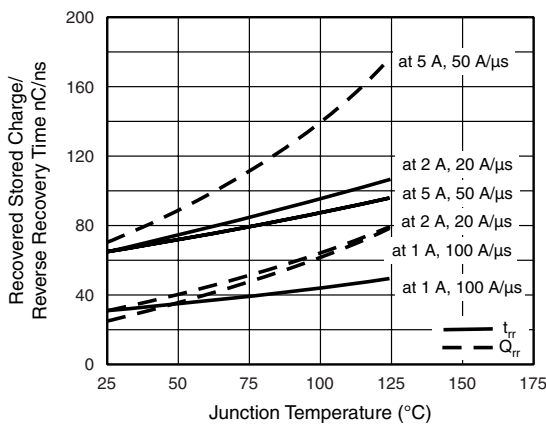
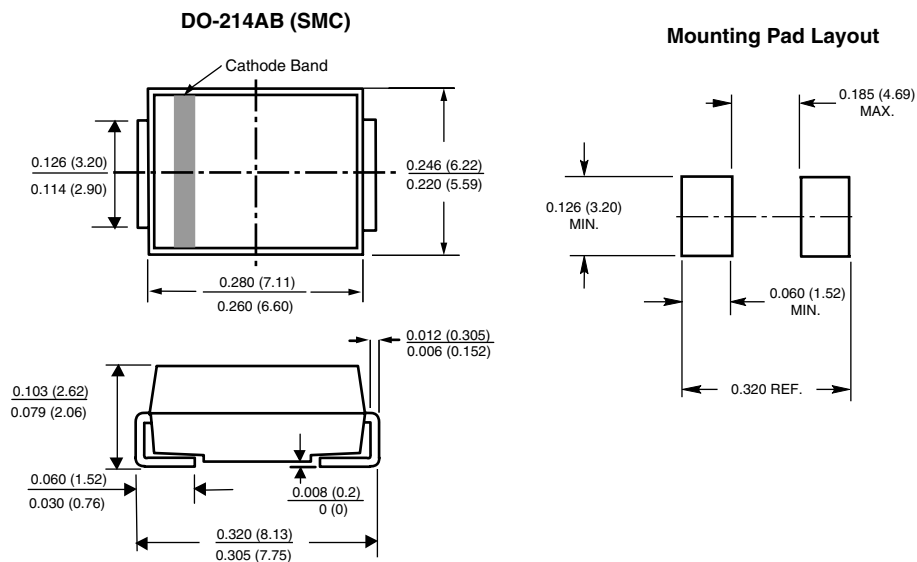


Figure 5. Reverse Switching Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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