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ES3F & ES3G

Vishay General Semiconductor

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.

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 max.	150 °C

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 °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

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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 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**ES3F**	**ES3G**	**UNIT**
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JL}$	50 15		°C/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 °C unless otherwise noted)

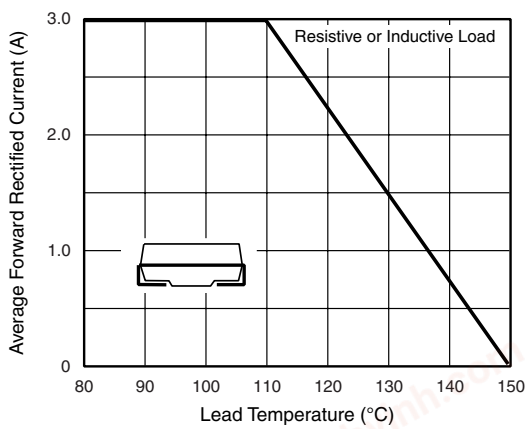


Figure 1. Maximum Forward Current Derating Curve

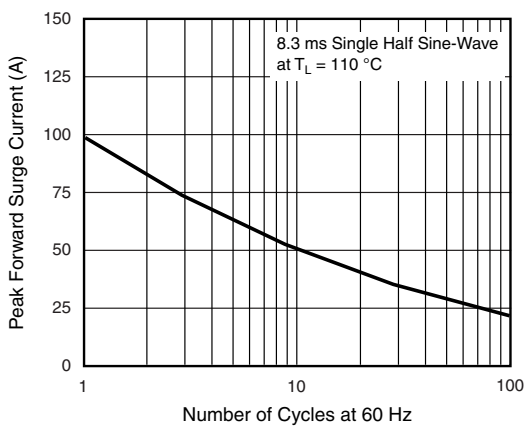


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

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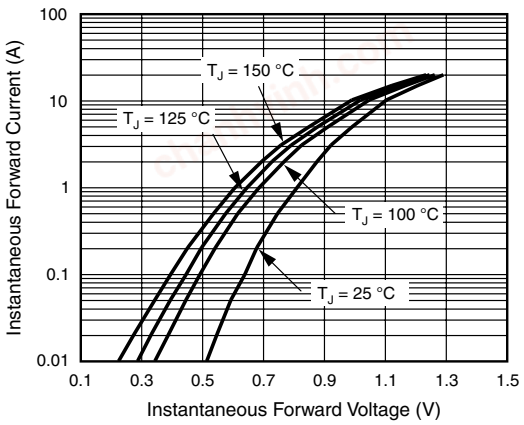


Figure 3. Typical Instantaneous Forward Characteristics

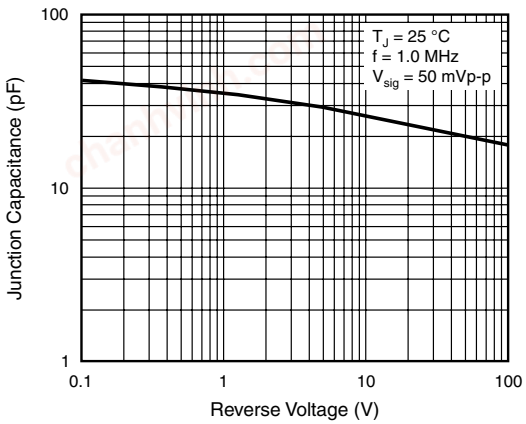


Figure 6. Typical Junction Capacitance

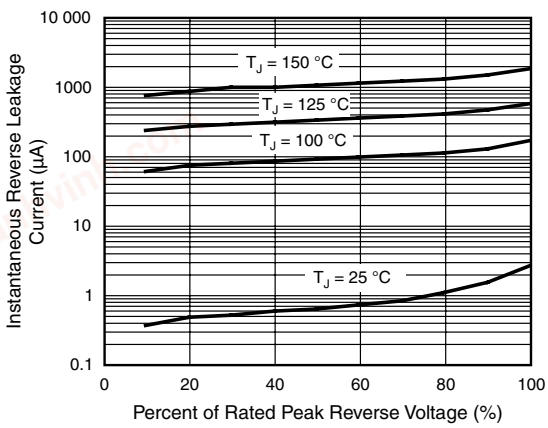


Figure 4. Typical Reverse Leakage Characteristics

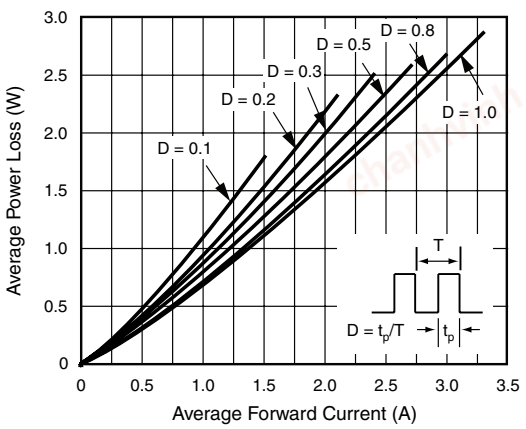


Figure 7. Forward Power Loss Characteristics

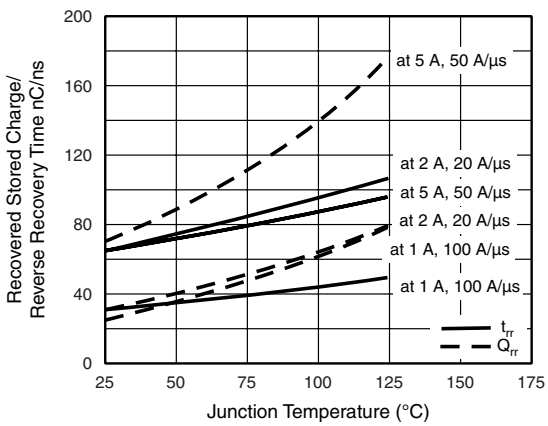
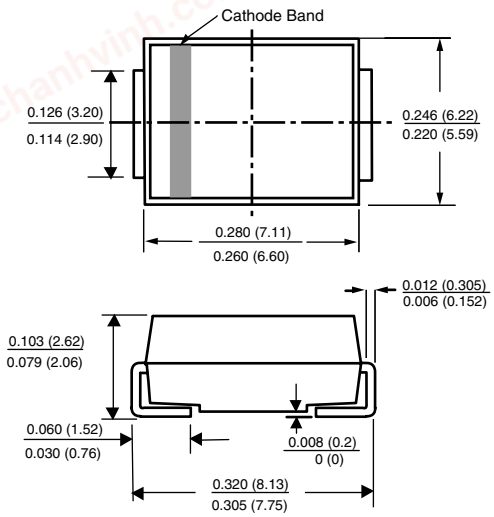


Figure 5. Reverse Switching Characteristics

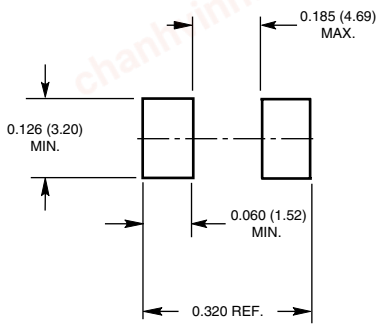
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout



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