AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN FREE



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Vishay General Semiconductor

Surface-Mount Ultrafast Plastic Rectifier



SMC (DO-214AB)



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	3.0 A				
V_{RRM}	300 V, 400 V				
I _{FSM}	100 A				
t _{rr}	35 ns				
V _F at I _F	1.1 V				
T _J max.	150 °C				
Package	SMC (DO-214AB)				
Circuit configuration	Single				

FEATURES

- Glass passivated pellet 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
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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: SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - haloge-free, RoHS-compliant, and commercial grade

Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3, M3, HE3, and HM3 suffix meet 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	ak reverse voltage V _{RRM} 300			V	
Working peak reverse voltage	g peak reverse voltage V _{RWM} 2		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		А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	100		А	
Operating junction and storage temperature range	T _{J,} T _{STG}	-55 to	°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	3.0 A		V _F ⁽¹⁾	1.1		V
Maximum DC reverse current at working peak reverse voltage		T _A = 25 °C T _A = 100 °C	- I _R	10 350		μΑ
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	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$		t _{rr}	50		ns
Maximum reverse recovery current	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$		I _{RM}	3.0		А
Maximum stored charge	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$		Q _{rr}	50		nC
Typical junction capacitance	4.0 V, 1 MHz		CJ	3	0	pF

Note

 $^{(1)}$ Pulse test: 300 μ s pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ES3F	ES3G	UNIT	
Typical thormal recistance	R _{0JA} (1)	50		°C/W	
Typical thermal resistance	R ₀ JL (1)	15			

Note

(1) Units mounted on PCB 5.0 mm 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_A/H (1)	0.211	Н	850	7" diameter plastic tape and reel	
ES3GHE3_A/I (1)	0.211	1	3500	13" diameter plastic tape and reel	
ES3G-M3/57T	0.211	57T	850	7" diameter plastic tape and reel	
ES3G-M3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel	
ES3GHM3_A/H (1)	0.211	Н	850	7" diameter plastic tape and reel	
ES3GHM3_A/I (1)	0.211	I	3500	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

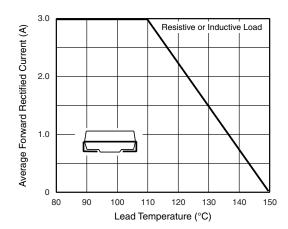


Fig. 1 - Maximum Forward Current Derating Curve

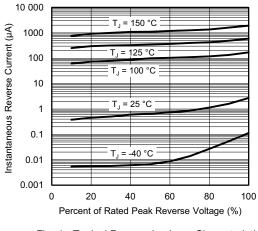


Fig. 4 - Typical Reverse Leakage Characteristics

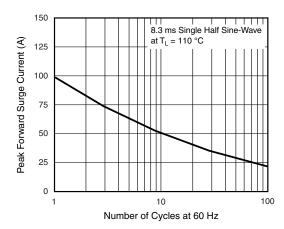


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

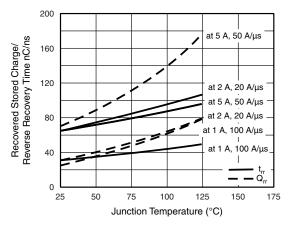


Fig. 5 - Reverse Switching Characteristics

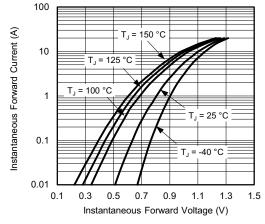


Fig. 3 - Typical Instantaneous Forward Characteristics

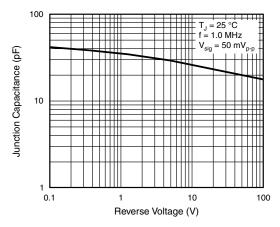


Fig. 6 - Typical Junction Capacitance



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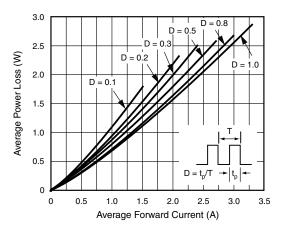
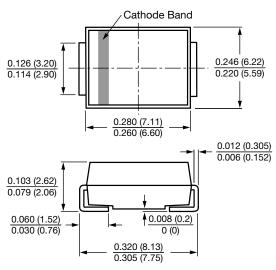


Fig. 7 - Forward Power Loss Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)



– 0.320 (8.13) REF. 🚤



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