

Surface Mount Ultrafast Plastic Rectifier


DO-214AB (SMC)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	50 V to 200 V
I_{FSM}	100 A
t_{rr}	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-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	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

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	3.0 A	V _F	0.90				V
Maximum DC reverse current at rated DC blocking voltage		I _R		10			μA
	T _A = 25 °C T _A = 100 °C			500			
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A	t _{rr}		20			ns
Maximum reverse recovery time	I _F = 3.0 A, V _R = 30 V, dI/dt = 50 A/μs, I _{rr} = 10 % I _{RM}	t _{rr}		30			ns
	T _J = 25 °C T _J = 100 °C			50			
Maximum stored charge	I _F = 3.0 A, V _R = 30 V, dI/dt = 50 A/μs, I _{rr} = 10 % I _{RM}	Q _{rr}		15			nC
	T _J = 25 °C T _J = 100 °C			35			
Typical junction capacitance	4.0 V, 1 MHz	C _J		45			pF

Note:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	ES3A	ES3B	ES3C	ES3D	UNIT	
Typical thermal resistance ⁽¹⁾	R _{θJA} R _{θJL}		47			°C/W	
			12				

Note:

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

ORDERING INFORMATION (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 and reel	
ES3D-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel	
ES3DHE3/57T ⁽¹⁾	0.211	57T	850	7" diameter plastic tape and reel	
ES3DHE3/9AT ⁽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)

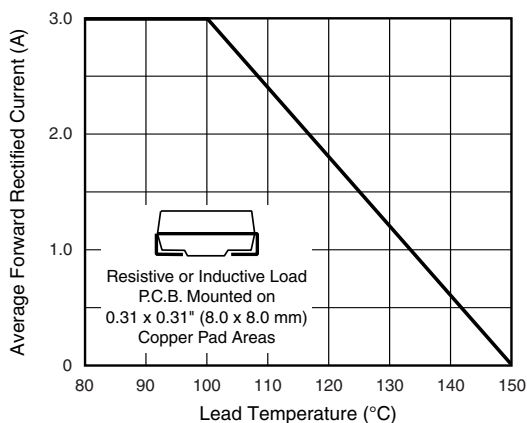


Figure 1. Maximum Forward Current Derating Curve

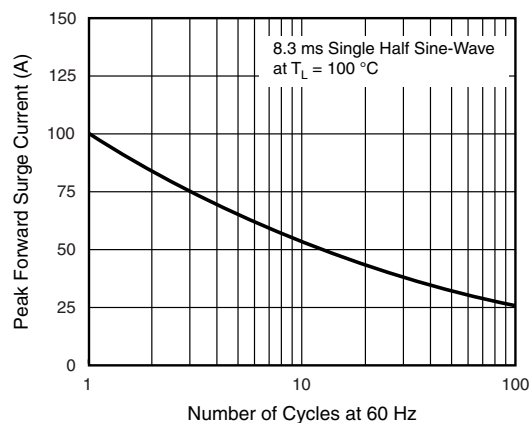


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

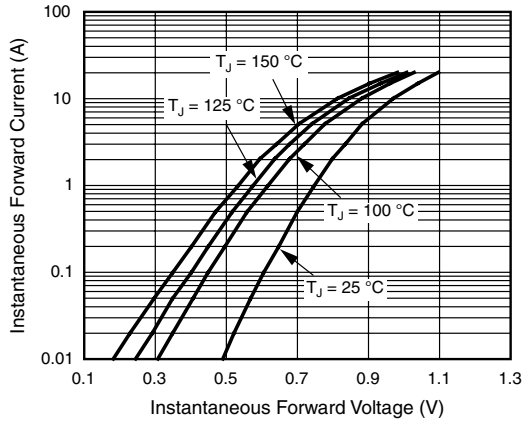


Figure 3. Typical Instantaneous Forward Characteristics

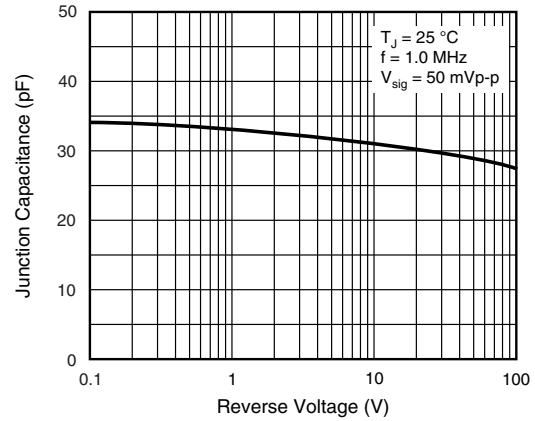


Figure 5. Typical Junction Capacitance

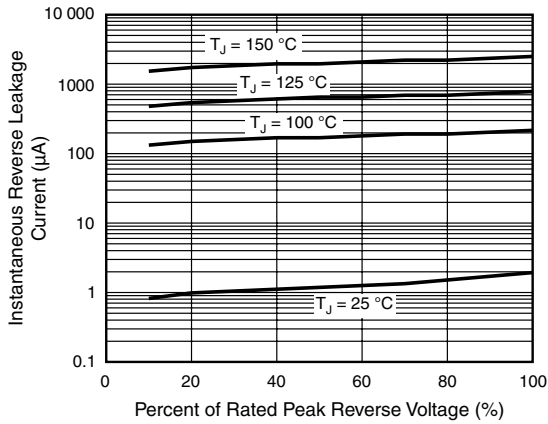
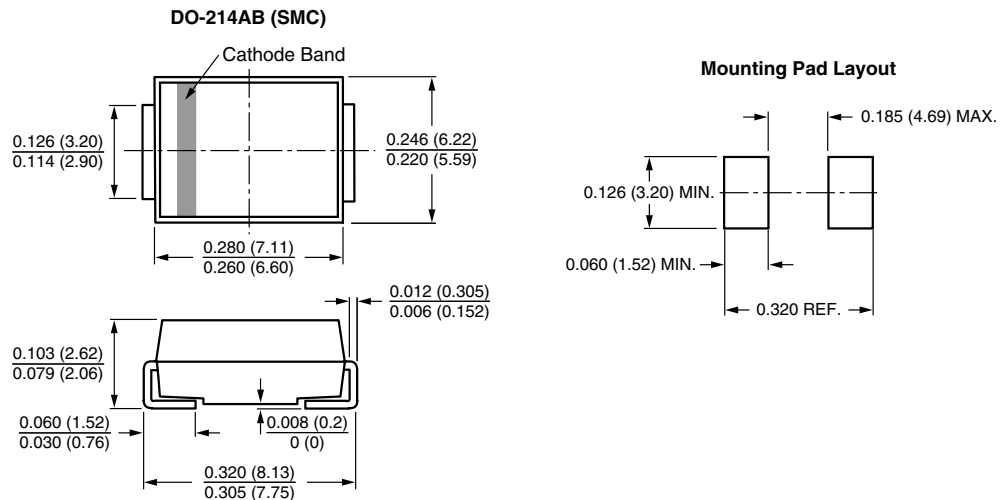


Figure 4. Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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