

Surface Mount Ultrafast Plastic Rectifier



DO-214AB (SMC)

FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

TYPICAL APPLICATIONS

For us in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

MECHANICAL DATA

Case: DO-214AB (SMC)

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

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

E3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	100 A
t_{rr}	20 ns
V_F at $I_F = 3.0$ A	0.74 V
T_J max.	150 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	U3B	U3C	U3D	UNIT
Device marking code		U3B	U3C	U3D	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	$T_M = 134$ °C	$I_{F(AV)}^{(1)}$			A
	$T_M = 125$ °C	$I_{F(AV)}^{(2)}$			
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

Notes

(1) Free air, mounted on recommended copper pad area

(2) Units mounted on P.C.B. with 0.47" x 0.47" (12 mm x 12 mm) copper pad areas

U3B, U3C, U3D

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 3.0 A	T _A = 25 °C	V _F ⁽¹⁾	0.85	0.90	V
		T _A = 100 °C		0.74	0.83	
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	10	μA
		T _A = 100 °C		250	500	
Reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A	T _A = 25 °C	t _{rr}	-	20	ns
		T _A = 25 °C		25	30	
		T _A = 100 °C		35	50	
Storage charge	I _F = 3.0 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}	T _A = 25 °C	Q _{rr}	9	15	nC
		T _A = 100 °C		22	35	
Typical junction capacitance	4.0 V, 1 MHz		C _J	25	-	pF

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	U3B	U3C	U3D	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	92			°C/W
	R _{θJM} ⁽¹⁾	10			

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance R_{θJA} - junction to ambient, R_{θJM} - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
U3D-E3/57T	0.239	57T	850	7" diameter plastic tape and reel
U3D-E3/9AT	0.239	9AT	3500	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

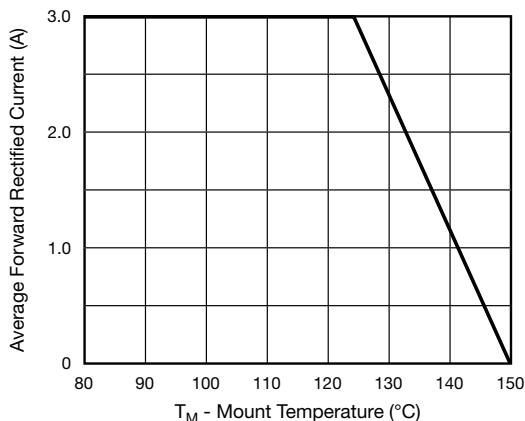


Fig. 1 - Maximum Forward Current Derating Curve

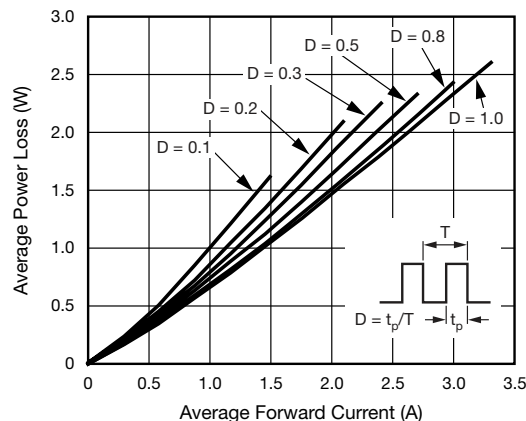


Fig. 2 - Forward Power Loss Characteristics

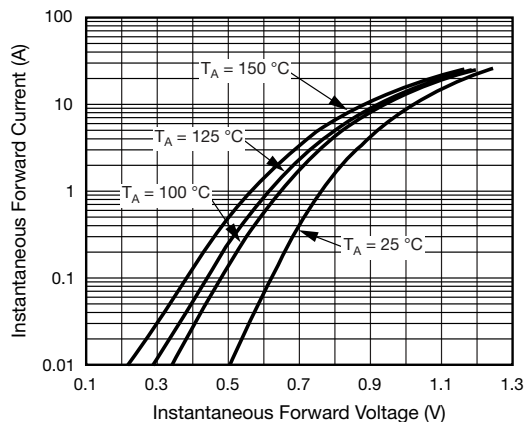


Fig. 3 - Typical Instantaneous Forward Characteristics

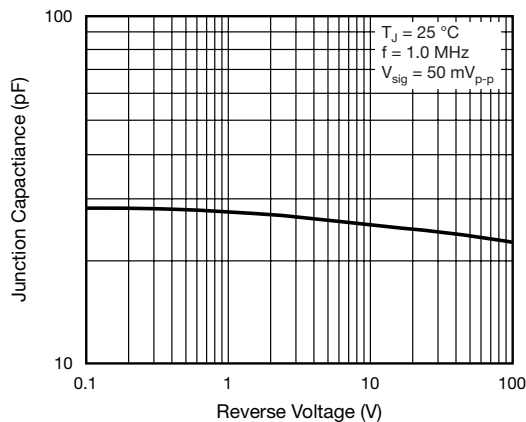


Fig. 5 - Typical Junction Capacitance

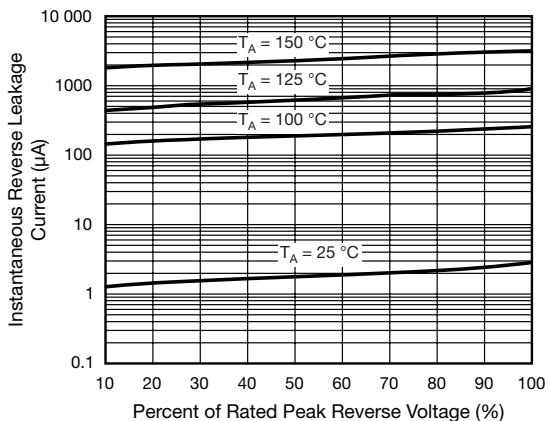


Fig. 4 - Typical Reverse Leakage Characteristics

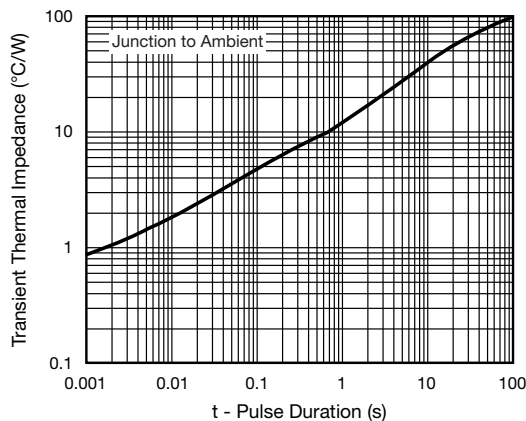
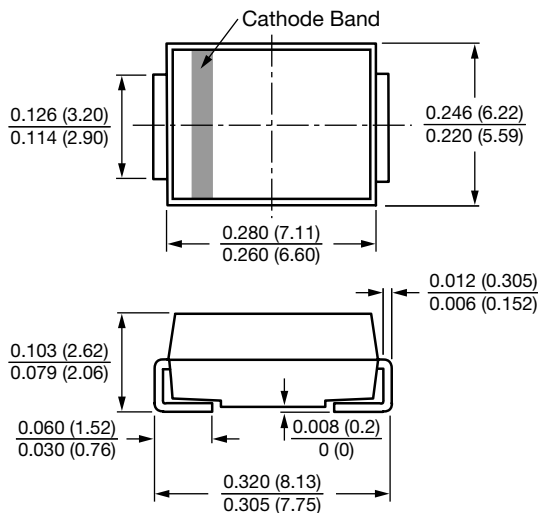


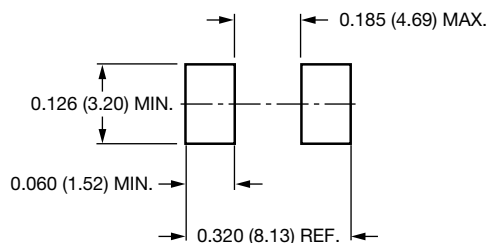
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout





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