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U3B-E3/9AT

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U3B-E3, U3C-E3, U3D-E3

Vishay General Semiconductor

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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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.

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
Package	DO-214AB (SMC)
Diode variations	Single die

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 2 whisker test

Polarity: Color band denotes cathode end

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)	2.0			A
	T_M = 125 °C	$I_{F(AV)}$ (2)	3.0			
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 PCB with 0.47" x 0.47" (12 mm x 12 mm) copper pad areas

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
	I_F = 3.0 A, dI/dt = 50 A/μs, V_R = 30 V, I_{rr} = 0.1 I_{RM}	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	$R_{\theta JA}$ (1)	92			°C/W
	$R_{\theta JM}$ (1)	10			

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - 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)

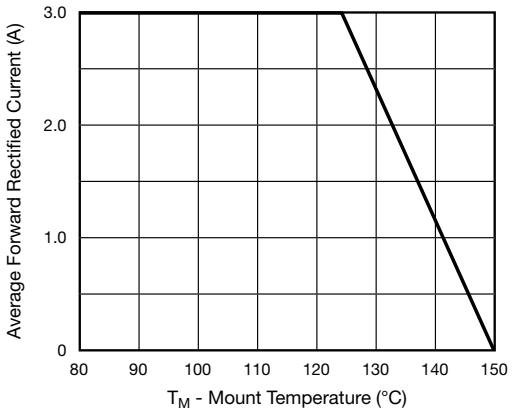


Fig. 1 - Maximum Forward Current Derating Curve

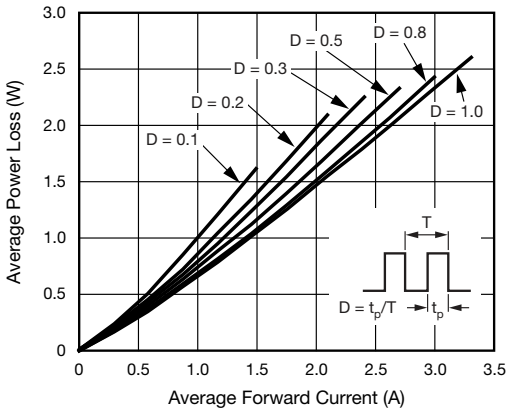


Fig. 2 - Forward Power Loss Characteristics

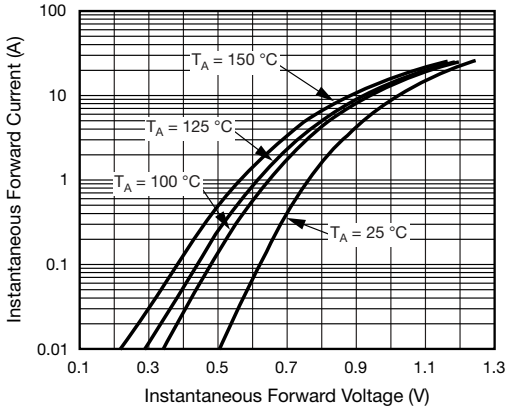


Fig. 3 - Typical Instantaneous Forward Characteristics

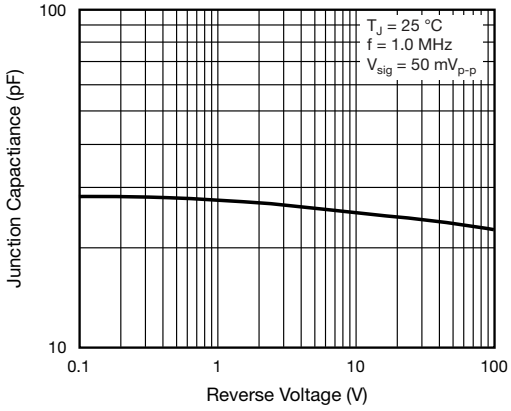


Fig. 5 - Typical Junction Capacitance

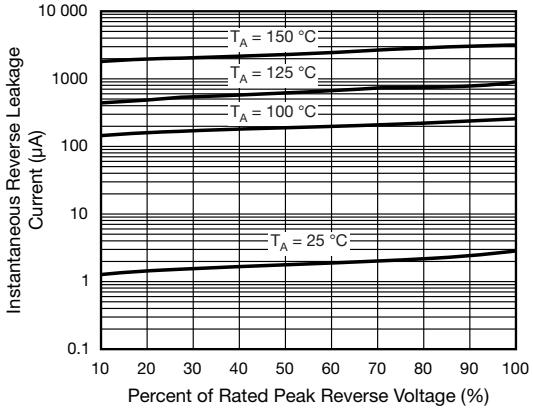


Fig. 4 - Typical Reverse Leakage Characteristics

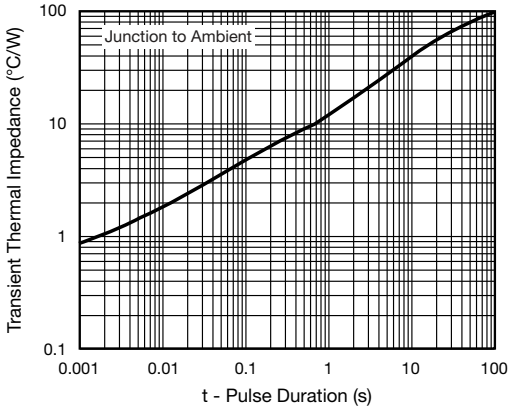
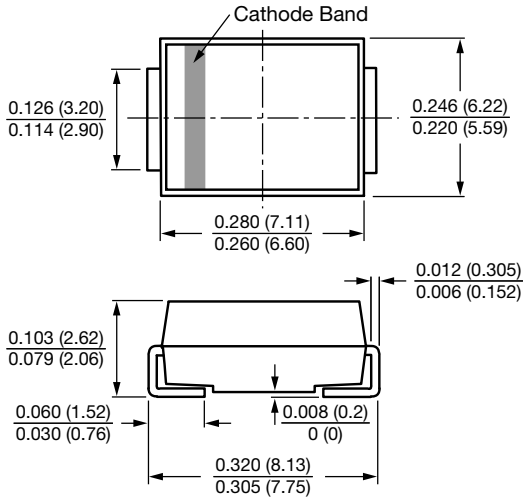


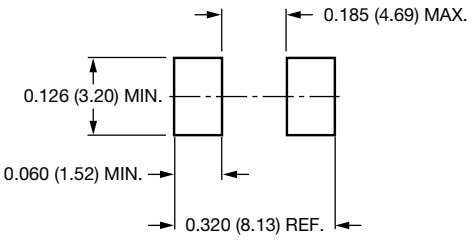
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout



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