

Surface Mount Ultrafast Plastic Rectifier


DO-214AA (SMB)

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 use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

MECHANICAL DATA

Case: DO-214AA (SMB)

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	50 A
t_{rr}	20 ns
V_F at $I_F = 2.0$ A	0.76 V
T_J max.	150 °C
Package	DO-214AA (SMB)
Diode variations	Single die

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	U2B	U2C	U2D	UNIT
Device marking code		U2B	U2C	U2D	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$		2.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}		50		A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150			°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 2\text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.86	0.90	V
		$T_A = 100^\circ\text{C}$		0.76	0.83	
Reverse current	Rated V_R	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	-	10	μA
		$T_A = 100^\circ\text{C}$		180	350	
Reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	$T_A = 25^\circ\text{C}$	t_{rr}	-	20	ns
	$I_F = 2.0\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1 I_{RM}$	$T_A = 25^\circ\text{C}$		27	-	
		$T_A = 100^\circ\text{C}$		35	-	
Storage charge	$I_F = 2.0\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1 I_{RM}$	$T_A = 25^\circ\text{C}$	Q_{rr}	9	-	nC
		$T_A = 100^\circ\text{C}$		19	-	
Typical junction capacitance	4.0 V, 1 MHz		C_J	16	-	pF

Notes

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

(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	U2B	U2C	U2D	UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾	105			$^\circ\text{C}/\text{W}$
	$R_{\theta JM}$ ⁽¹⁾	18			

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
U2D-E3/52T	0.099	52T	750	7" diameter plastic tape and reel
U2D-E3/5BT	0.099	5BT	3200	13" diameter plastic tape and reel

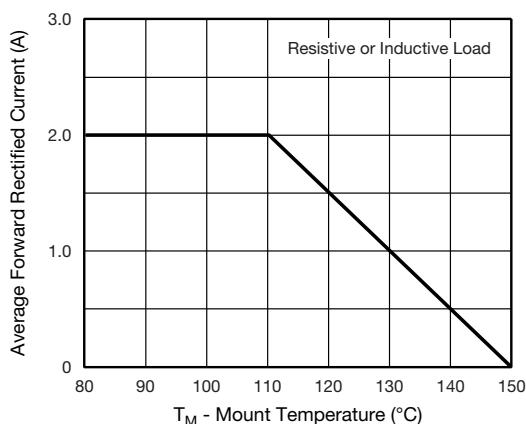
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

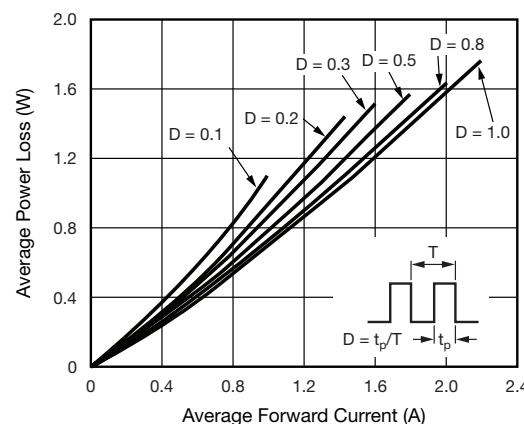


Fig. 2 - Forward Power Loss Characteristics

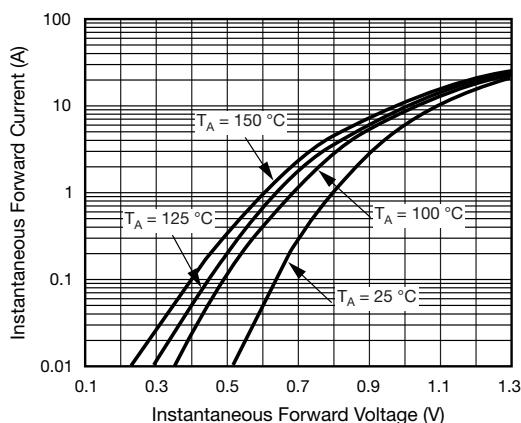


Fig. 3 - Typical Instantaneous Forward Characteristics

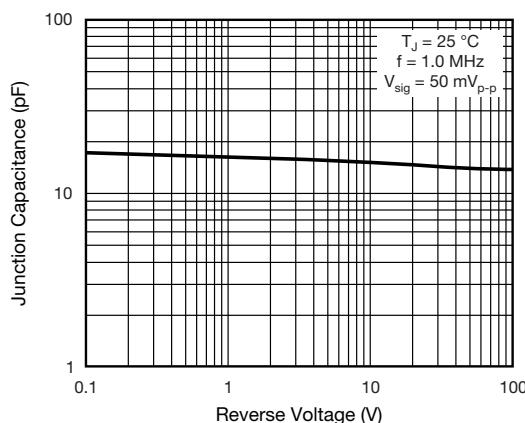


Fig. 5 - Typical Junction Capacitance

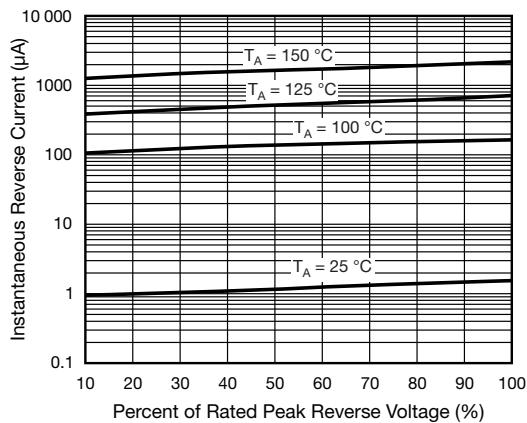


Fig. 4 - Typical Reverse Characteristics

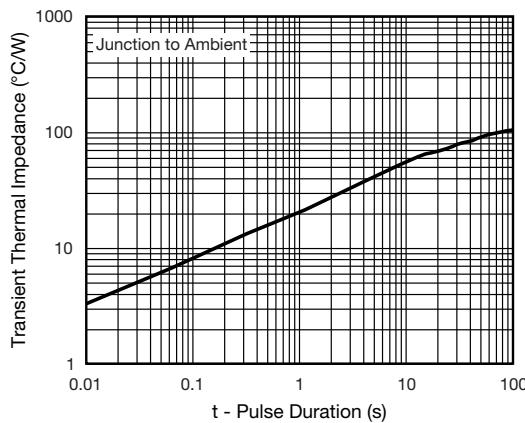
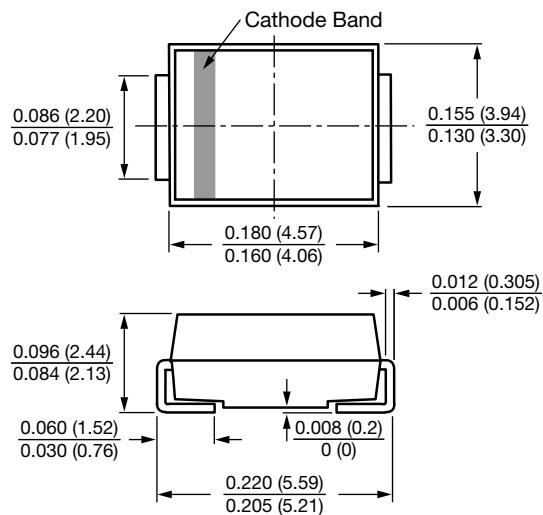


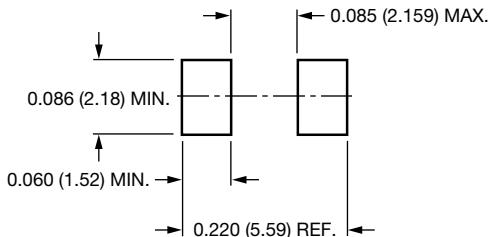
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout



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