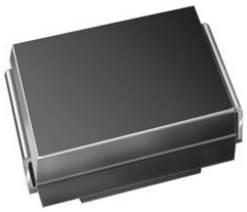
Surface Mount Ultrafast Plastic Rectifier



DO-214AA (SMB)

FEATURES

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

RoHS COMPLIANT
HALOGEN FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	600 V
I_{FSM}	90 A
t_{rr}	30 ns
V_F at I_F	1.0 V
T_J max.	150 °C
Package	DO-214AA (SMB)
Diode variations	Single die

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-214AA (SMB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 and HM3 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**	**USB260**	**UNIT**
Device marking code		U60	
Maximum repetitive peak reverse voltage	V_{RRM}	600	V
Maximum RMS voltage	V_{RMS}	420	V
Maximum DC blocking voltage	V_{DC}	600	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}	90	A
Non-repetitive avalanche energy at I_{AS} = 2.0 A, L = 10 mH, T_J = 25 °C	E_{AS}	20	mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Breakdown voltage	I_R = 10 µA	T_J = 25 °C	V_{BR}	600 (minimum)		V
Instantaneous forward voltage	I_F = 1 A	T_J = 25 °C	V_F (1)	1.25	-	V
	I_F = 2.0 A	T_J = 25 °C		1.5	1.6	
		T_J = 125 °C		1.0	1.1	
Maximum reverse current	V_R = 600 V	T_J = 25 °C	I_R (2)	-	5.0	µA
		T_J = 125 °C		30	100	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	30		ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	45		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**	**USB260**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	45	°C/W
	$R_{\theta JL}$ (1)	10	

Note

(1) Units mounted on PCB with 2.0" x 2.0" copper pad areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
USB260-M3/52T	0.096	52T	750	7" diameter plastic tape and reel
USB260-M3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
USB260HM3/52T	0.096	52T	750	7" diameter plastic tape and reel
USB260HM3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel

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

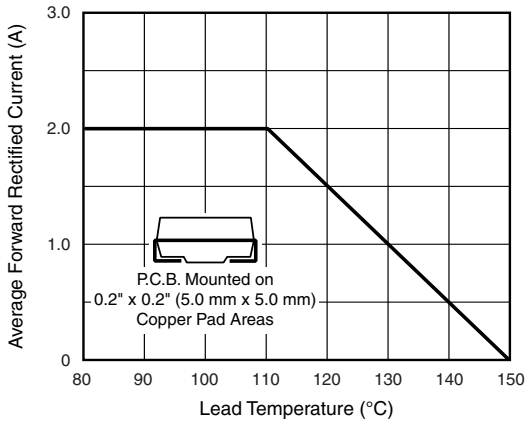

Fig. 1 - Maximum Forward Current Derating Curve

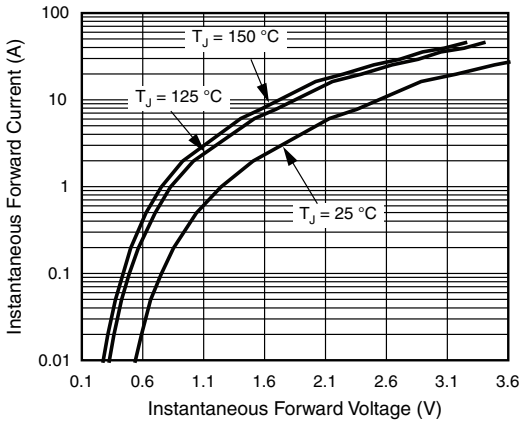

Fig. 4 - Typical Instantaneous Forward Characteristics

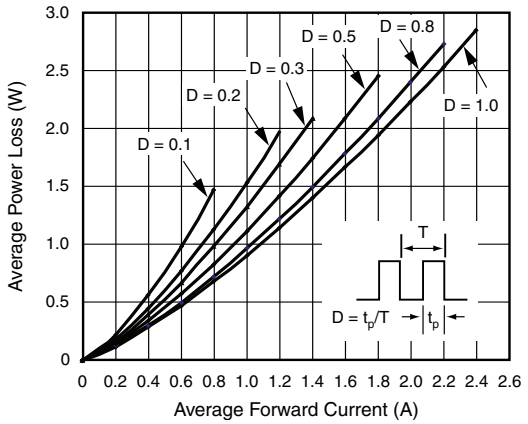

Fig. 2 - Forward Power Loss Characteristics

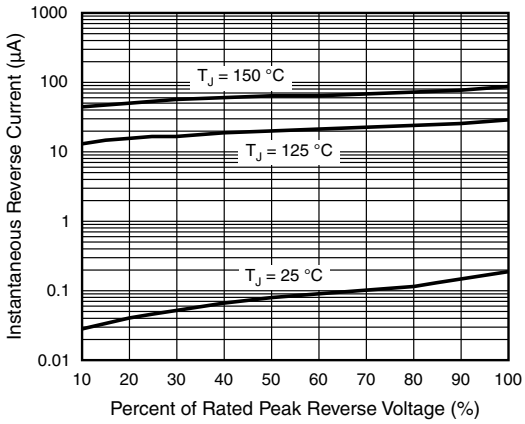

Fig. 5 - Typical Reverse Leakage Characteristics

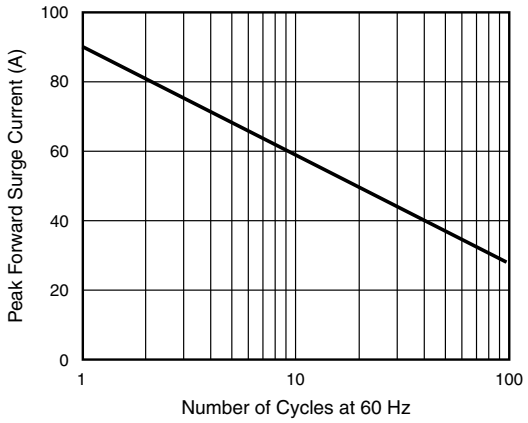

Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

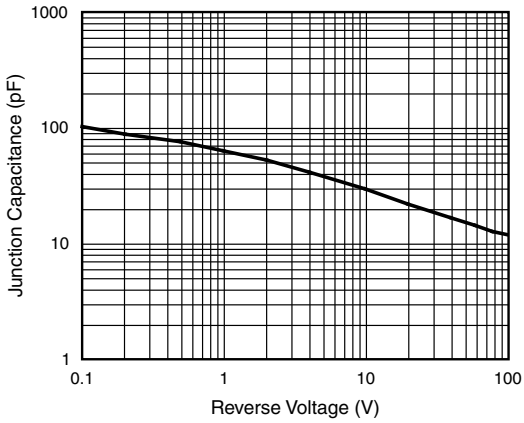

Fig. 6 - Typical Junction Capacitance

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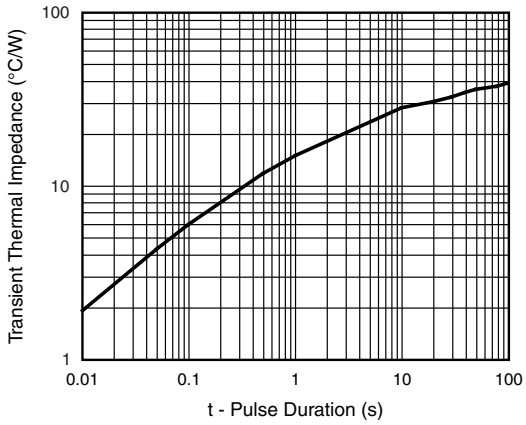
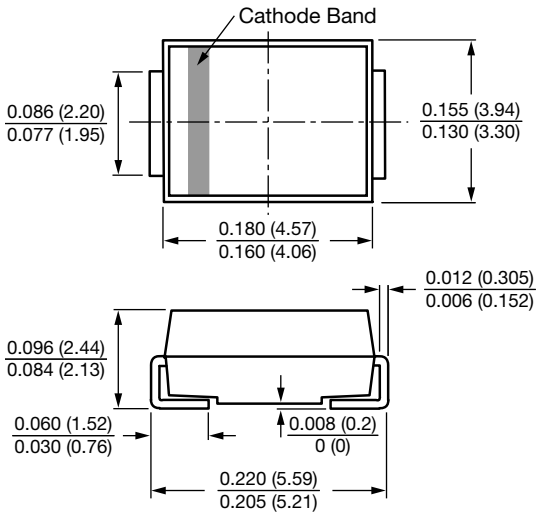


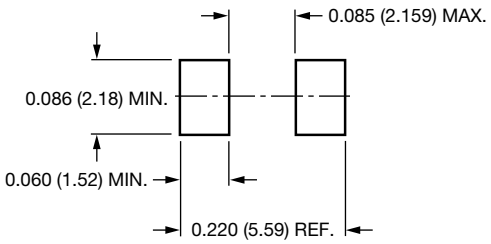
Fig. 7 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout



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