

Glass Passivated Ultrafast Plastic Rectifier

SUPERECTIFIER®

DO-204AL (DO-41)

FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Ideal for printed circuit boards
- Ultrafast reverse recovery time
- Low forward voltage drop
- Low leakage current
- Low switching losses, high efficiency
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


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-204AL, molded plastic over glass body
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant and 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	
$I_{F(AV)}$	1.0 A
V_{RRM}	600 V
I_{FSM}	30 A
t_{rr}	30 ns
V_F	1.3 V
T_J max.	175 °C
Package	DO-204AL (DO-41)
Diode variations	Single die

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
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 0.375" (9.5 mm) lead length at $T_L = 85\text{ °C}$ (fig. 1)	$I_{F(AV)}$	1.0	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	30	A
Non repetitive peak reverse energy	$E_{RSM}^{(1)}$	5.0	mJ
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +175	°C

Note

⁽¹⁾ Peak reverse energy measured with 8/20 μ s surge

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Minimum avalanche breakdown voltage	100 μA		V_{BR}	600	V
Maximum instantaneous forward voltage	1.0 A	$T_J = 25\text{ }^\circ\text{C}$	V_F	2.5	V
		$T_J = 175\text{ }^\circ\text{C}$		1.3	
Maximum DC reverse current at rated DC blocking voltage		$T_A = 25\text{ }^\circ\text{C}$	I_R	5.0	μA
		$T_A = 165\text{ }^\circ\text{C}$		150	
Max. reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	30	ns
Maximum junction capacitance	4.0 V, 1 MHz		C_J	45	pF
Maximum reverse recovery current slope	$I_F = 1\text{ A}$, $V_R = 30\text{ V}$, $di/dt = -1\text{ A}/\mu\text{s}$		di/dt	7.0	$\text{A}/\mu\text{s}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	70	$^\circ\text{C}/\text{W}$
	$R_{\theta JL}^{(2)}$	16	

Notes

- (1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, mounted on PCB with 0.5" x 0.5" (12 mm x 12 mm) copper pads
 (2) Thermal resistance from junction to lead at 0.375" (9.5 mm) lead length with both leads attached to heatsink

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SBYV26C-E3/54	0.339	54	5500	13" diameter paper tape and reel
SBYV26C-E3/73	0.339	73	3000	Ammo pack packaging

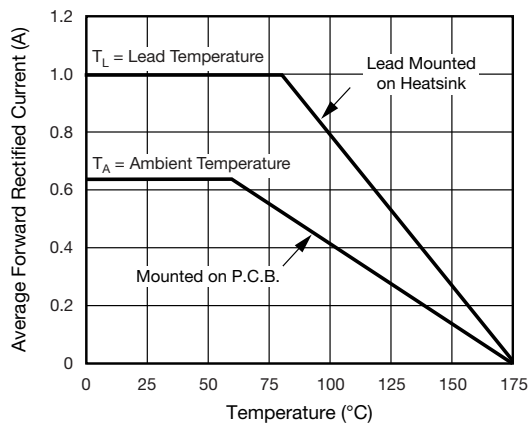
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

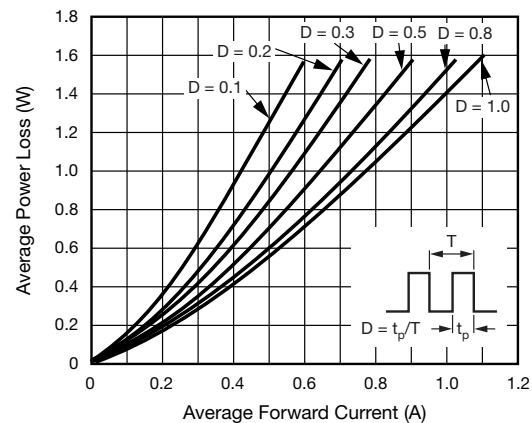


Fig. 2 - Forward Power Loss Characteristics

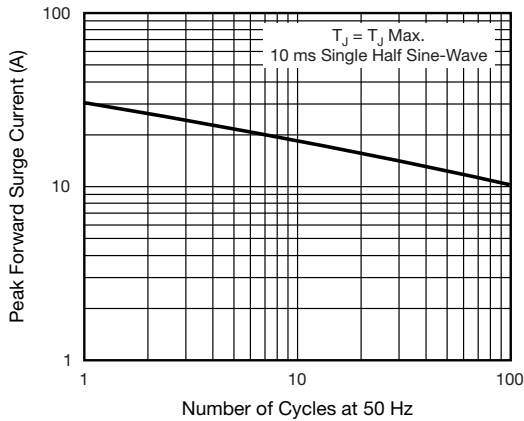


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

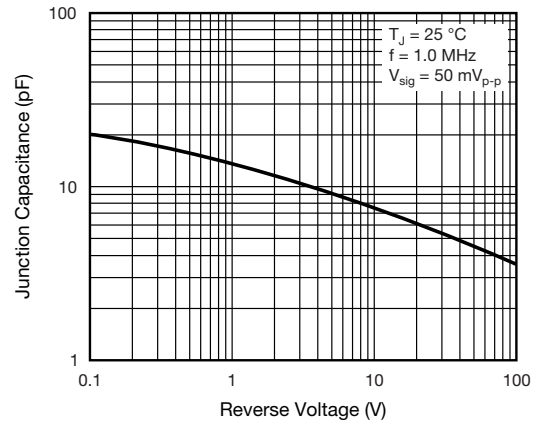


Fig. 6 - Typical Junction Capacitance

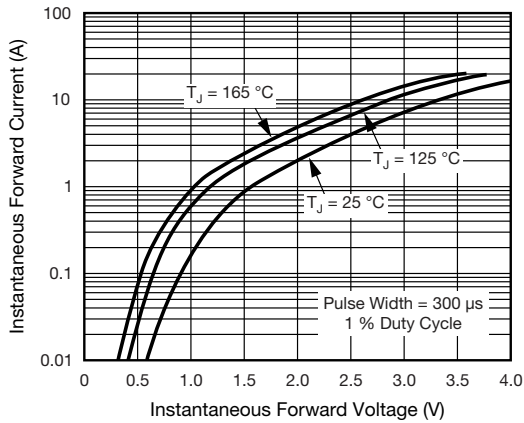


Fig. 4 - Typical Instantaneous Forward Characteristics

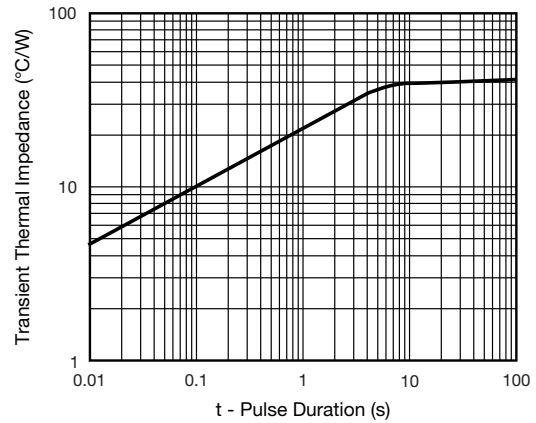


Fig. 7 - Typical Transient Thermal Impedance

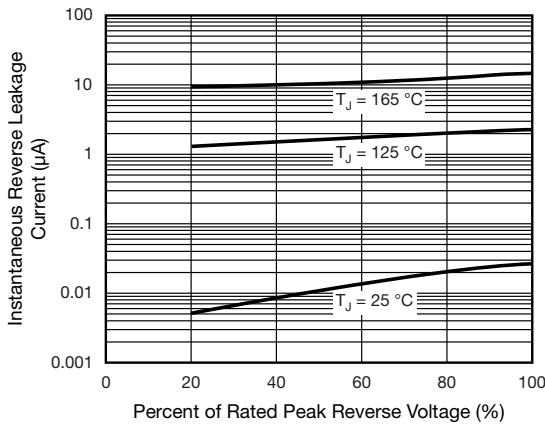
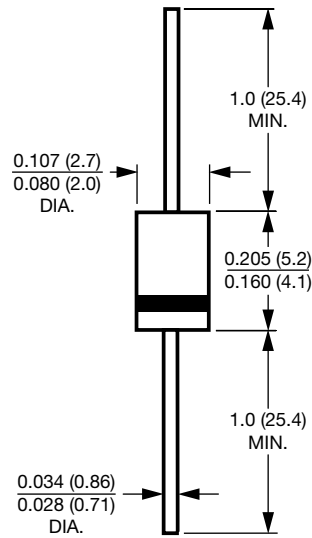


Fig. 5 - Typical Reverse Leakage Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)





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