

Miniature Ultrafast Plastic Rectifier


DO-204AL (DO-41)

FEATURES

- Glass passivated chip junction
- Ultrafast reverse recovery time
- Soft recovery characteristics
- Low forward voltage drop
- 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	50 V, 100 V, 150 V, 200 V
I_{FSM}	40 A
t_{rr}	15 ns
V_F	0.95 V
T_J max.	150 °C
Package	DO-204AL (DO-41)
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-204AL (DO-41)

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

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	UG1A	UG1B	UG1C	UG1D	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	40				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	VALUE	UNIT
Maximum instantaneous forward voltage	$I_F = 1.0 \text{ A}$		V_F ⁽¹⁾	0.95	V
Maximum DC reverse current at rated DC blocking voltage		$T_A = 25^\circ\text{C}$	I_R	5.0	μA
		$T_A = 100^\circ\text{C}$		200	
Maximum reverse recovery time	$I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$		t_{rr}	15	ns
Maximum reverse recovery time	$I_F = 1.0 \text{ A}$, $V_R = 30 \text{ V}$, $dI/dt = 50 \text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$	$T_J = 25^\circ\text{C}$	t_{rr}	25	ns
		$T_J = 100^\circ\text{C}$		35	
Maximum stored charge	$I_F = 1.0 \text{ A}$, $V_R = 30 \text{ V}$, $dI/dt = 50 \text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$	$T_J = 25^\circ\text{C}$	Q_{rr}	8.0	nC
		$T_J = 100^\circ\text{C}$		12	
Typical junction capacitance	4.0 V, 1 MHz		C_J	7	pF

Note

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

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	UG1A	UG1B	UG1C	UG1D	UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾	60				$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$ ⁽¹⁾	20				

Note

⁽¹⁾ Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UG1D-E3/54	0.334	54	5500	13" diameter paper tape and reel
UG1D-E3/73	0.334	73	3000	Ammo pack packaging

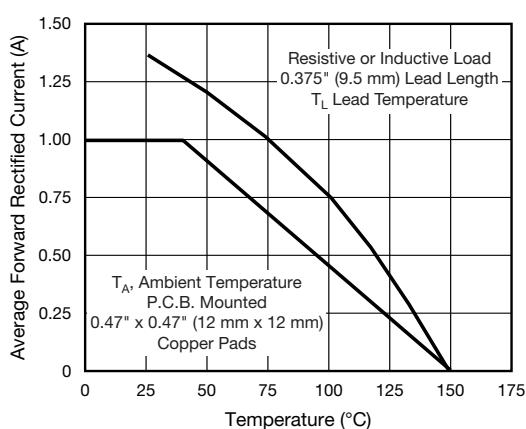
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curves

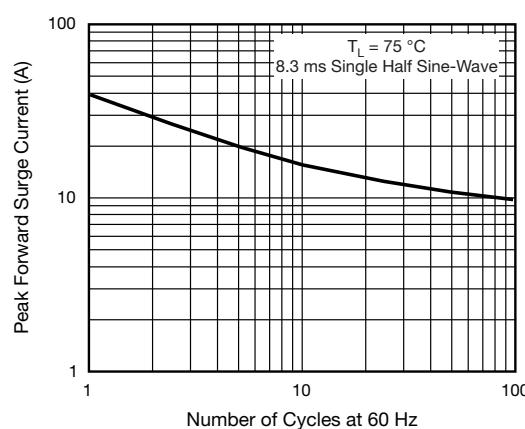


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

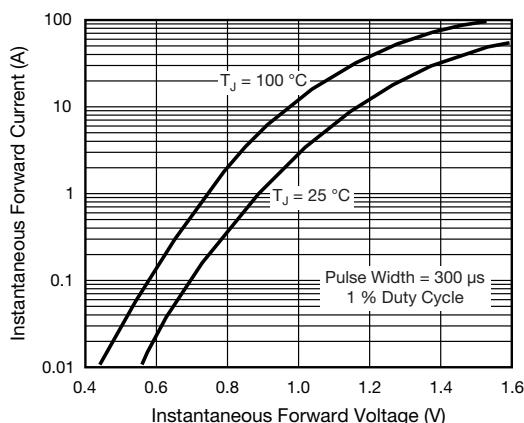


Fig. 3 - Typical Instantaneous Forward Characteristics

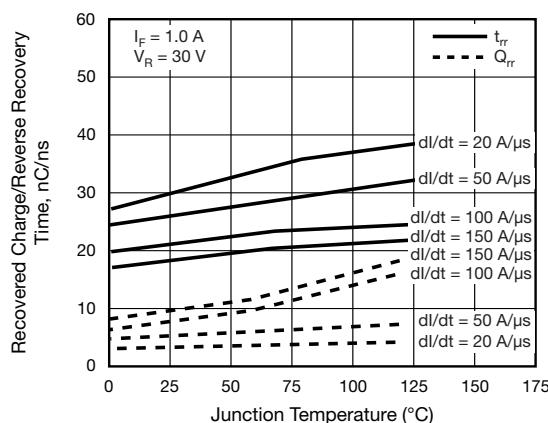


Fig. 5 - Reverse Switching Characteristics

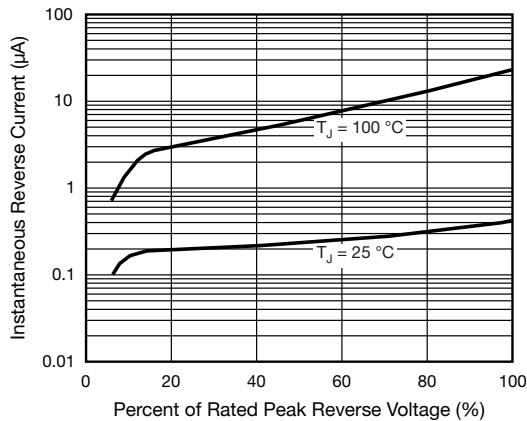


Fig. 4 - Typical Reverse Characteristics

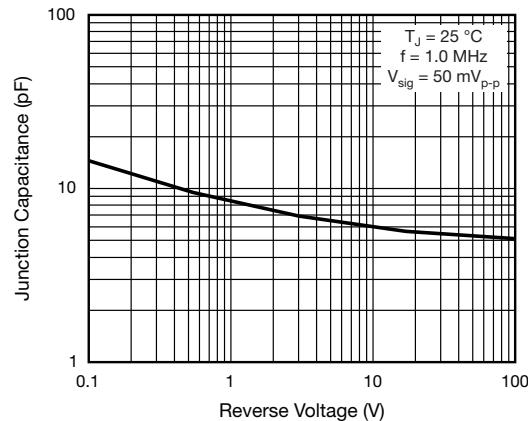
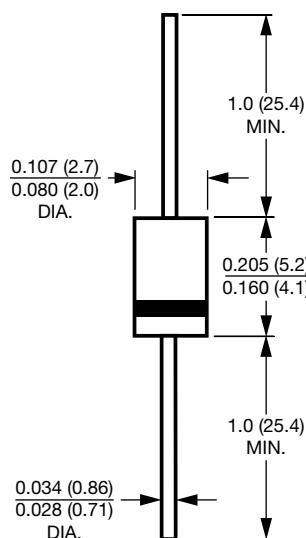


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)



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