

## 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](http://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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	$I_F = 1.0 \text{ A}$		$V_F$ <sup>(1)</sup>	0.95	V
Maximum DC reverse current at rated DC blocking voltage		$T_A = 25^\circ\text{C}$	$I_R$	5.0	$\mu\text{A}$
		$T_A = 100^\circ\text{C}$		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**

<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

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

**Note**

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

<b>ORDERING INFORMATION</b> (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

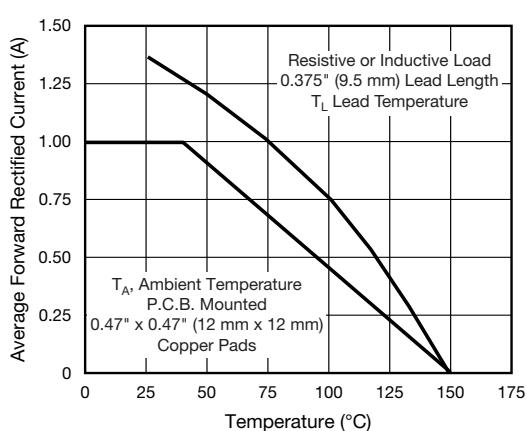
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curves

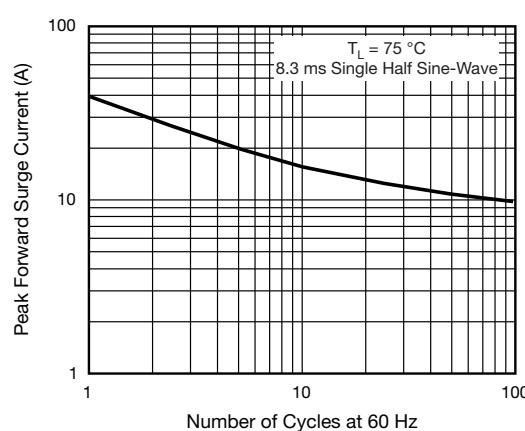
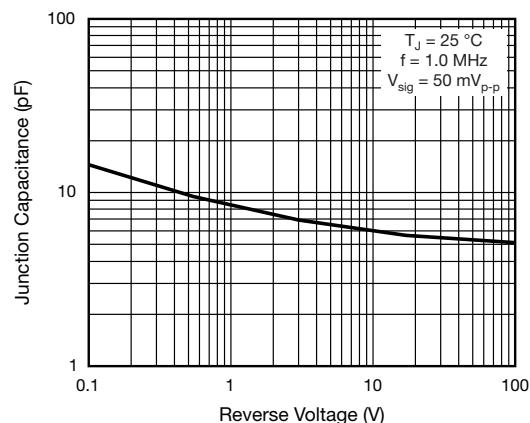
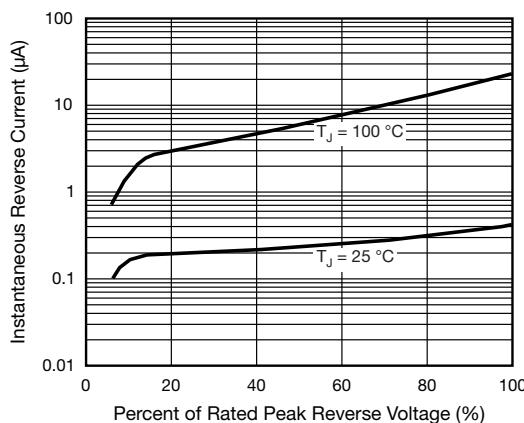
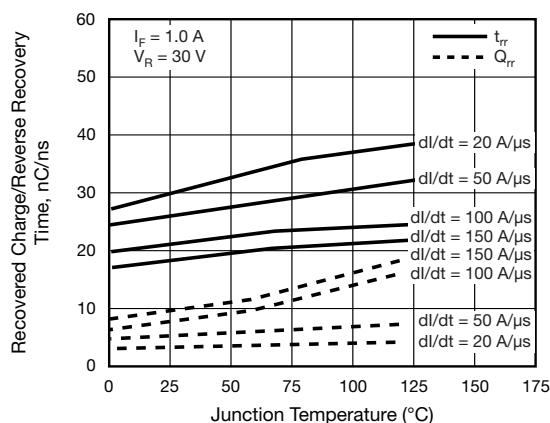
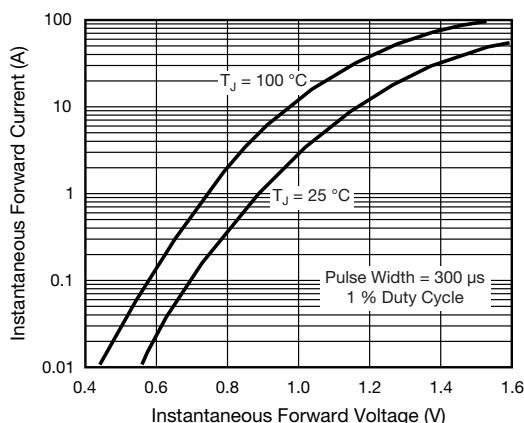
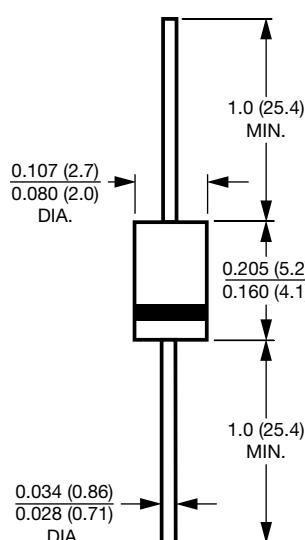


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current


**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-204AL (DO-41)**


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