

## Miniature Ultrafast Plastic Rectifier



DO-41 (DO-204AL)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

### 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)

### 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-41 (DO-204AL)

Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant, commercial grade  
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meet JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

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-41 (DO-204AL)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 1.0 A	V <sub>F</sub> <sup>(1)</sup>	0.95	V
Maximum DC reverse current at rated DC blocking voltage		I <sub>R</sub>	T <sub>A</sub> = 25 °C	5.0
			T <sub>A</sub> = 100 °C	200
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A	t <sub>rr</sub>	15	ns
Maximum reverse recovery time	I <sub>F</sub> = 1.0 A, V <sub>R</sub> = 30 V, dl/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub>	t <sub>rr</sub>	T <sub>J</sub> = 25 °C	25
			T <sub>J</sub> = 100 °C	35
Maximum stored charge	I <sub>F</sub> = 1.0 A, V <sub>R</sub> = 30 V, dl/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub>	Q <sub>rr</sub>	T <sub>J</sub> = 25 °C	8.0
			T <sub>J</sub> = 100 °C	12
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	7	pF

**Note**

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	UG1A	UG1B	UG1C	UG1D	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	60				°C/W
	R <sub>θJL</sub> <sup>(1)</sup>	20				

**Note**

(2) 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
UG1D-M3/54	0.334	54	5500	13" diameter paper tape and reel
UG1D-M3/73	0.334	73	3000	Ammo pack packaging

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

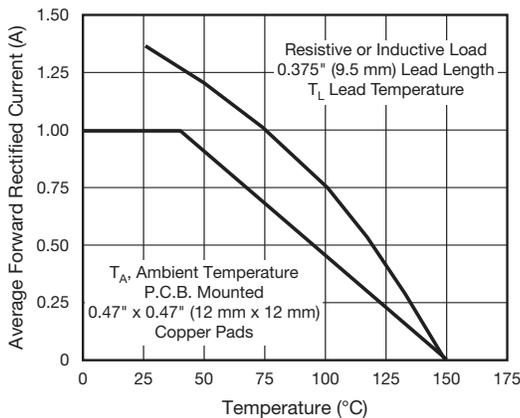


Fig. 1 - Forward Current Derating Curves

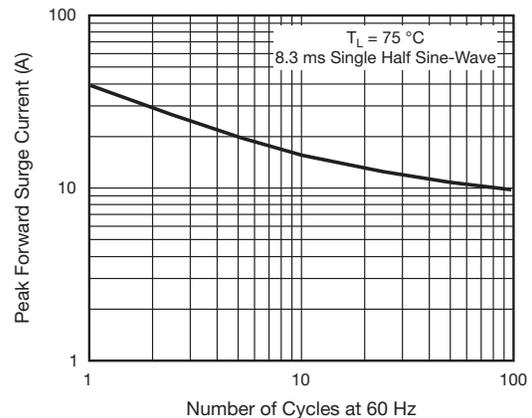


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

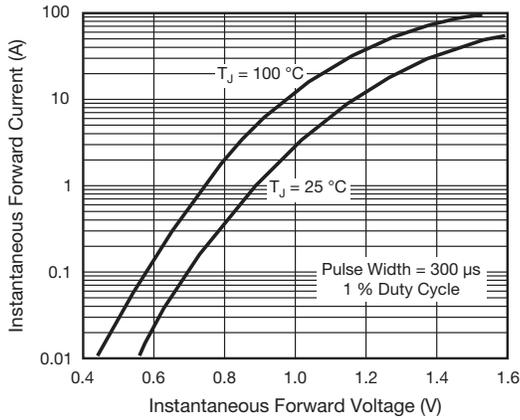


Fig. 3 - Typical Instantaneous Forward Characteristics

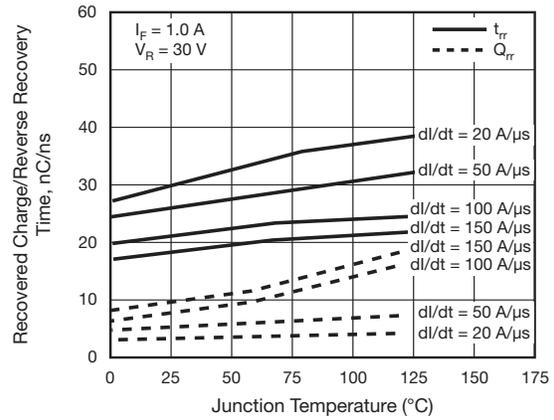


Fig. 5 - Reverse Switching Characteristics

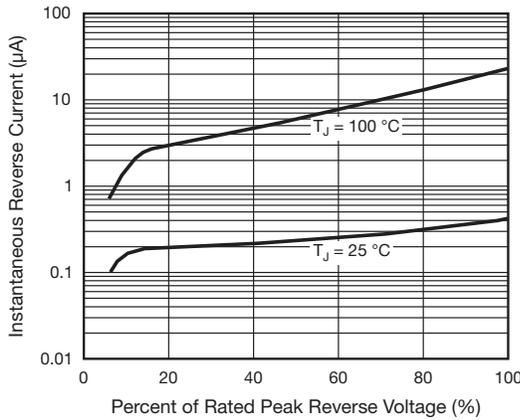


Fig. 4 - Typical Reverse Characteristics

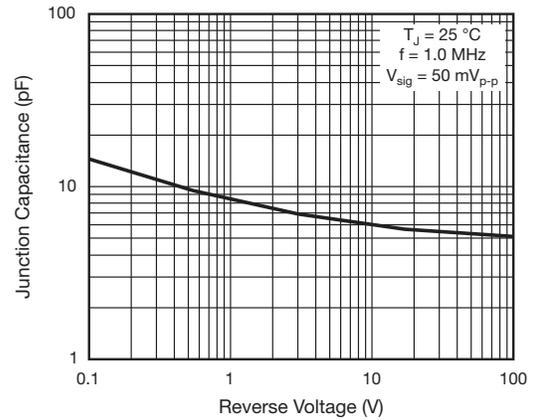
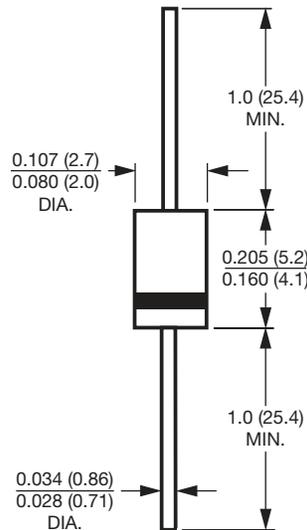


Fig. 6 - Typical Junction Capacitance

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

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





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