

Vishay General Semiconductor

COMPLIANT

HALOGEN

FREE

Miniature Ultrafast Plastic Rectifier



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					

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 <u>www.vishav.com/doc?99912</u>

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

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			Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	40			А	
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	VALUE	UNIT			
Maximum instantaneous forward voltage	I _F = 1.0 A		V _F ⁽¹⁾	0.95	V		
Maximum DC reverse current		T _A = 25 °C	_	5.0	- μΑ		
at rated DC blocking voltage		T _A = 100 °C	I _R	200			
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	15	ns		
Maximum reverse recovery time	$I_F = 1.0 \text{ A}, V_R = 30 \text{ V},$ $T_J = 25 \text{ °C}$		+	25	ns		
Maximum reverse recovery time	$dI/dt = 50 A/\mu s, I_{rr} = 10 \% I_{RM}$	T _J = 100 °C	- t _{rr}	35	115		
Maximum stored charge	$I_F = 1.0 \text{ A}, V_R = 30 \text{ V},$	$T_J = 25 ^{\circ}C$	Q _{rr}	8.0	nC		
	$dI/dt = 50 \text{ A/}\mu\text{s}, I_{rr} = 10 \% I_{RM}$ $T_{J} = 100 \text{ °C}$		Q _{rr}	12	110		
Typical junction capacitance	4.0 V, 1 MHz		CJ	7	pF		

Note

 $^{^{(1)}}$ Pulse test: 300 μs pulse width, 1 % duty cycle

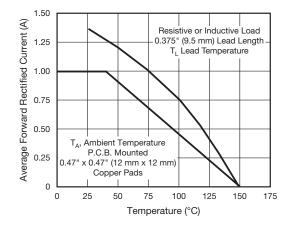
THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL UG1A UG1B UG1C UG1D UN				UNIT	
Typical thermal resistance	R _{0JA} (1)	60				°C/W
Typical thermal resistance	R _{0JL} (1)	20				C/VV

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 ($T_A = 25$ °C unless otherwise noted)





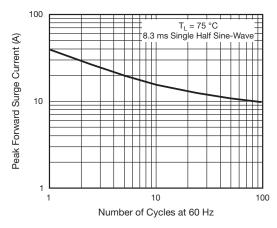


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



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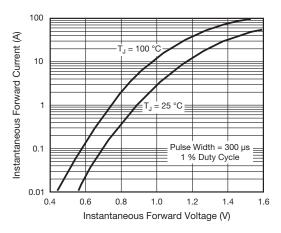


Fig. 3 - Typical Instantaneous Forward Characteristics

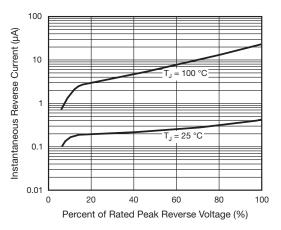


Fig. 4 - Typical Reverse Characteristics

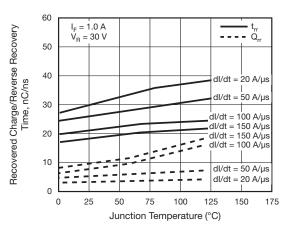


Fig. 5 - Reverse Switching Charateristics

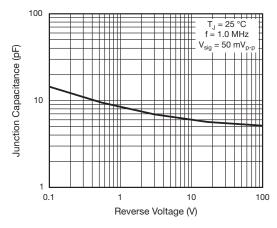
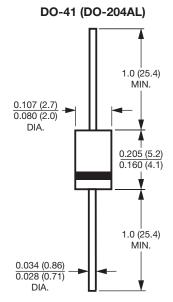


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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