

Glass Passivated Junction Plastic Rectifier

SUPERECTIFIER®

DO-204AL (DO-41)

PRIMARY CHARACTERISTICS	
Package	DO-204AL (DO-41)
$I_{F(AV)}$	1.0 A
V_{RRM}	50 V to 1000 V
I_{FSM} (8.3 ms sine-wave)	30 A
I_{FSM} (Square wave $t_p = 1$ ms)	45 A
I_R	5.0 μ A
V_F	1.1 V
T_J max.	175 °C
Diode variations	Single die

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for both consumer, and automotive applications.

FEATURES

- Superectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Low leakage current, typical I_R less than 0.1 μ A
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

MECHANICAL DATA

Case: DO-204AL (DO-41), molded epoxy over glass body
 Molding compound meets UL 94 V-0 flammability rating
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
 Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
 M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

Note

- For part numbers with "E" suffix, they are "-M3" commercial grade only

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)									
PARAMETER	SYMBOL	1N4001GP	1N4002GP	1N4003GP	1N4004GP	1N4005GP	1N4006GP	1N4007GP	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	$V_{RMS}^{(1)}$	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	$V_{DC}^{(1)}$	50	100	200	400	600	800	1000	V
Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 75$ °C	$I_{F(AV)}^{(1)}$	1.0							A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}^{(1)}$	30							A
Non-repetitive peak forward surge current square waveform $T_A = 25$ °C (fig. 3)	$t_p = 1$ ms	45							A
	$t_p = 2$ ms	35							
	$t_p = 5$ ms	30							
Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length $T_A = 75$ °C	$I_{R(AV)}^{(1)}$	30							μ A
Rating for fusing ($t < 8.3$ ms)	$I^2t^{(2)}$	3.7							A ² s
Operating junction and storage temperature range	$T_J, T_{STG}^{(1)}$	- 65 to + 175							°C

Notes

- (1) JEDEC® registered values
 (2) For device using on bridge rectifier application



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)										
PARAMETER	TEST CONDITIONS	SYMBOL	1N4001GP	1N4002GP	1N4003GP	1N4004GP	1N4005GP	1N4006GP	1N4007GP	UNIT
Maximum instantaneous forward voltage	1.0 A	V _F				1.1				V
Maximum DC reverse current at rated DC blocking voltage	T _A = 25 °C	I _R ⁽¹⁾				5.0				μA
	T _A = 125 °C					50				
Typical reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A	t _{rr}				2.0				μs
Typical junction capacitance	4.0 V, 1 MHz	C _J				8.0				pF

Note

⁽¹⁾ JEDEC® registered values

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)										
PARAMETER	SYMBOL	1N4001GP	1N4002GP	1N4003GP	1N4004GP	1N4005GP	1N4006GP	1N4007GP	UNIT	
Typical thermal resistance	R _{θJA} ⁽¹⁾				55				°C/W	
	R _{θJL} ⁽¹⁾				25					

Note

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

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
1N4004GP-M3/54	0.335	54	5500	13" diameter paper tape and reel	
1N4004GP-M3/73	0.335	73	3000	Ammo pack packaging	
1N4004GPHM3/54 ⁽¹⁾	0.335	54	5500	13" diameter paper tape and reel	
1N4004GPHM3/73 ⁽¹⁾	0.335	73	3000	Ammo pack packaging	

Note

⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

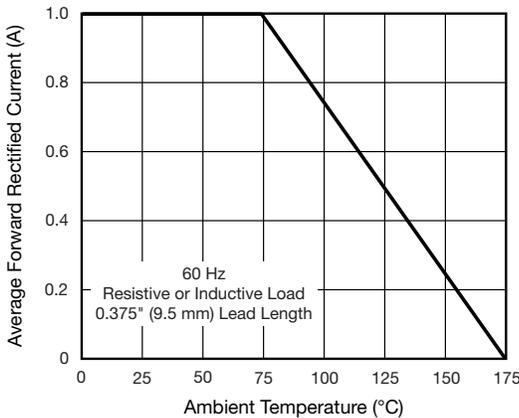


Fig. 1 - Forward Current Derating Curve

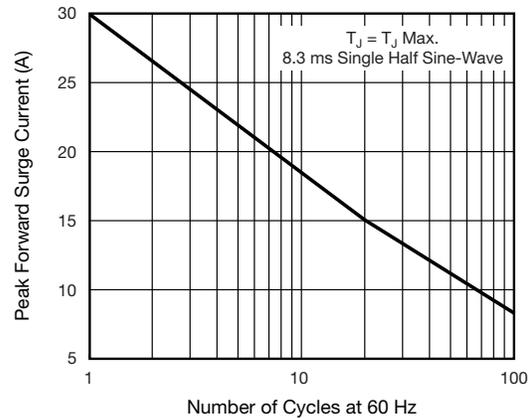


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

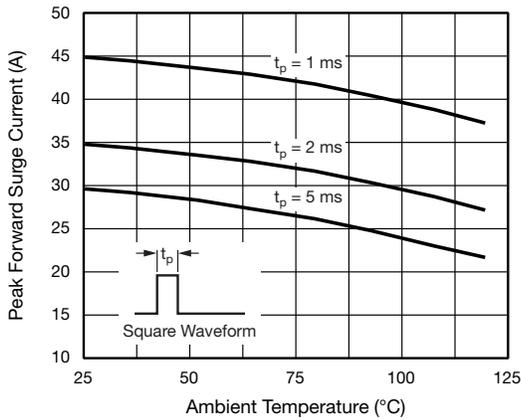


Fig. 3 - Non-Repetitive Peak Forward Surge Current

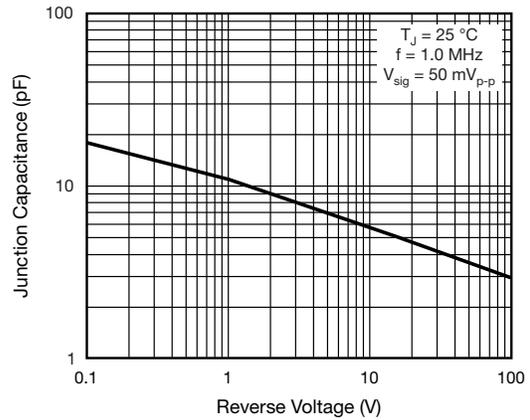


Fig. 6 - Typical Junction Capacitance

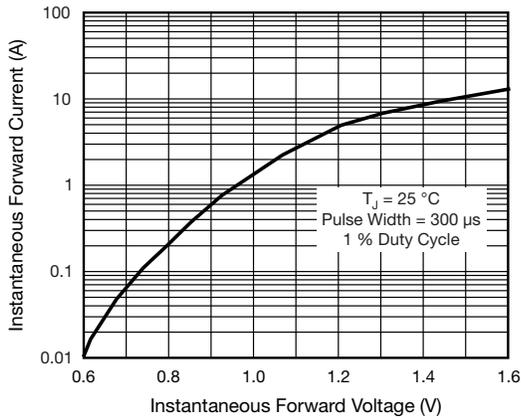


Fig. 4 - Typical Instantaneous Forward Characteristics

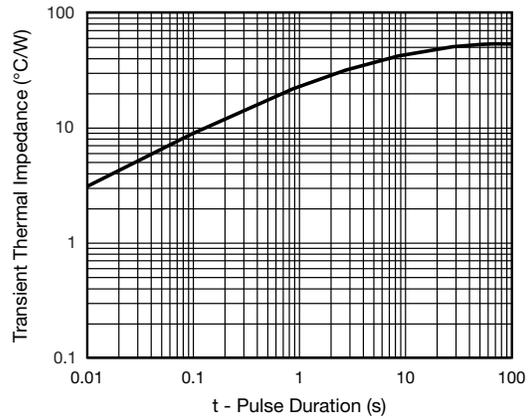


Fig. 7 - Typical Transient Thermal Impedance

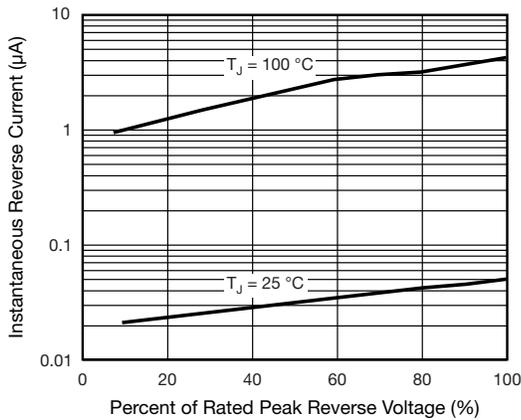
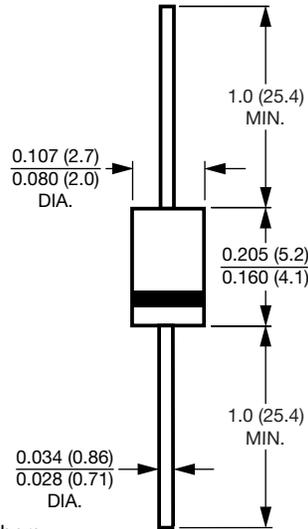


Fig. 5 - Typical Reverse Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)



Note

- Lead diameter is $\frac{0.026 (0.66)}{0.023 (0.58)}$ for suffix "E" part numbers



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