



Glass Passivated Junction Plastic Rectifier

SUPERECTIFIER®



DO-204AL (DO-41)

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.0 A
V_{RRM}	50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 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
Package	DO-204AL (DO-41)
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

MECHANICAL DATA

Case: DO-204AL (DO-41), molded epoxy over glass body
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

Note

- For part numbers with "E" suffix, they are "E3" 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							μA
Rating for fusing (t < 8.3 ms)	I ² t ⁽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** ($T_A = 25\text{ }^{\circ}\text{C}$ 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⁽³⁾ JEDEC® registered values**THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ 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							W

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-E3/54	0.335	54	5500	13" diameter paper tape and reel
1N4004GP-E3/73	0.335	73	3000	Ammo pack packaging
1N4004GPHE3/54 ⁽¹⁾	0.335	54	5500	13" diameter paper tape and reel
1N4004GPHE3/73 ⁽¹⁾	0.335	73	3000	Ammo pack packaging

Note⁽¹⁾ AEC-Q101 qualified**RATINGS AND CHARACTERISTICS CURVES** ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve



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

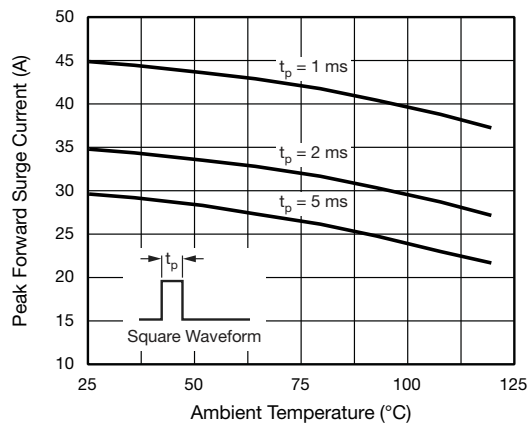


Fig. 3 - Non-Repetitive Peak Forward Surge Current

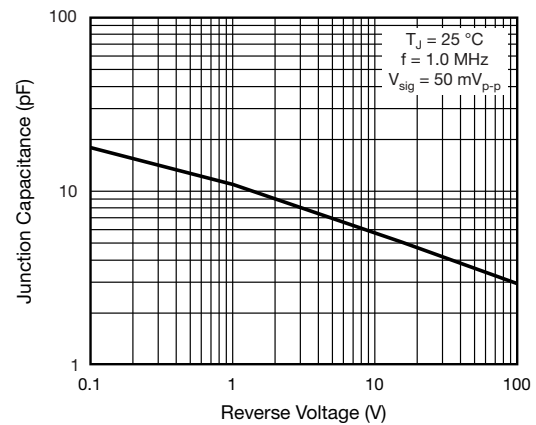


Fig. 6 - Typical Junction Capacitance

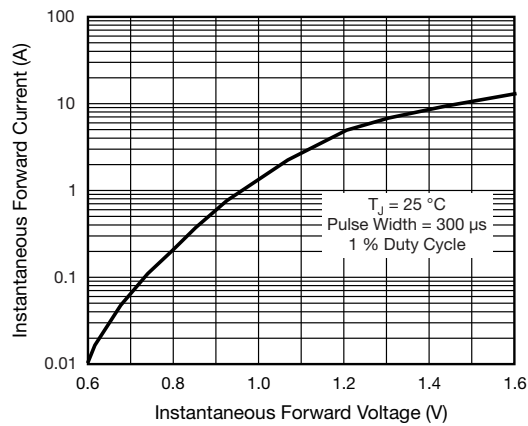


Fig. 4 - Typical Instantaneous Forward Characteristics

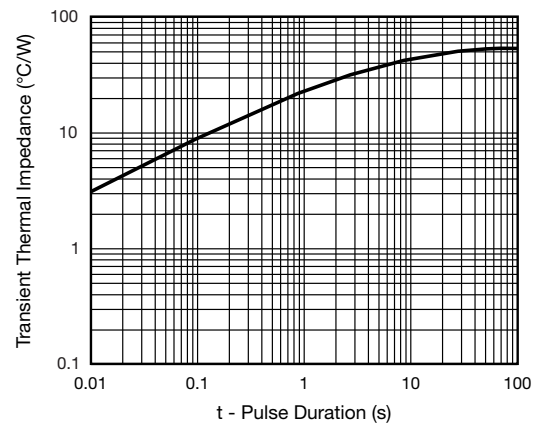


Fig. 7 - Typical Transient Thermal Impedance



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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