

General Purpose Plastic Rectifier


DO-204AL (DO-41)

FEATURES

- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

Note

- These devices are not AEC-Q101 qualified.

MECHANICAL DATA

Case: DO-204AL, molded epoxy body

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	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
V_F	1.1 V
I_R	5.0 μ A
T_J max.	150 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)											
PARAMETER	SYMBOL	1N4001	1N4002	1N4003	1N4004	1N4005	1N4006	1N4007	UNIT		
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V		
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V		
Maximum DC blocking voltage	V_{DC}	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	$I_{F(AV)}$	1.0						A			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	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 $T_L = 75$ °C	$I_R(AV)$	30						μA			
Rating for fusing ($t < 8.3$ ms)	I^2t (1)	3.7						A ² s			
Operating junction and storage temperature range	T_J, T_{STG}	- 50 to + 150						°C			

Note

(1) For device using on bridge rectifier application

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	1N4001	1N4002	1N4003	1N4004	1N4005	1N4006	1N4007	UNIT
Maximum instantaneous forward voltage	1.0 A	V_F				1.1				V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$	I_R			5.0					μA
					50					
Typical junction capacitance	4.0 V, 1 MHz	C_J				15				pF

 THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	1N4001	1N4002	1N4003	1N4004	1N4005	1N4006	1N4007	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$			50					$^\circ\text{C/W}$
	$R_{\theta JL}^{(1)}$			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
1N4004-E3/54	0.33	54	5500	13" diameter paper tape and reel
1N4004-E3/73	0.33	73	3000	Ammo pack packaging

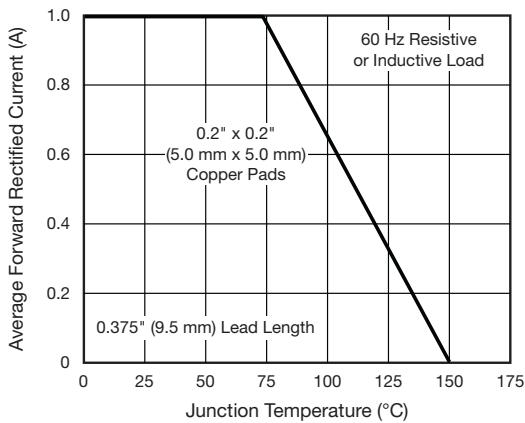
RATINGS AND CHARACTERISTICS CURVES $(T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

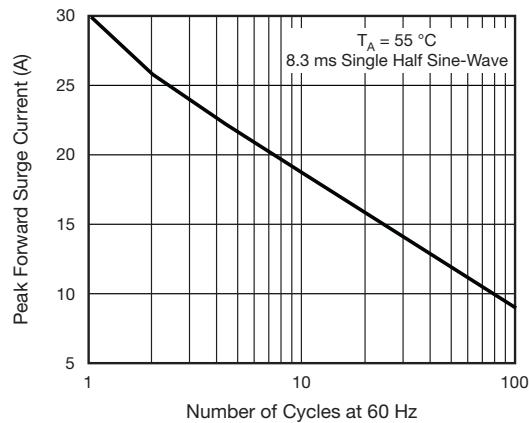


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

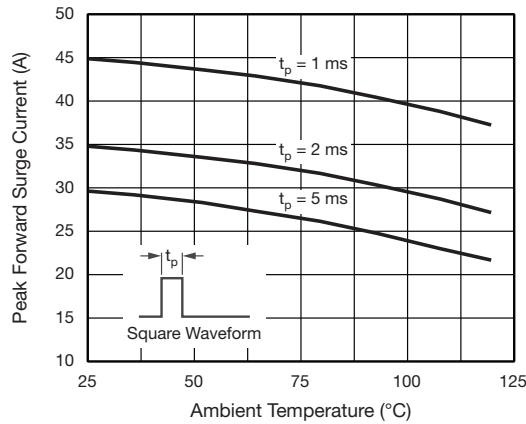


Fig. 3 - Non-Repetitive Peak Forward Surge Current

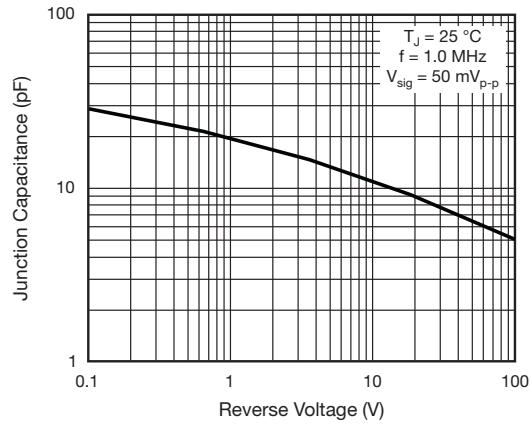


Fig. 6 - Typical Junction Capacitance

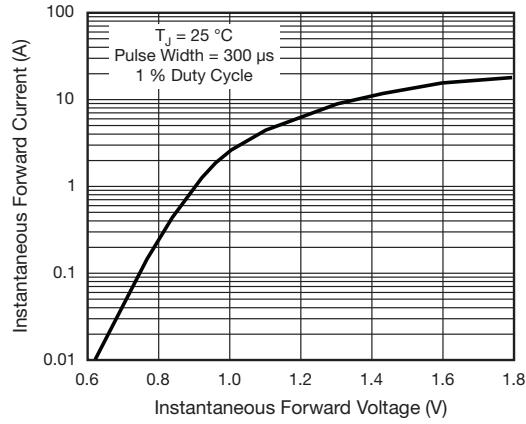


Fig. 4 - Typical Instantaneous Forward Characteristics

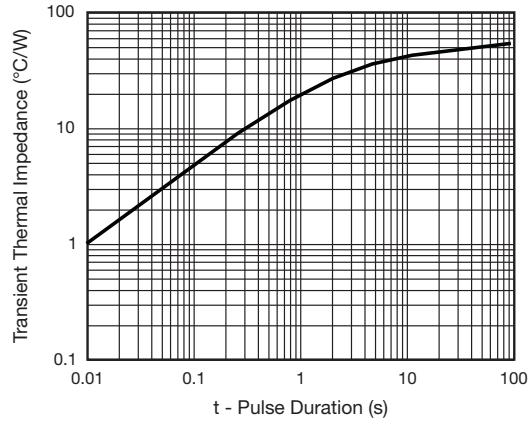


Fig. 7 - Typical Transient Thermal Impedance

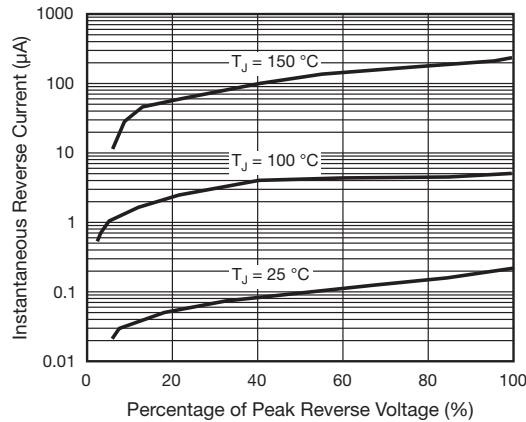
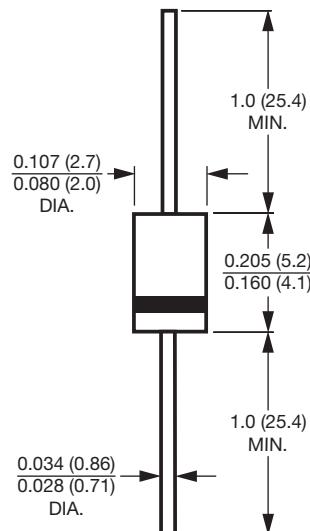


Fig. 5 - Typical Reverse Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)

**Note**

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

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