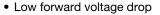


## **General Purpose Plastic Rectifier**



PRIMARY CHARACTERISTICS									
I <sub>F(AV)</sub> 1.0 A									
V <sub>RRM</sub>	50 V to 1000 V								
I <sub>FSM</sub> (8.3 ms sine-wave)	30 A								
I <sub>FSM</sub> (square wave t <sub>p</sub> = 1 ms)	45 A								
V <sub>F</sub>	1.1 V								
I <sub>R</sub>	5.0 μA								
T <sub>J</sub> max.	150 °C								

#### **FEATURES**





• 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

#### **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

MAXIMUM RATINGS (T <sub>A</sub> = 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 <sub>RMS</sub>	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 0.375" (9.5 mm) lead length at $T_A = 7$	I <sub>F(AV)</sub>	1.0							Α	
Peak forward surge current 8.3 ms s sine-wave superimposed on rated lo	I <sub>FSM</sub>	30						А		
Non-repetitive peak forward	t <sub>p</sub> = 1 ms		45							
surge current square waveform	t <sub>p</sub> = 2 ms	I <sub>FSM</sub>	35							
$T_A = 25$ °C (fig. 3) $t_p = 5 \text{ ms}$			30							
Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length $T_L=75\ ^{\circ}C$		I <sub>R(AV)</sub>	30							μΑ
Rating for fusing (t < 8.3 ms)		I <sup>2</sup> t <sup>(1)</sup>	3.7							A <sup>2</sup> s
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	- 50 to + 150						°C	

#### Note

(1) For device using on bridge rectifier appliaction



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)											
PARAMETER	TEST	CONDITIONS	SYMBOL	1N4001	1N4002	1N4003	1N4004	1N4005	1N4006	1N4007	UNIT
Maximum instantaneous forward voltage	1.0 /	A	V <sub>F</sub>	1.1					٧		
Maximum DC reverse current		T <sub>A</sub> = 25 °C	I_	5.0					μA		
at rated DC blocking voltage		T <sub>A</sub> = 125 °C	IR		50					μΑ	
Typical junction capacitance	4.0 \	/, 1 MHz	CJ	15					pF		

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	SYMBOL 1N4001 1N4002 1N4003 1N4004 1N4005 1N4006 1N4007 UI						UNIT		
Typical thormal registance	R <sub>0JA</sub> (1)	50							°C/W
Typical thermal resistance	R <sub>0</sub> JL (1)	25							C/VV

#### Note

<sup>(1)</sup> 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<sub>A</sub> = 25 °C unless otherwise noted)

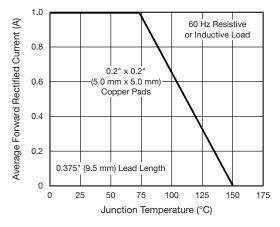


Fig. 1 - Forward Current Derating Curve

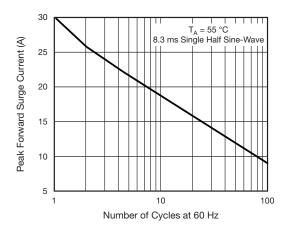


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current



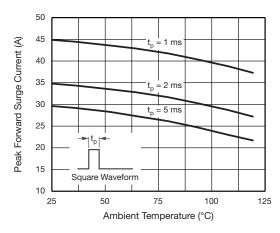


Fig. 3 - Non-Repetitive Peak Forward Surge Current

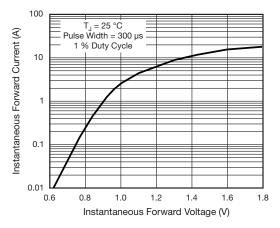


Fig. 4 - Typical Instantaneous Forward Characteristics

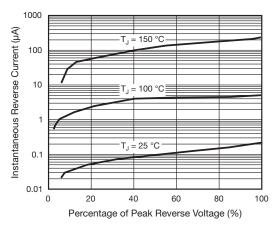


Fig. 5 - Typical Reverse Characteristics

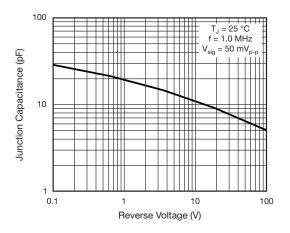


Fig. 6 - Typical Junction Capacitance

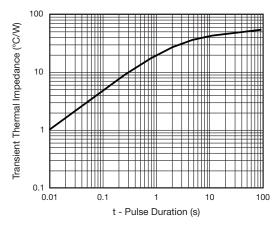
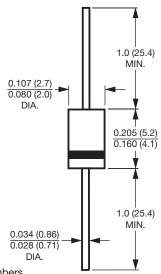


Fig. 7 - Typical Transient Thermal Impedance



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





Note

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



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Vishay

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1N4002/1 1N4002GP/1 1N4001GP/1 1N4004GP/1 1N4003GP/1 1N4004/4 1N4001/4 1N4005/4 1N4001-E3/23

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