1.0Amp Glass Passivated Standard Rectifiers

1N4001~1N4007

DO-41P

DO-41P Axial Leaded
Plastic Package
RoHS compliant

DEVICE MARKING

Full part number e.g. **1N4007**

FEATURE:

1. The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
2. Glass passivated Junction chip
3. Low reverse leakage
4. High forward surge current capability
5. High temperature soldering guaranteed 250 C/10 seconds at terminals
6. This product is available in AEC-Q101 Qualified and PPAP Capable also.

Note: For AEC-Q101 qualified products, please use suffix -AQ in the part number while ordering.

APPLICATIONS:

1. AC Mains rectifications
2. Power supplies
3. Polarity protection
4. inverters, converters.
5. Freewheeling diodes application.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	1N 4001	1N 4002	1N 4003	1N 4004	1N 4005	1N 4006	1N 4007	UNIT
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM}, V_{RWM} V_R	50	100	200	400	600	800	1000	V
Non-Repetitive Peak Reverse Voltage (half wave, single phase, 60Hz)	V_{RSM}	60	120	240	480	720	1000	1200	V
RMS Reverse Voltage	$V_{R(RMS)}$	35	70	140	280	420	560	700	V
Average Rectified Current at Half Wave 0.375" Lead Length at T_a = 75°C	I_O	1.0							A
Non-Repetitive Peak Surge Current 8.3ms single half sine-wave superimposed on rated Load	I_{FSM}	30							A
Thermal Resistance from Junction to Ambient in free air	$R_{th\ (j-a)}$	50							ºC/W
Storage Temperature Range	T_{stg}	-55 to +150							ºC
Operating Junction Temperature	T_j	-55 to +125							ºC

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Maximum Instantaneous Forward Voltage Drop		V_F	I_F = 1.0A	--	--	1.1	V
Maximum Full-Cycle Average Forward Voltage Drop		$V_{F(AV)}$	I_O=1.0A, T_a=75ºC	--	--	0.8	V
Maximum Reverse Current	T_A = 25 ºC	I_R	at rated V_R	--	--	5	µA
	T_A = 125 ºC			--	--	50	µA
Maximum Full-Cycle Average Reverse Current		$I_{R(AV)}$	I_O=1.0A, T_a=75°C	--	--	30	µA
Junction Capacitance		C_j	V_R = 4V, f = 1MHz	--	15	--	pF

TYPICAL CHARACTERISTICS CURVES

Fig 1: Forward Current Derating Curve

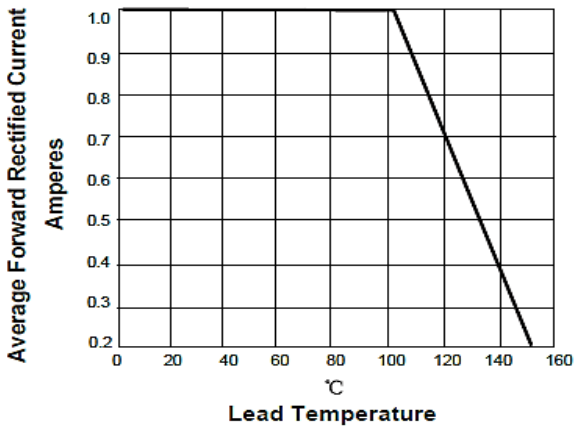


Fig 4: Maximum Non-Repetitive Peak Forward Surge Current

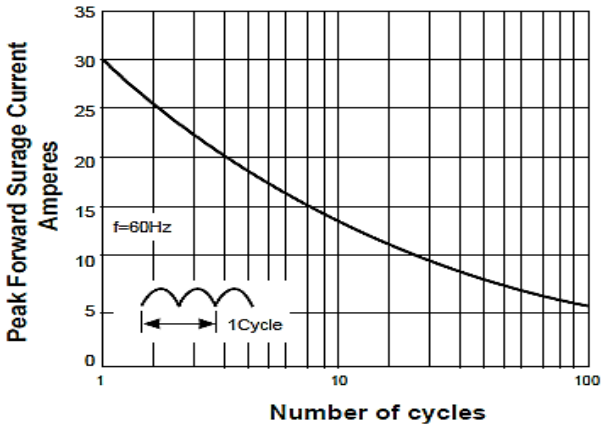


Fig 2: Typical Instantaneous Forward Characteristics

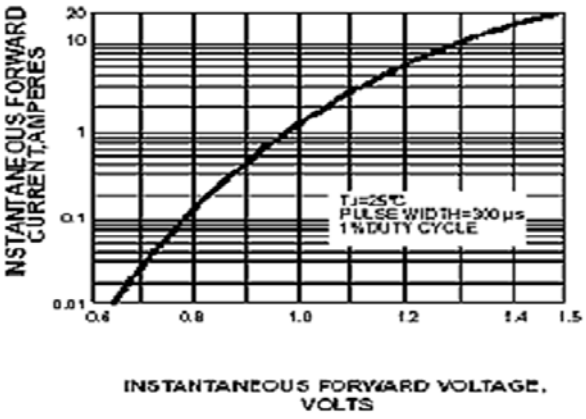


Fig 5: Typical Reverse Leakage Characteristics

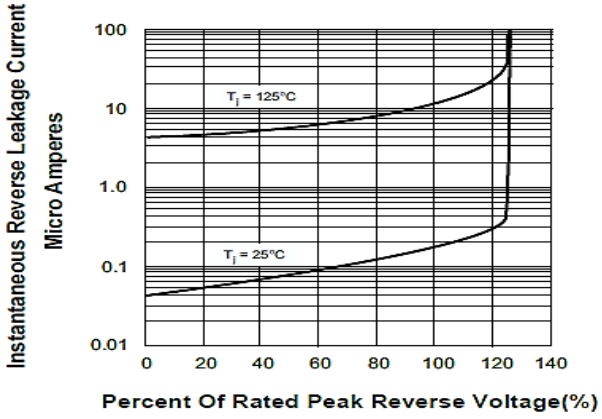


Fig 3: Typical Junction Capacitance

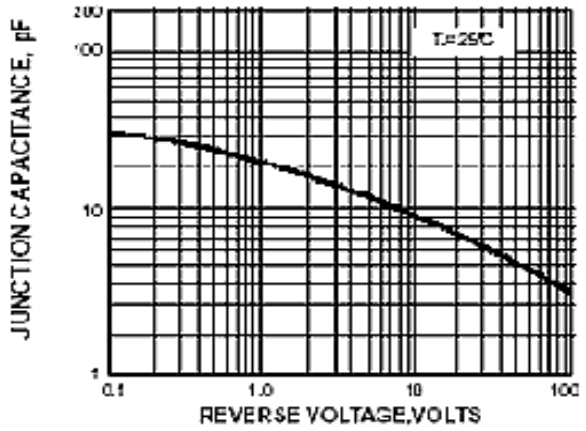
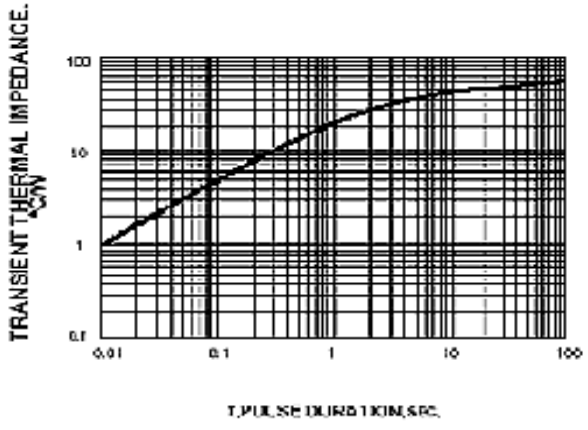
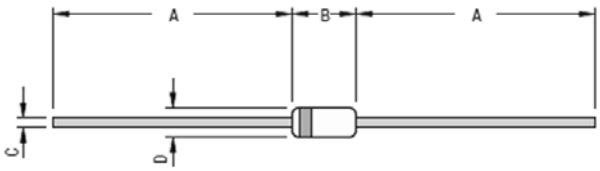


Fig 6: Typical Transient Thermal Impedance



PACKAGE DETAILS

DO-41P Axial Lead Plastic Package



Dim	Min	Max.
A	25.40	--
B	4.10	5.20
C	0.50	0.90
D	2.00	2.70

All Dimensions are in mm

Mechanical Data

Case : Molded plastic body
Terminals : Solder plated, solderable per MIL-STD-750,Method 2026
Polarity : Polarity symbol marking on body
Mounting Position : Any
Weight : 0.0088 ounce, 0.25 grams

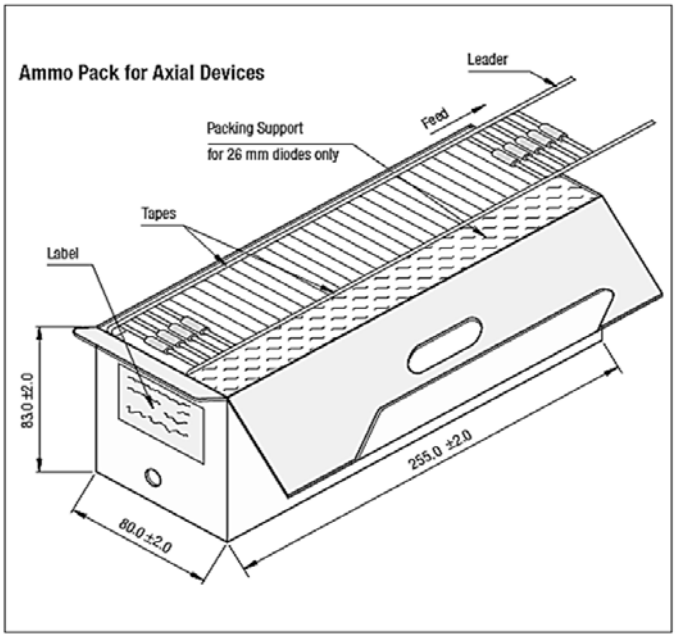
Packaging Specifications

T & A: Tape and Ammo Pack; **T & R:** Tape and Reel; **Bulk:** Loose in Poly Bags; **Tube:** Tube and Carton; **K:** 1,000

Package / Case Type	Packaging Type	Std. Packing	Inner Carton			Outer Carton		
		Qty	Qty	Size L x W x H	Gross Weight	Qty	Size L x W x H	Gross Weight
DO-41P	T & A	5,000	5K	27 x 8 x 14	2.0	45K	46 x 35 x 25	17.5

Axial Tape Specifications

Device	Type	A		B		C		D		E		F	
DO-41P	52 mm	50.0	54.0	95.0	105.0	5.6	6.5	—	1.5R	9.5	10.5	—	1.3



Taping Specification

- 300 mm (Min) leader tape on every roll.
- No. of empty places allowed 0.25% without consecutive empty places.
- Ends of leads shall normally not protrude beyond the tapes.
- Components shall be held sufficiently in the tape or tapes so that they can not come free in normal handling.

Recommended Reflow Solder Profiles

The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

Figure 1 shows the recommended solder profile for devices that have Pb-free terminal plating, and where a Pb-free solder is used.

Figure 2 shows the recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

Figure 1

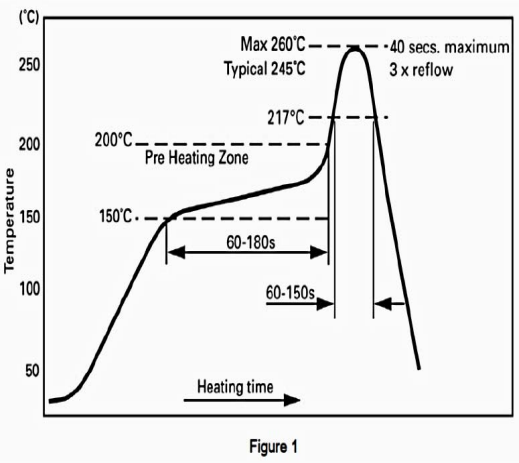


Figure 1

Figure 2

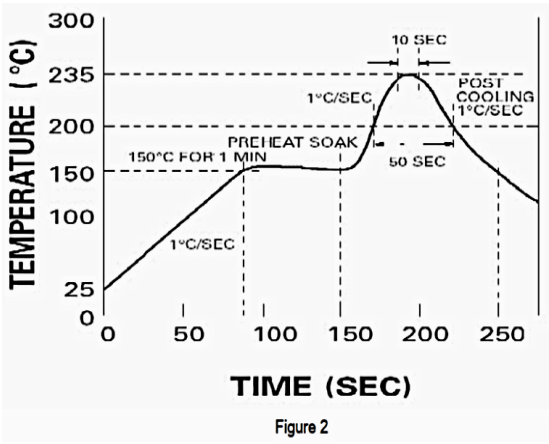


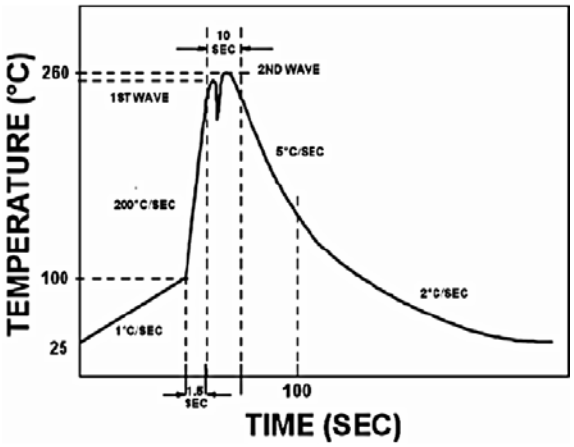
Figure 2

Reflow profiles in tabular form

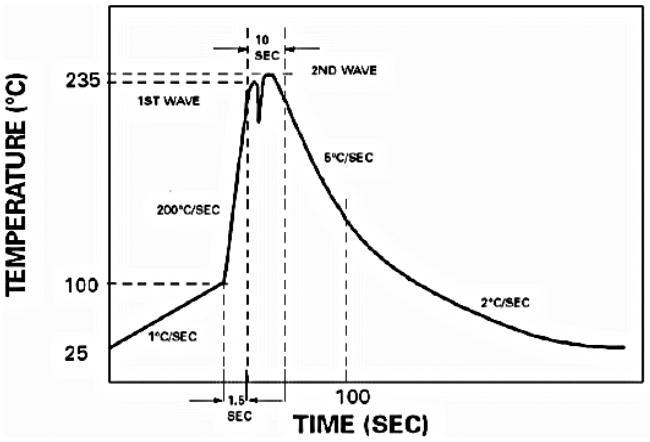
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Time	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	40 seconds
Ramp-Down Rate	3°C/second max.	6°C/second max.

Recommended Wave Solder Profiles

The Recommended solder Profile For Devices with Pb-free terminal plating where a Pb-free solder is used



The Recommended solder Profile For Devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with leaded solder



Wave Profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~200°C/second	~200°C/second
Heating rate during preheat	Typical 1-2, Max 4°C/sec	Typical 1-2, Max 4°C/Sec
Final preheat Temperature	Within 125°C of Solder Temp	Within 125°C of Solder Temp
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	10 seconds
Ramp-Down Rate	5°C/second max.	5°C/second max

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).
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