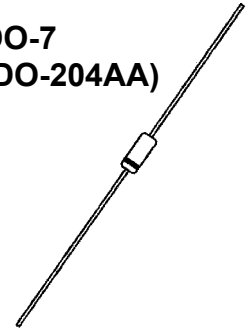


**DESCRIPTION**

The 1N4775 thru 1N4784A series of Zero-TC Reference Diodes provides a selection of 8.5 V nominal voltages and temperature coefficients to as low as 0.0005%/°C for minimal voltage change with temperature when operated at 7.5 mA. Options for screening similar to JAN, JANTX, JANTXV, and JANS also exist by using MQ, MX, MV or MSP respectively for part number prefixes and high reliability screening. Microsemi also offers numerous other Zener Reference Diode products for a variety of other voltages from 6.2 V to 200 V

**APPEARANCE**

**DO-7  
(DO-204AA)**



**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**FEATURES**

- JEDEC registered 1N4775 thru 1N4784A series
- Standard reference voltage of 8.5 V +/- 5%
- Internal metallurgical bonds
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers. For example, designate "MX1N4779A" for a JANTX, or MV1N4784A for a JANTXV screen.
- Radiation Hardened devices available by changing the "1N" prefix to "RH", e.g. RH4779A, RH4784A, etc. Also consult factory for "RH" data sheet brochure for other radiation hardened reference diode products.

**APPLICATIONS / BENEFITS**

- Provides minimal voltage changes over a broad temperature range for instrumentation and other circuit designs requiring a voltage reference
- Temperature coefficient selections available from 0.01%/°C to 0.0005%/°C
- Tight voltage tolerances available by adding tolerance 1%, 2%, 3%, etc. after part number for further identification, e.g. 1N4773A-2%, 1N4774A-1%, 1N4769-3%, 1N4769A-1%, etc.
- Flexible axial-leaded mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020

**MAXIMUM RATINGS**

- Operating & Storage Temperature: -65°C to +175°C
- DC Power Dissipation: 250 mW @ T<sub>L</sub> = 25°C  
NOTE: For optimum voltage-temperature stability, the test current I<sub>ZT</sub> = 0.5 or 1.0 mA as shown in Electrical Characteristics (less than 10 mW in dissipated power)
- Solder temperatures: 260 °C for 10 s (maximum)

**MECHANICAL AND PACKAGING**

- CASE: Hermetically sealed glass case with DO-7 (DO-204AA) package
- TERMINALS: Tin-lead plated and solderable per MIL-STD-750, Method 2026
- MARKING: Part number and cathode band
- POLARITY: Reference diode to be operated with the banded end positive with respect to the opposite end
- TAPE & REEL option: Standard per EIA-296 (add "TR" suffix to part number)
- WEIGHT: 0.2 grams.
- See package dimensions on last page

**\*ELECTRICAL CHARACTERISTICS @ 25°C, unless otherwise specified**

JEDEC TYPE NUMBER	ZENER VOLTAGE (Note 5)	ZENER TEST CURRENT	MAXIMUM DYNAMIC IMPEDANCE	MAXIMUM REVERSE CURRENT $I_R @ 6 V$	MAXIMUM VOLTAGE TEMPERATURE STABILITY (Note 3 & 5)	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COMPENSATIONS $\alpha_{VZ}$
	$V_Z @ I_{ZT}$	$I_{ZT}$	$Z_{ZT}$	$I_R$	$\Delta V_{ZT}$	$^{\circ}C$	$\%/^{\circ}C$
	VOLTS	mA	OHMS	$\mu A$	mV		
1N4775	8.5	0.5	200	10	64	0 to + 75	0.01
1N4775A	8.5	0.5	200	10	132	-55 to +100	0.01
1N4776	8.5	0.5	200	10	32	0 to + 75	0.005
1N4776A	8.5	0.5	200	10	66	-55 to +100	0.005
1N4777	8.5	0.5	200	10	13	0 to + 75	0.002
1N4777A	8.5	0.5	200	10	26	-55 to +100	0.002
1N4778	8.5	0.5	200	10	6	0 to + 75	0.001
1N4778A	8.5	0.5	200	10	13	-55 to +100	0.001
1N4779	8.5	0.5	200	10	3	0 to + 75	0.0005
1N4779A	8.5	0.5	200	10	7	-55 to +100	0.0005
1N4780	8.5	1.0	100	10	64	0 to + 75	0.01
1N4780A	8.5	1.0	100	10	132	-55 to +100	0.01
1N4781	8.5	1.0	100	10	32	0 to + 75	0.005
1N4781A	8.5	1.0	100	10	66	-55 to +100	0.005
1N4782	8.5	1.0	100	10	13	0 to + 75	0.002
1N4782A	8.5	1.0	100	10	26	-55 to +100	0.002
1N4783	8.5	1.0	100	10	6	0 to + 75	0.001
1N4783A	8.5	1.0	100	10	13	-55 to +100	0.001
1N4784	8.5	1.0	100	10	3	0 to + 75	0.0005
1N4784A	8.5	1.0	100	10	7	-55 to +100	0.0005

\*JEDEC Registered Data.

**NOTES:**

1. Designate Radiation Hardened devices with "RH" prefix instead of "1N," i.e., RH4784A. Consult factory for TX, TXV or JANS equivalent SCDs.
2. Measured by superimposing  $I_Z$  ac rms on  $I_Z$  dc @ 25°C where  $I_Z$  ac rms = 10%  $I_Z$  dc.
3. Maximum allowable change between any two discrete temperatures over the specified temperature change.
4. When ordering devices with a tighter tolerance than specified, use a nominal center voltage of 8.4 volts.
5. Voltage measurements to be performed 15 seconds after application of dc current.

**PACKAGE DIMENSIONS**

