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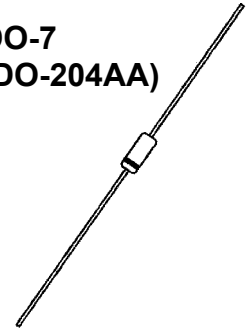


### DESCRIPTION

The 1N4765 thru 1N4774A series of Zero-TC Reference Diodes provides a selection of 9.1 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 1N935 thru 1N940 series
- Standard reference voltage of 9.1V +/- 5%
- Internal metallurgical bonds
- JANS Equivalent available via SCD
- 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 "MX1N4769A" for a JANTX screen
- Radiation Hardened devices available by changing "1N" prefix to "RH", e.g. RH4769A, RH4774A, 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**

JEDEC TYPE NUMBER	ZENER VOLTAGE (Note 3)	ZENER TEST CURRENT	MAXIMUM DYNAMIC IMPEDANCE	MAXIMUM REVERSE CURRENT $I_R @ 6 V$	MAXIMUM VOLTAGE TEMPERATURE STABILITY (Note 2 & 3)	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COMPENSATIONS $\alpha_{VZ}$
	$V_Z @ I_{ZT}$ VOLTS	$I_{ZT}$ mA	$Z_{ZT}$ OHMS	$I_R$ $\mu A$	$\Delta V_{ZT}$ mV	$^{\circ}C$	$\% / ^{\circ}C$
1N4765	9.1	0.5	350	10	68	0 to +75	0.01
1N4765A	9.1	0.5	350	10	141	-55 to +100	0.01
1N4766	9.1	0.5	350	10	34	0 to +75	0.005
1N4766A	9.1	0.5	350	10	70	-55 to +100	0.005
1N4767	9.1	0.5	350	10	14	0 to +75	0.002
1N4767A	9.1	0.5	350	10	28	-55 to +100	0.002
1N4768	9.1	0.5	350	10	7	0 to +75	0.001
1N4768A	9.1	0.5	350	10	14	-55 to +100	0.001
1N4769	9.1	0.5	350	10	3	0 to +75	0.0005
1N4769A	9.1	0.5	350	10	7	-55 to +100	0.0005
1N4770	9.1	1.0	200	10	68	0 to +75	0.01
1N4770A	9.1	1.0	200	10	141	-55 to +100	0.01
1N4771	9.1	1.0	200	10	34	0 to +75	0.005
1N4771A	9.1	1.0	200	10	70	-55 to +100	0.005
1N4772	9.1	1.0	200	10	14	0 to +75	0.002
1N4772A	9.1	1.0	200	10	28	-55 to +100	0.002
1N4773	9.1	1.0	200	10	7	0 to +75	0.001
1N4773A	9.1	1.0	200	10	14	-55 to +100	0.001
1N4774	9.1	1.0	200	10	3	0 to +75	0.005
1N4774A	9.1	1.0	200	10	7	-55 to +100	0.005

\*JEDEC Registered Data.

**NOTES:**

1. Measured by superimposing  $I_Z$  ac rms on  $I_Z$  dc @ +25°C where  $I_Z$  ac rms = 10%  $I_Z$  dc.
2. Maximum allowable change between any two discrete temperatures over the specified temperature range.
3. Voltage measurements to be performed 15 seconds after application of dc current.
4. Designate Radiation Hardened devices with "RH" prefix instead of "1N", i.e., RH4774A.
5. Consult factory for TX, TXV or JANS equivalent SCDs.

**PACKAGE DIMENSIONS**

