- **MONOLITHIC TEMPERATURE COMPENSATED ZENER REFERENCE CHIPS**
- **ALL JUNCTIONS COMPLETELY PROTECTED WITH SILICON DIOXIDE**
- **8.5 & 9.1 VOLT NOMINAL ZENER VOLTAGE ±5%**
- **ELECTRICALLY EQUIVALENT TO 1N4765 THRU 1N4772A AND 1N4775 THRU 1N4782A SERIES**
- **COMPATIBLE WITH ALL WIRE BONDING AND DIE ATTACH TECHNIQUES, WITH THE EXCEPTION OF SOLDER REFLOW**

# CD4765 thru CD4767A and CD4770 thru CD4772A and CD4775 thru CD4777A and CD4780 thru CD4782A

## MAXIMUM RATINGS

Operating Temperature: -65°C to +175°C
Storage Temperature: -65°C to +175°C

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

| TYPE NUMBER | ZENER VOLTAGE $v_z$ @ $I_{ZT}$ (Note 3) | ZENER TEST CURRENT $I_{ZT}$ | MAXIMUM ZENER IMPEDANCE $Z_{ZT}$ (Note 1) | MAXIMUM VOLTAGE TEMPERATURE STABILITY $\Delta V_{ZT}$ MAXIMUM (Note 2) | TEMPERATURE RANGE | EFFECTIVE TEMPERATURE COEFFICIENT |
|---|---|---|---|---|---|---|
| | VOLTS | mA | OHMS | mV | °C | % / °C |
| CD4765 | 9.1 | 0.5 | 350 | 68 | 0 to + 75 | 0.01 |
| CD4765A | 9.1 | 0.5 | 350 | 141 | -55 to + 100 | 0.01 |
| CD4766 | 9.1 | 0.5 | 350 | 34 | 0 to + 75 | 0.005 |
| CD4766A | 9.1 | 0.5 | 350 | 70 | -55 to + 100 | 0.005 |
| CD4767 | 9.1 | 0.5 | 350 | 14 | 0 to + 75 | 0.002 |
| CD4767A | 9.1 | 0.5 | 350 | 28 | -55 to + 100 | 0.002 |
| CD4770 | 9.1 | 1.0 | 200 | 68 | 0 to + 75 | 0.01 |
| CD4770A | 9.1 | 1.0 | 200 | 141 | -55 to + 100 | 0.01 |
| CD4771 | 9.1 | 1.0 | 200 | 34 | 0 to + 75 | 0.005 |
| CD4771A | 9.1 | 1.0 | 200 | 70 | -55 to + 100 | 0.005 |
| CD4772 | 9.1 | 1.0 | 200 | 14 | 0 to + 75 | 0.002 |
| CD4772A | 9.1 | 1.0 | 200 | 28 | -55 to + 100 | 0.002 |
| CD4775 | 8.5 | 0.5 | 350 | 64 | 0 to + 75 | 0.01 |
| CD4775A | 8.5 | 0.5 | 350 | 132 | -55 to + 100 | 0.01 |
| CD4776 | 8.5 | 0.5 | 350 | 32 | 0 to + 75 | 0.005 |
| CD4776A | 8.5 | 0.5 | 350 | 66 | -55 to + 100 | 0.005 |
| CD4777 | 8.5 | 0.5 | 350 | 13 | 0 to + 75 | 0.002 |
| CD4777A | 8.5 | 0.5 | 350 | 26 | -55 to + 100 | 0.002 |
| CD4780 | 8.5 | 1.0 | 200 | 64 | 0 to + 75 | 0.01 |
| CD4780A | 8.5 | 1.0 | 200 | 132 | -55 to + 100 | 0.01 |
| CD4781 | 8.5 | 1.0 | 200 | 32 | 0 to + 75 | 0.005 |
| CD4781A | 8.5 | 1.0 | 200 | 66 | -55 to + 100 | 0.005 |
| CD4782 | 8.5 | 1.0 | 200 | 13 | 0 to + 75 | 0.002 |
| CD4782A | 8.5 | 1.0 | 200 | 26 | -55 to + 100 | 0.002 |

**NOTE 1** Zener impedance is derived by superimposing on $I_{ZT}$ A 60Hz rms a.c. current equal to 10% of $I_{ZT}$.

**NOTE 2** The maximum allowable change observed over the entire temperature range i.e., the diode voltage will not exceed the specified mV at any discrete temperature between the established limits, per JEDEC standard No.5.

**NOTE 3** Zener voltage range is ±5%

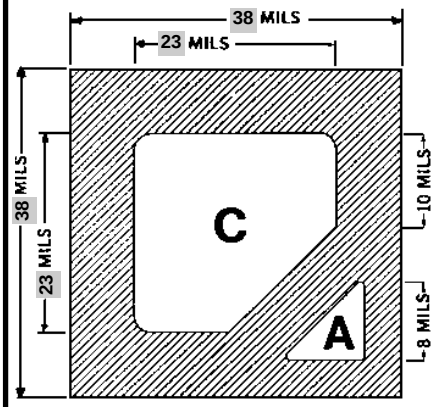


**FIGURE 1**

## DESIGN DATA

**METALLIZATION:**
Top: C (Cathode)..... ..Al
A (Anode).....Al
Back: .....Au

**AL THICKNESS**.....25,000 Å Min

**GOLD THICKNESS**... .....4,000 Å Min

**CHIP THICKNESS**..... .....10 Mils

**CIRCUIT LAYOUT DATA:**
Backside must be electrically isolated.
**Backside is not cathode.**
For Zener operation cathode must be operated positive with respect to anode.

**TOLERANCES:** ALL
Dimensions ± 2 mils


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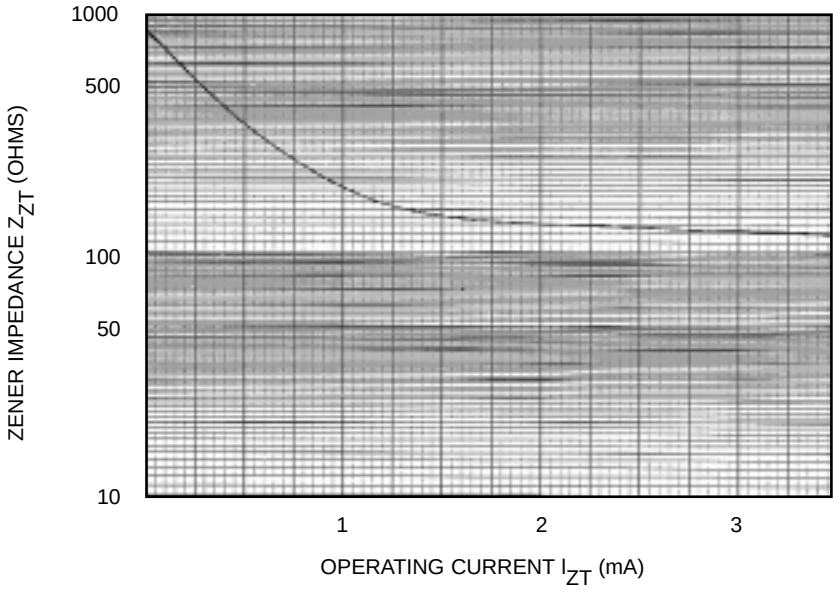


**FIGURE 2**

**ZENER IMPEDANCE
VS.
OPERATING CURRENT**

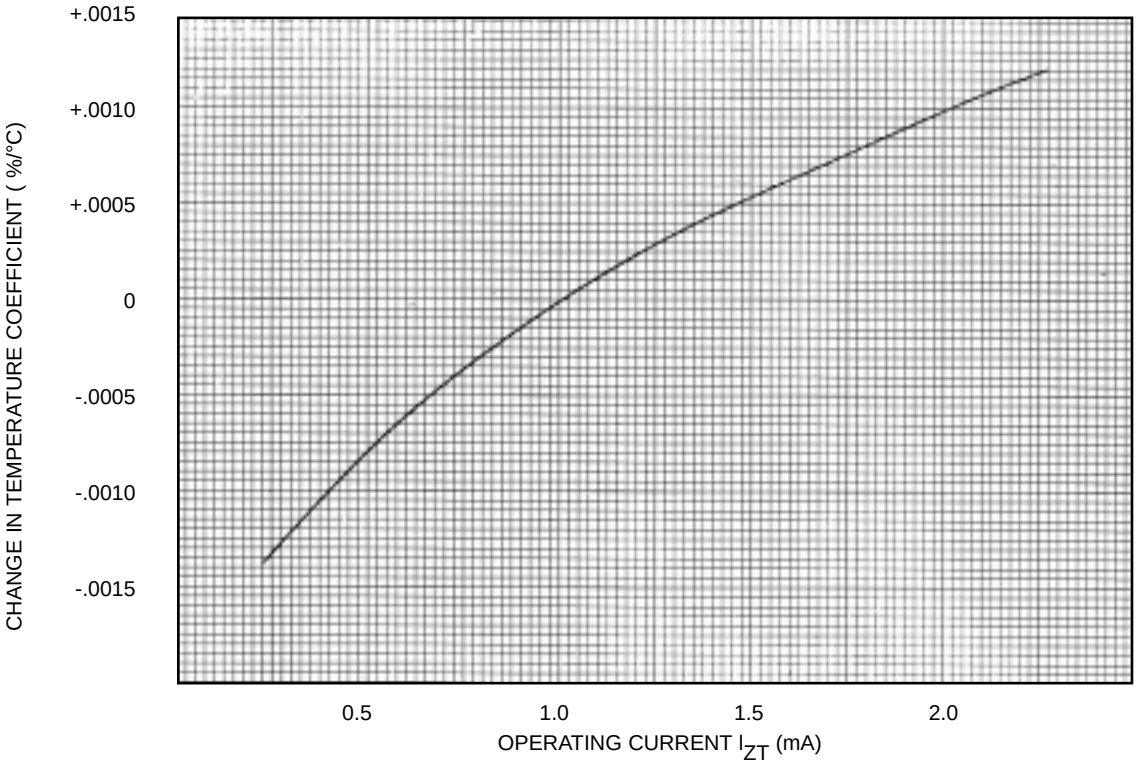


**FIGURE 3**

**TYPICAL CHANGE OF TEMPERATURE COEFFICIENT
WITH CHANGE IN OPERATING CURRENT**