



# INTERNATIONAL SEMICONDUCTOR, INC.

TEMPERATURE COMPENSATED ZENER REFERENCE DIODES  
6.6 VOLT NOMINAL ZENER VOLTAGE - 2.0 to 1.0 mA

## 1N4611 thru 1N4613C

### MAXIMUM RATINGS \*

Operating Temperature: -65 °C to +175 °C  
Storage Temperature: -65 °C to +200 °C  
DC Power Dissipation: 400 mW at 50 °C  
Power Derating: 3.33 mW/°C above 50 °C

Note 1: The maximum allowable change observed over the entire temperature range, ie: the diode voltage will not exceed the specified change at any discrete temperature between the established limits

Note 2: Zener impedance is derived by superimposing on  $I_{zT}$  a 60 Hz a.c. current equal to 10% of  $I_{zT}$ .

### DESIGN DATA

**CASE:** Hermetically sealed glass case. DO-7 Outline.

**LEAD MATERIAL:** Copper Clad Steel

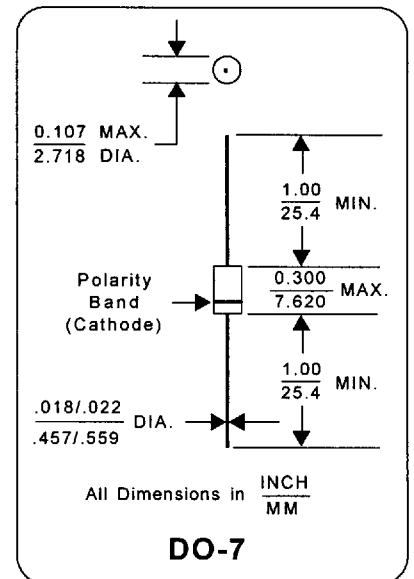
**LEAD FINISH:** Tin Plate

**THERMAL RESISTANCE:**  
250 °C/w (Typical)  
junction to ambient.

**POLARITY:** Diode to be operated with the banded (cathode) end positive with respect to the opposite end

**WEIGHT:** 0.2 Grams

**MOUNTING POSITION:** Any

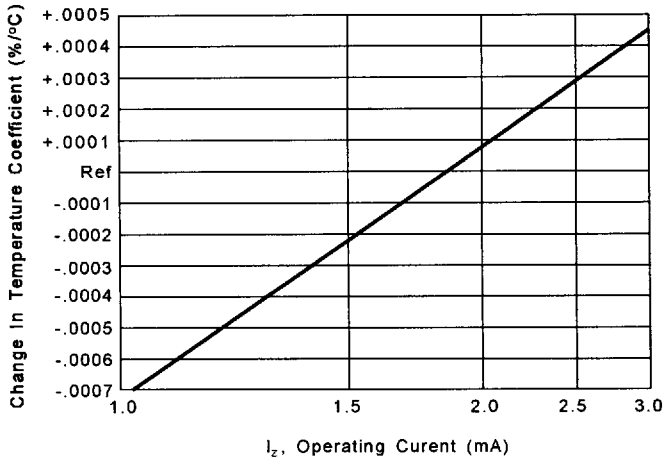


### ELECTRICAL CHARACTERISTICS @ 25°C, unless otherwise specified

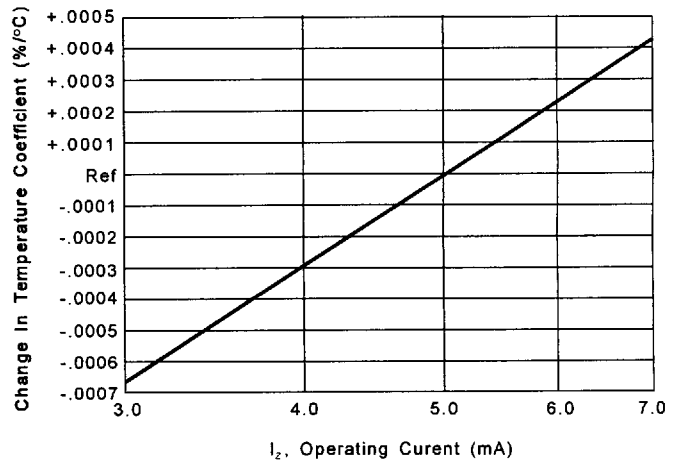
JEDEC TYPE NUMBERS	ZENER VOLTAGE ( $\pm 5\%$ ) $V_{zT}$ at $I_{zT}$	ZENER TEST CURRENT $I_{zT}$	MAXIMUM DYNAMIC IMPEDANCE (Note 2) $Z_{zT}$	MAXIMUM REVERSE CURRENT $I_r$ at $V_r=3.0V$	MAXIMUM TEMPERATURE COEFFICIENT at $I_{zT}$ -50°C to +100°C	OPERATING CURRENT RANGE	MAXIMUM TEMPERATURE COEFFICIENT OVER OPERATING CURRENT RANGE (Note 1) -50°C to +100°C	TYPICAL NOISE LEVEL
	Volts	mA	Ohms	$\mu A$	%/°C	mA	%/°C	$\mu V$
1N4611	6.6	2.0	75.0	0.20	.005	1.0 - 3.0	.01	1.0
1N4611A	6.6	2.0	75.0	0.20	.002	1.0 - 3.0	.005	1.0
1N4611B	6.6	2.0	75.0	0.20	.001	1.0 - 3.0	.002	1.0
1N4611C	6.6	2.0	75.0	0.20	.0005	1.0 - 3.0	.001	1.0
1N4612	6.6	5.0	25.0	0.20	.005	3.0 - 7.0	.01	1.0
1N4612A	6.6	5.0	25.0	0.20	.002	3.0 - 7.0	.005	1.0
1N4612B	6.6	5.0	25.0	0.20	.001	3.0 - 7.0	.002	1.0
1N4612C	6.6	5.0	25.0	0.20	.0005	3.0 - 7.0	.001	1.0
1N4613	6.6	10.0	15.0	0.20	.005	7.0 - 15.0	.01	1.0
1N4613A	6.6	10.0	15.0	0.20	.002	7.0 - 15.0	.005	1.0
1N4613B	6.6	10.0	15.0	0.20	.001	7.0 - 15.0	.002	1.0
1N4613C	6.6	10.0	15.0	0.20	.0005	7.0 - 15.0	.001	1.0

\* JEDEC Registered Data.

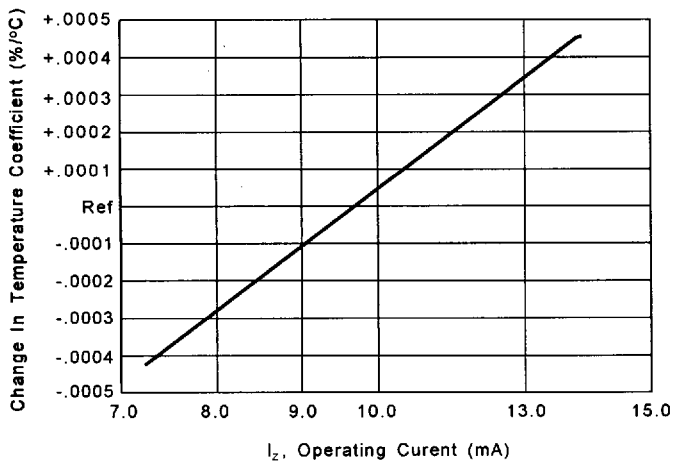
# 1N4611 thru 1N4613C CHARACTERISTIC CURVES



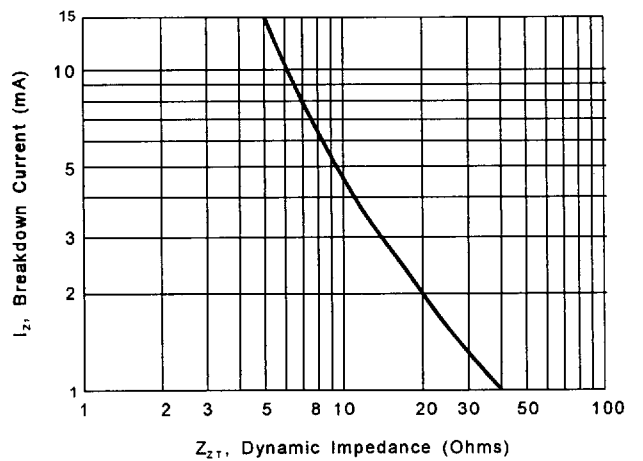
TYPICAL CHANGE OF TEMPERATURE COEFFICIENT  
WITH CHANGE IN OPERATING CURRENT  
1N4611 TYPES  
FIGURE 2



TYPICAL CHANGE OF TEMPERATURE COEFFICIENT  
WITH CHANGE IN OPERATING CURRENT  
1N4612 TYPES  
FIGURE 3



TYPICAL CHANGE OF TEMPERATURE COEFFICIENT  
WITH CHANGE IN OPERATING CURRENT  
1N4613 TYPES  
FIGURE 4



TYPICAL CHANGE OF DYNAMIC IMPEDANCE WITH  
CHANGE IN BREAKDOWN CURRENT  
ALL TYPES  
FIGURE 5