



# S TO K-BAND GaAs VARACTOR DIODE

## ND3000 SERIES

### FEATURES

- **HIGH CUTOFF FREQUENCY:**  
 $f_c-6 = 250 \text{ GHz ND3048}$   
 $f_c-6 = 270 \text{ GHz ND3138(1)}$
- **HIGH RELIABILITY**
- **LOW COST**
- **WIDEBAND SELECTION: 2-15 GHz**
- **ULTRA HIGH CAPACITANCE RATIO:**  
 $C_{j0}/C_{j-25} \geq 15 \text{ ND3050}$

### APPLICATIONS

- **TUNING**
- **MULTIPLIER CIRCUITS**
- **MODULATOR**

### COLOR MARKINGS

Part Number	(A)	(B)
ND3048	YELLOW	RED
ND3049	YELLOW	BLUE
ND3050	YELLOW	BLACK
ND3138 (1)	GREEN	RED
ND3138 (2)	GREEN	BLUE

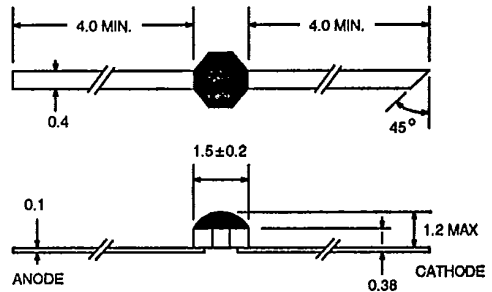
### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>R</sub>	Reverse Voltage	V	25
I <sub>F</sub>	Forward Current	mA	10
P <sub>D</sub>	Power Dissipation <sup>1</sup>	W	0.2
P <sub>D</sub>	Power Dissipation <sup>2</sup>	W	0.5
T <sub>STG</sub>	Storage Temperature	°C	-65 to +175
T <sub>J</sub>	Junction Temperature	°C	175
T <sub>SDR</sub>	Soldering Temperature <sup>3</sup>	°C	230

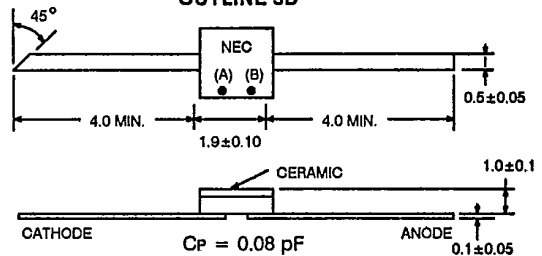
1. ND3048, ND3049, ND3050
2. ND3138(1), ND3138(2)
3. Within 10 Seconds

### OUTLINE DIMENSIONS (Units in mm)

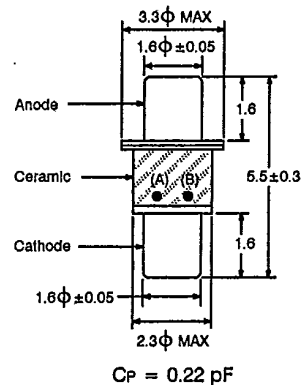
OUTLINE 3A



OUTLINE 3D



OUTLINE 5E



**ELECTRICAL CHARACTERISTICS** (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			ND3048 3A, 3D, 5E			ND3049 3A, 3D, 5E			ND3050 3A, 3D, 5E			ND3138(1) 3A, 3D, 5E			ND3138(2) 3A, 3D, 5E		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
V <sub>R</sub>	Reverse Voltage at I <sub>R</sub> = 10 μA	V	25			25			25			25			25		
I <sub>R</sub>	Reverse Current at V <sub>R</sub> = 23 V	ηA			100			100			100			100			100
V <sub>F</sub>	Forward Voltage at I <sub>F</sub> = 10 mA	V			1.4			1.4			1.4			1.4			1.4
C <sub>JO</sub>	Junction Capacitance at V <sub>R</sub> = 0, f = 1 MHz	pF	0.7	1.1	1.5	4	6	8				0.6	0.9	1.2	1.2	1.8	2.4
C <sub>J-4</sub>	Junction Capacitance at V <sub>R</sub> = 4 V, f = 1 MHz	pF							0.45	0.60	0.75						
C <sub>JO</sub> /C <sub>J-6</sub>	Capacitance Ratio at V <sub>R</sub> = 0, V <sub>R</sub> = 6 V, f = 1 MHz											1.8	2.2		1.8	2.2	
C <sub>JO</sub> /C <sub>J-25</sub>	Capacitance Ratio at V <sub>R</sub> = 0, V <sub>R</sub> = 25 V, f = 1 MHz		5	8		5	8		15	20							
f <sub>c-6</sub> *	Cutoff Frequency at V <sub>R</sub> = 6 V, f = 20 GHz	GHz		250			80			220			270			170	
Q-6	V <sub>R</sub> = 6 V, f = 50 MHz			5000			1600			4400			5400			3400	

\*Harrison Method

**TYPICAL CHARACTERISTICS** (TA = 25°C)

