

NEC[®]**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

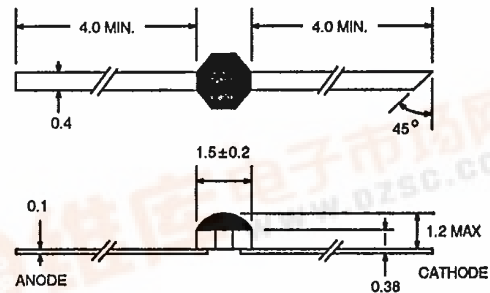
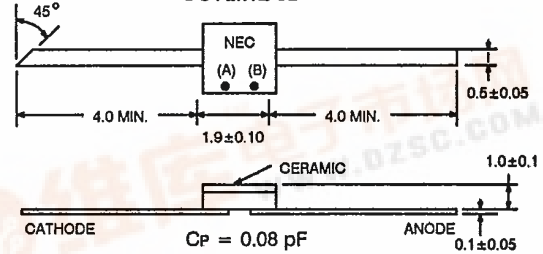
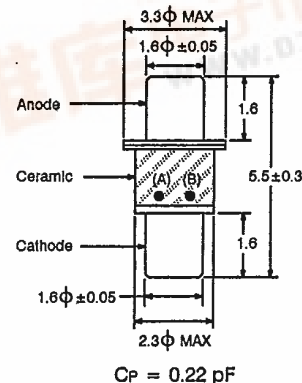
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_R	Reverse Voltage	V	25
I_F	Forward Current	mA	10
P_D	Power Dissipation ¹	W	0.2
P_D	Power Dissipation ²	W	0.5
T_{STG}	Storage Temperature	$^\circ\text{C}$	-65 to +175
T_J	Junction Temperature	$^\circ\text{C}$	175
T_{SDR}	Soldering Temperature ³	$^\circ\text{C}$	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 ($T_A = 25^\circ\text{C}$)

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_R	Reverse Voltage at $I_R = 10 \mu\text{A}$	V	25			25			25			25			25		
I_R	Reverse Current at $V_R = 23 \text{ V}$	ηA			100			100			100			100			100
V_F	Forward Voltage at $I_F = 10 \text{ mA}$	V			1.4			1.4			1.4			1.4			1.4
C_{j0}	Junction Capacitance at $V_R = 0, f = 1 \text{ MHz}$	pF	0.7	1.1	1.5	4	6	8				0.6	0.9	1.2	1.2	1.8	2.4
C_{j-4}	Junction Capacitance at $V_R = 4 \text{ V}, f = 1 \text{ MHz}$	pF							0.45	0.60	0.75						
C_{j0}/C_{j-6}	Capacitance Ratio at $V_R = 0, V_R = 6 \text{ V}, f = 1 \text{ MHz}$											1.8	2.2		1.8	2.2	
C_{j0}/C_{j-25}	Capacitance Ratio at $V_R = 0, V_R = 25 \text{ V}, f = 1 \text{ MHz}$		5	8		5	8		15	20							
f_{c-6}^*	Cutoff Frequency at $V_R = 6 \text{ V}, f = 20 \text{ GHz}$	GHz		250			80			220			270			170	
$Q-6$	$V_R = 6 \text{ V}, f = 50 \text{ MHz}$			5000			1600			4400			5400			3400	

*Harrison Method

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)