



SILICON SCHOTTKY MIXER/DETECTOR DIODE ND4000 SERIES

FEATURES

- LOW MEDIUM BARRIERS
- PASSIVATED CONSTRUCTION
- HIGH RELIABILITY

DESCRIPTION AND APPLICATIONS

This group of NEC microwave Schottky diodes includes both low barrier and medium barrier N-type and P-type passivated epitaxial diodes for use in mixer and detector applications. Applications are mixers, modulators, discriminators, samplers, detectors, switches and wave shaping circuits, all for use in industrial, military, hi-rel and space applications.

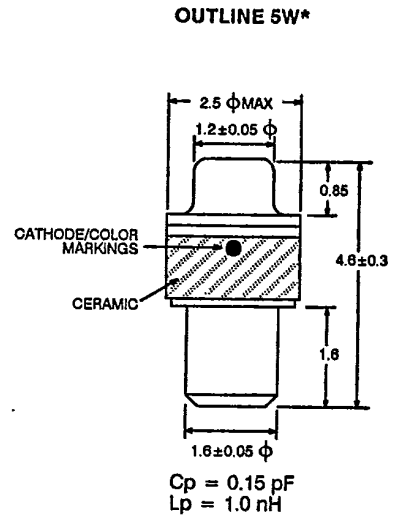
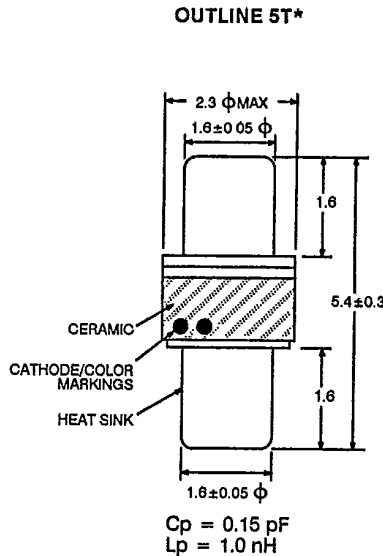
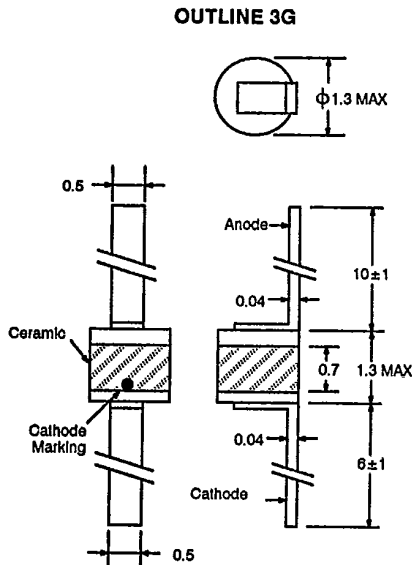
ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Pr	Total Power Dissipation ¹ N-Type Series P-Type Series	mW mW	200 100
Top	Operating Temperature	°C	-65 to +150
TJ	Junction Temperature	°C	150
TSDR	Maximum Soldering Temperature	°C	230 for 10 sec.

Note:

1. Derate linearly to zero at 150°C junction temperature.

OUTLINE DIMENSIONS** (Units in mm)



*Heatsink is cathode for N-type and anode for P-type Schottky diodes.
**All dimensions are typical unless noted.



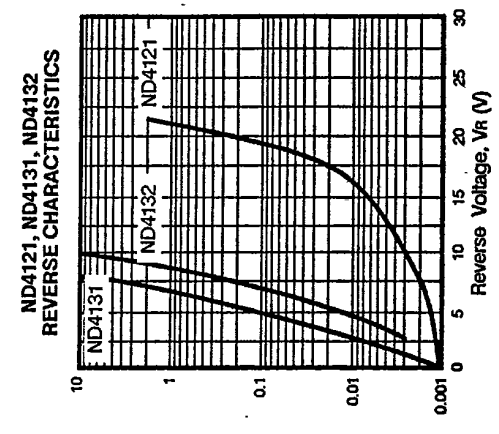
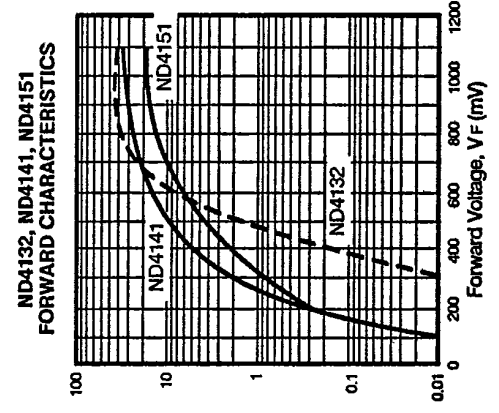
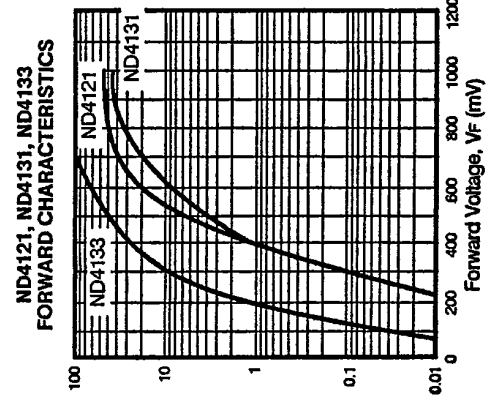
PERFORMANCE SPECIFICATIONS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE AND CATHODE MARKING(S)	EIAJ PART NUMBER	BARRIER TYPE AND DIODE TYPE	FREQUENCY RANGE (GHz)		BREAKDOWN VOLTAGE (V)		REVERSE CURRENT (μA)		FORWARD VOLTAGE (mV)		TERMINAL CAPACITANCE (pF)		NOISE FIGURE 3			TANGENTIAL SENSITIVITY 4		
			IR (μA)	BV (V)	VR (V)	IR (μA)	IF (mA)	VF (mV)	VR (V)	CT (pF)	fLO (GHz)	ZIF (Ω)	NF (dB)	f (GHz)	RV (KΩ)	γ (μV/μW)	TSS (dBm)	
ND4121-3G1-2 RED	1SS12	MEDIUM N-TYPE	~5	10	20	5	0.01	1000	0	0.70	2	375	5.5	7	2	1.5	5	-50
ND4131-3G1-2 BLUE	1SS13	MEDIUM N-TYPE	~12	4	6	3	0.01	1000	0	0.35	9.375	375	6.5	7	10	1.5	6	-57
ND4131-5W2 BLACK		MEDIUM N-TYPE	~12	4	6	3	0.01	1000	0	0.35	9.375	375	6.5	7	10	1.5	6	-57
ND4131-5T2 RED		MEDIUM N-TYPE	~12	4	6	3	0.01	1000	0	0.35	9.375	375	6.5	7	10	1.5	6	-57
ND4132-5W RED	1SS14	MEDIUM P-TYPE	~26	5	9	2	0.01	420	0	0.22	9.375	400	7		10	1.3	8	-55
ND4133-5W BLUE	1SS15	LOW N-TYPE	~26	100	3	4	1	190	0.2	0.20	9.375	175	5.5	7	10	1.2	6	-58
ND4141-3G1-2 BLUE-RED	1SS14	LOW P-TYPE	~12	100	3	4	6	50	1000	0.30	9.375	300	7		10	1.4	5	-58
ND4151-3G1 BLUE-ORANGE	1SS15	LOW P-TYPE	~18	100	3	5	4	1	200	0.2	9.375	300	7		10	1.4	5	-58

Notes:

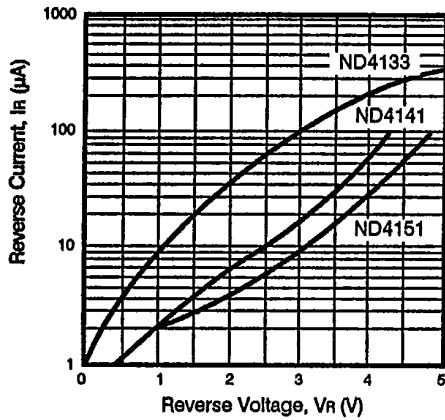
- Available in MIL Grade (C) as well as Commercial Grade (D).
- Matched Pairs add an "M" to the end of the "ND Part Number," (e.g. ND4121M-3G), ΔV_F = 20 mV, ΔC_T = 20%.
- P_{LO} = 1 mW, NF_F = 1.5 dB, f_r = 30 MHz, R_{oc} ≤ 10 Ω, V_{SWR} ≤ 1.5:1 for noise figure test.
- I_F = 20 μA, R_L = 100 KΩ, P_A = 500 Ω, BW = 2 MHz for TSS test.

TYPICAL PERFORMANCE CHARACTERISTICS (T_A = 25°C)

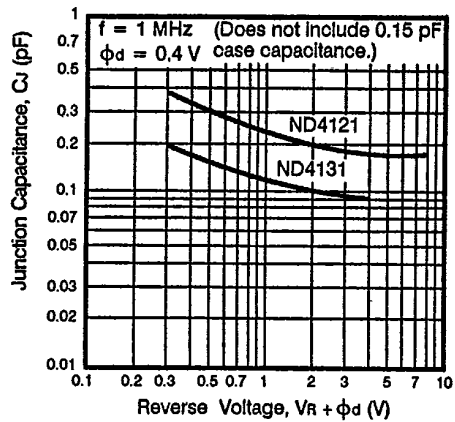


TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

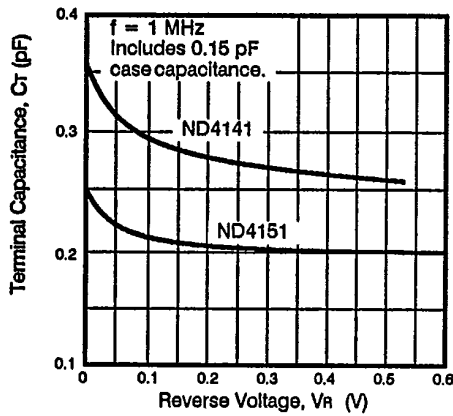
**ND4133, ND4141, ND4151
 REVERSE CHARACTERISTICS**



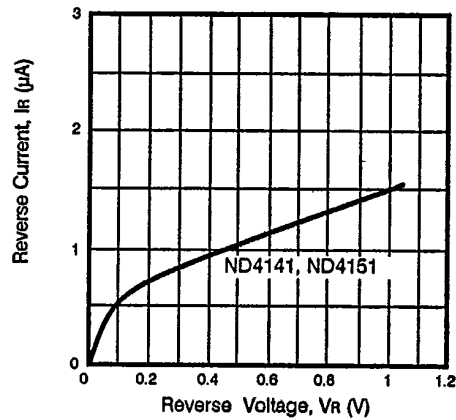
**ND4121, ND4131
 JUNCTION CAPACITANCE
 vs. REVERSE VOLTAGE**



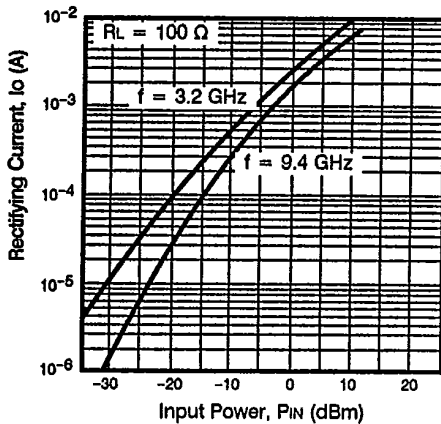
**ND4141, ND4151
 TERMINAL CAPACITANCE
 vs. REVERSE VOLTAGE**



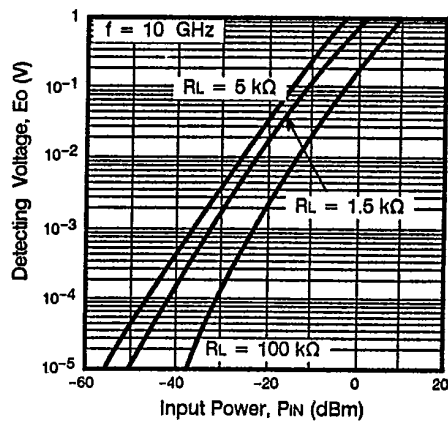
**ND4141, ND4151
 REVERSE CURRENT
 vs. REVERSE VOLTAGE**



**ND4141
 RECTIFYING CURRENT
 vs. INPUT POWER**



**ND4141
 DETECTING VOLTAGE
 vs. INPUT POWER**



TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)

