

E.S.D NOISE CLIPPING DIODES

NNCD3.3E to NNCD12E

ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODES (200 mW TYPE)

This product series is a diode developed for E.S.D (Electrostatic Discharge) noise protection. Based on the IEC1000-4-2 test on electromagnetic interference (EMI), the diode assures an endurance of no less than 30 kV, thus making itself most suitable for external interface circuit protection.

Type NNCD3.3E to NNCD12E Series are into 3PIN Mini Mold Package having allowable power dissipation of 200 mW.

FEATURES

- Based on the electrostatic discharge immunity test (IEC1000-4-2), the product assures the minimum endurance of 30 kV.
- Based on the reference supply of the set, the product achieves a series over a wide range (15 product name lined up).

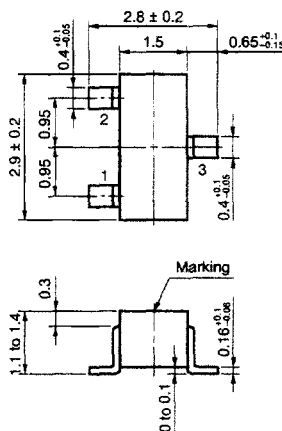
APPLICATIONS

- External interface circuit E.S.D protection.
- Circuits for Waveform clipper, Surge absorber.

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

Power Dissipation	P	200 mW
Surge Reverse Power	P_{RSM}	100 W ($t_r = 10 \mu\text{s}$ 1 pulse) Fig. 6
Junction Temperature	T_j	150°C
Storage Temperature	T_{stg}	-55°C to $+150^\circ\text{C}$

PACKAGE DIMENSIONS (in millimeters)



PIN CONNECTION

1. NC
 2. Anode
 3. Cathode
- SC-59 (EIAJ)

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

Type Number	Breakdown Voltage ^{Note 1} V_{BR} (V)			Dynamic Impedance ^{Note 2} Z_z (Ω)		Reverse Leakage I_R (μA)		Capacitance C_t (pF)		E.S.D Voltage (kV)	
	MIN.	MAX.	I_T (mA)	MAX.	I_T (mA)	MAX.	V_R (V)	TYP.	TEST CONDITION	MIN.	TEST CONDITION
NNCD3.3E	3.10	3.50	5	130	5	20	1.0	220	$V_R = 0\text{ V}$ $f = 1\text{ MHz}$	30	$C = 150\text{ pF}$ $R = 330\ \Omega$ (IEC1000 -4-2)
NNCD3.6E	3.40	3.80	5	130	5	10	1.0	210		30	
NNCD3.9E	3.70	4.10	5	130	5	10	1.0	200		30	
NNCD4.3E	4.01	4.48	5	130	5	10	1.0	180		30	
NNCD4.7E	4.42	4.90	5	130	5	10	1.0	170		30	
NNCD5.1E	4.84	5.37	5	130	5	5	1.5	160		30	
NNCD5.6E	5.31	5.92	5	80	5	5	2.5	140		30	
NNCD6.2E	5.86	6.53	5	50	5	2	3.0	120		30	
NNCD6.8E	6.47	7.14	5	30	5	2	3.5	110		30	
NNCD7.5E	7.06	7.84	5	30	5	2	4.0	90		30	
NNCD8.2E	7.76	8.64	5	30	5	2	5.0	90		30	
NNCD9.1E	8.56	9.55	5	30	5	2	6.0	90		30	
NNCD10E	9.45	10.55	5	30	5	2	7.0	80		30	
NNCD11E	10.44	11.56	5	30	5	2	8.0	70		30	
NNCD12E	11.42	12.60	5	35	5	2	9.0	70		30	

Notes 1. Tested with pulse (40 ms)

2. Z_z is measured at I_T give a small A.C. signal.

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

Fig. 1 POWER DISSIPATION vs. AMBIENT TEMPERATURE

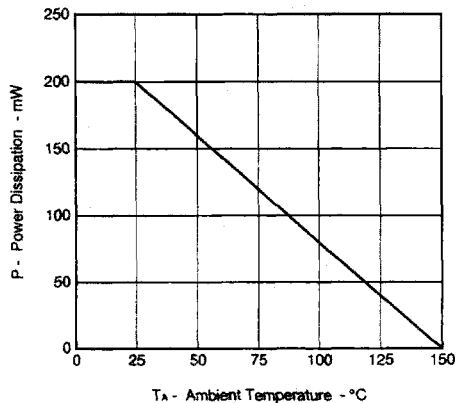


Fig. 2 I_T - V_{BR} CHARACTERISTICS

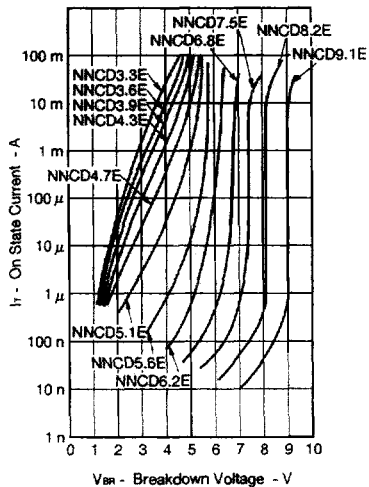


Fig. 3 I_T - V_{BR} CHARACTERISTICS

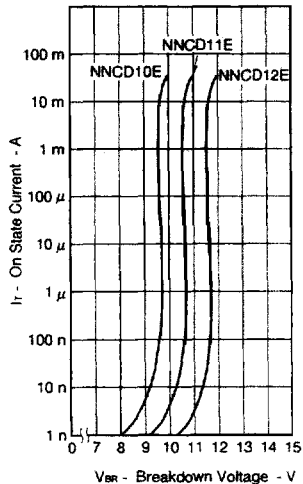


Fig. 4 Z_z - I_r CHARACTERISTICS

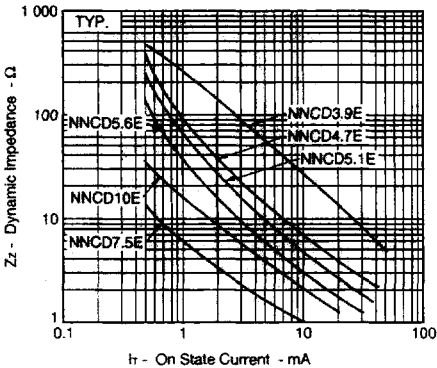


Fig. 5 TRANSIENT THERMAL IMPEDANCE

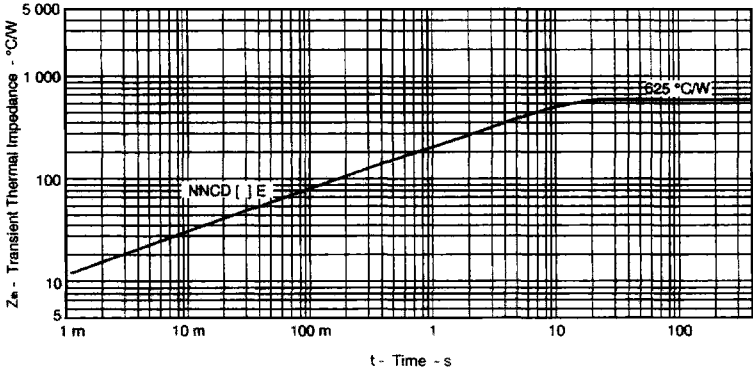
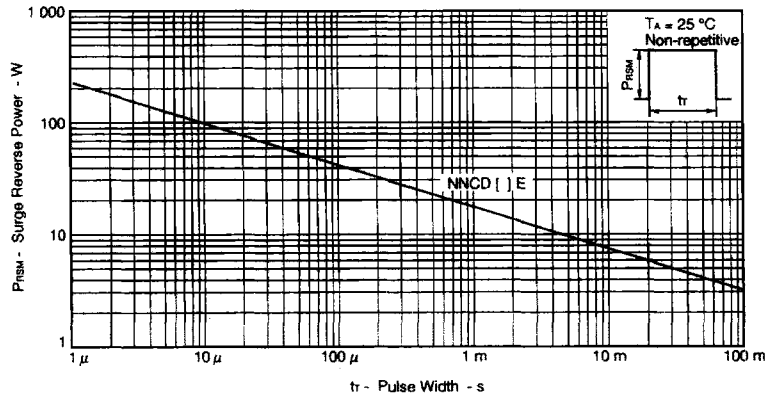
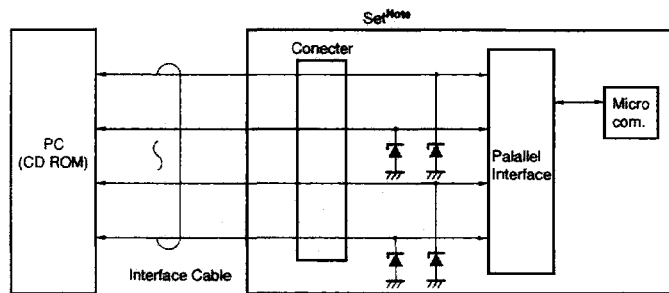


Fig. 6 SURGE REVERSE POWER RATING



Sample Application Circuits



Note Set
Printer, P.D.C, T.V Game etc