

ESD NOISE CLIPPING DIODES NNCD5.6LH to NNCD6.8LH

LOW CAPACITANCE TYPE ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODES
(QUARTO TYPE: COMMON ANODE)
5-PIN SUPER SMALL MINI MOLD

This product series is a low capacitance type diode developed for ESD (Electrostatic Discharge) absorption. Based on the IEC1000-4-2 test on electromagnetic interference (EMI), the diode assures an endurance of no less than 8 kV, and capacitance is small with 10 pF between the terminal. This product series is the most suitable for the ESD absorption in the high-speed data communication bus such as USB.

With four elements mounted in the 5-pin super mini mold package, that product can cope with more high density assembling.

FEATURES

- Based on the electrostatic discharge immunity test (IEC1000-4-2), the product assures the minimum endurance of 8 kV.
- Capacitance is small with 10 pF (at $V_R = 0$ V, $f = 1$ MHz) between the terminal. It is excellent in the frequency characteristic.
- With 4 elements mounted (common anode) in the 5-pin super mini mold package, that product can cope with more high density assembling.

APPLICATIONS

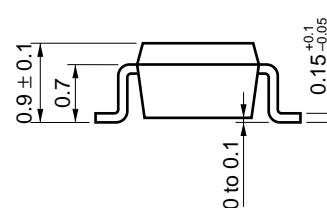
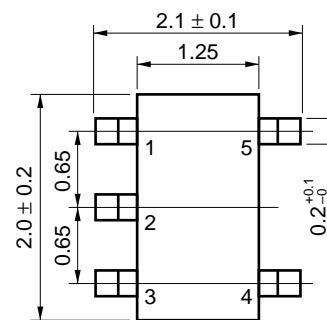
- External interface circuit ESD absorption in the high-speed data communication bus such as USB.

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

Power Dissipation	P	200 mW	(Total)
Surge Reverse Power	P_{RSM}	2W ($t = 10 \mu\text{s}$, 1 pulse)	Fig.5
Junction Temperature	T_j	150°C	
Storage Temperature	T_{stg}	-55°C to +150°C	

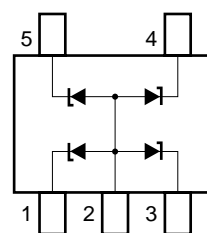
PACKAGE DIMENSIONS

(in millimeters)



(5-pin super mini mold)

PIN CONNECTION



- 1: K1 Cathode 1
- 2: A Anode (Common)
- 3: K2 Cathode 2
- 4: K3 Cathode 3
- 5: K4 Cathode 4

ELECTRICAL CHARACTERISTICS (T_A = 25 °C) (A-K1, A-K2, A-K3, A-K4)

Type No	Breakdown Voltage ^{Note 1} V _{BR} (V)			Dynamic ^{Note 2} Impedance Z _z (Ω)		Reverse Leakage I _R (μA)		Capacitance C _i (pF)		ESD Voltage ^{Note 3} (kV)	
	MIN.	MAX.	I _T (mA)	MAX.	I _T (mA)	MAX.	V _R (V)	TYP.	Test Condition	MIN.	Test Condition
NNCD5.6LH	5.3	6.3	5	80	5	5	2.5	10	V _R = 0 V f = 1 MHz	8	C = 150 pF R = 330 Ω Contact discharge
NNCD6.2LH	5.7	6.7	5	50	5	2	3.0	8		8	
NNCD6.8LH	6.2	7.1	5	30	5	2	3.5	7		8	

- Notes**
1. Tested with pulse (40 ms)
 2. Z_z is measured at I_T given a small A.C. signal.
 3. ESD voltage is measured based on the IEC1000-4-2 test on electromagnetic interference (EMI).

TYPICAL CHARACTERISTICS (T_A = 25°C)

Figure 1. P - T_A RATING

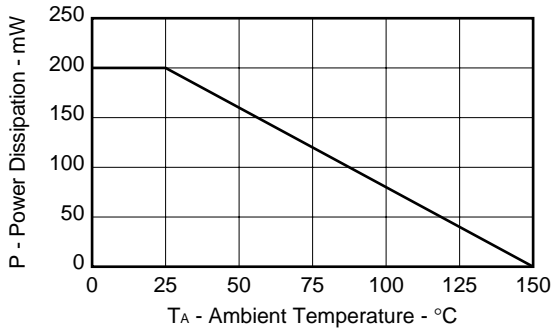


Figure 2. I_T - V_{BR} CHARACTERISTICS
(A - K1, A - K2, A - K3, A - K4)

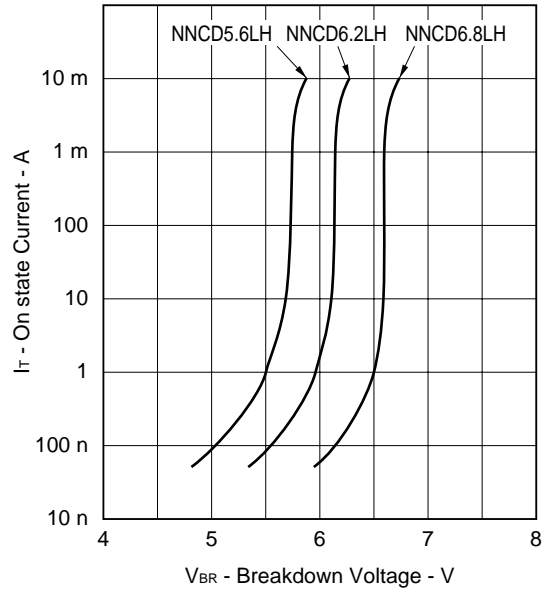


Figure 3. C_t - V_R CHARACTERISTICS

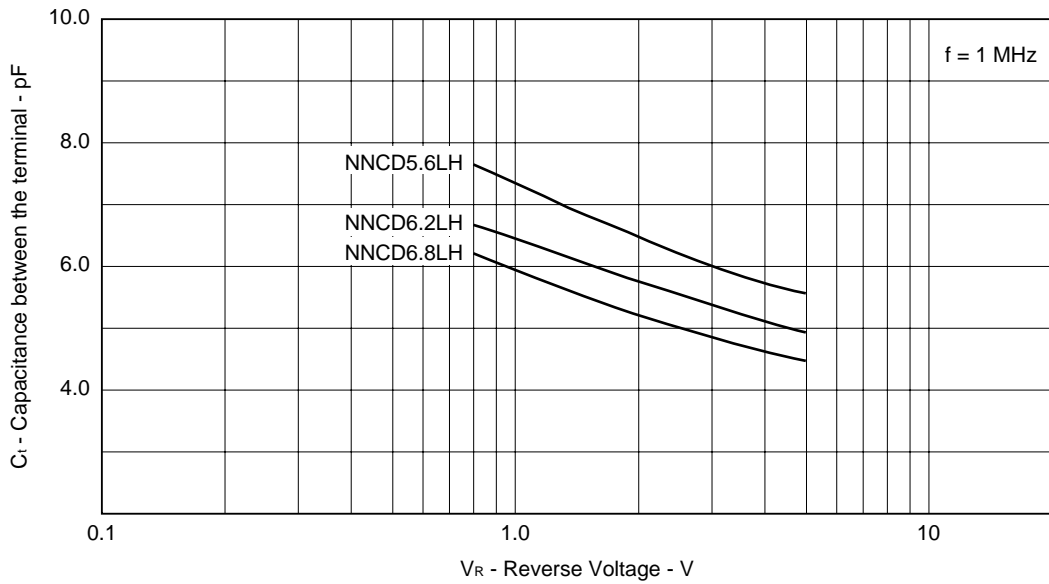


Figure 4. TRANSIENT THERMAL IMPEDANCE

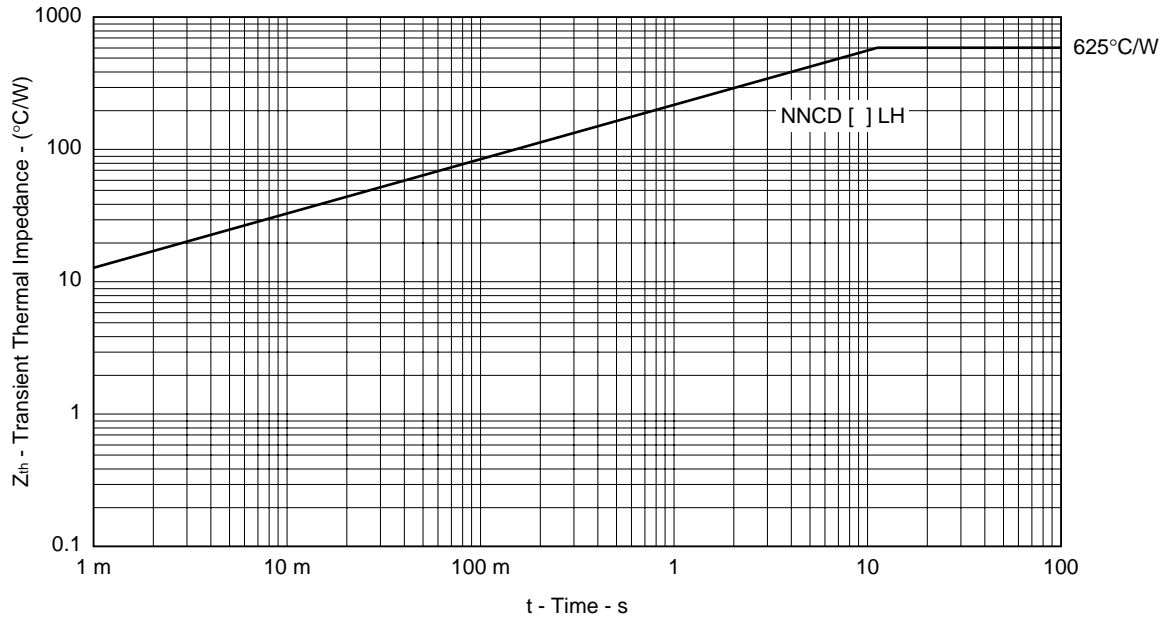
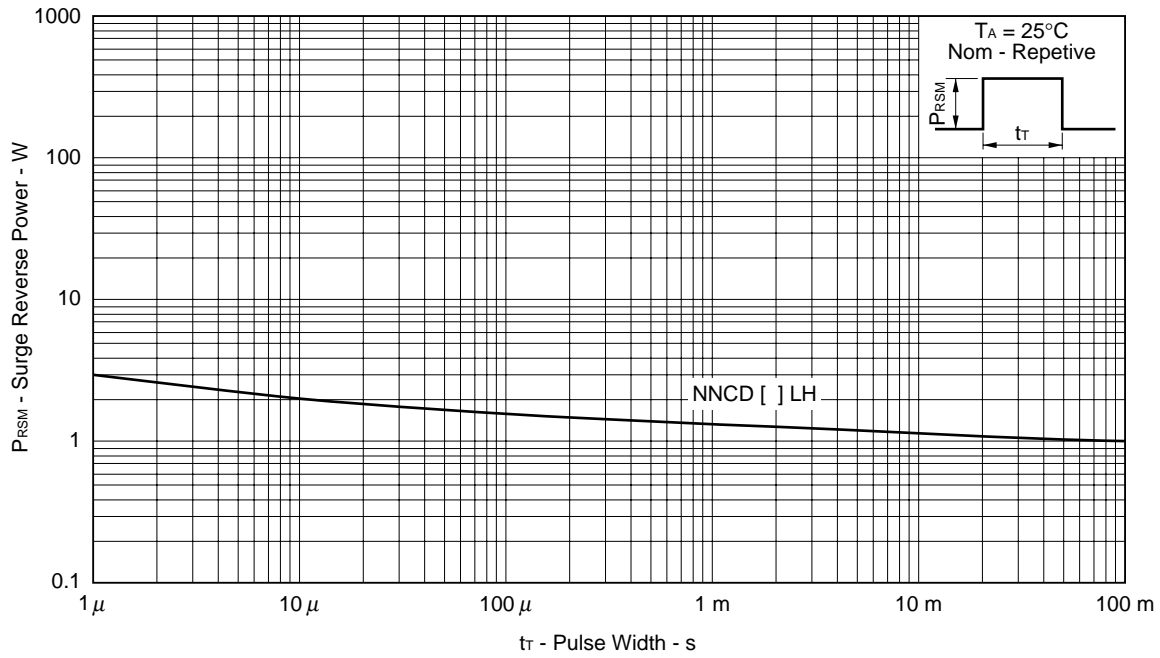


Figure 5. SURGE REVERSE POWER RATING



REFERENCE

Document	Document No.
NEC semiconductor device reliability/quality control system	C11745E
NEC semiconductor device reliability/quality control system	MEI - 1201
Quality grade on NEC semiconductor device	C11531E
Semiconductor device mounting technology manual	C10535E

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Anti-radioactive design is not implemented in this product.