To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

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

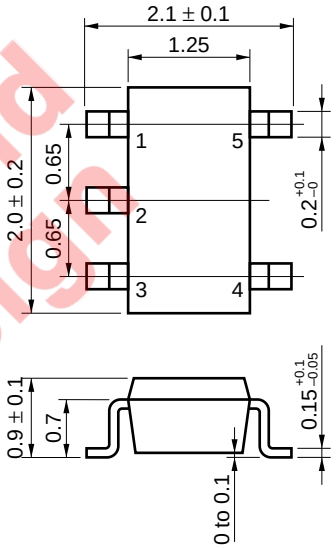
- Based on the electrostatic discharge immunity test (IEC1000-4-2), the product assures the minimum endurance of 8 kV.
- Capacitance is small with 10 pF (at V_R = 0 V, f = 1 MHz) between the terminal. It is excellent in the frequency characteristic.
- With 4 elements mounted (common anode) in the 5-pin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

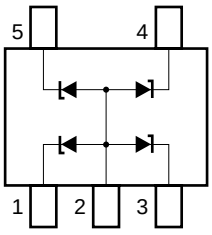
PACKAGE DIMENSIONS

(in millimeters)



(5-pin super mini mold)

PIN CONNECTION



1: K1 Cathode 1
2: A Anode (Common)
3: K2 Cathode 2
4: K3 Cathode3
5: K4 Cathode4

MAXIMUM RATINGS (T_A = 25°C)

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

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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_t (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

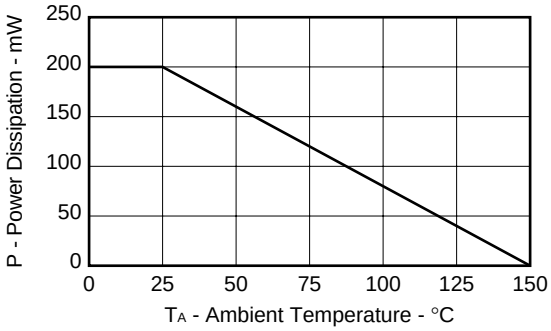


Figure 2. I_t - V_{BR} CHARACTERISTICS (A - K1, A - K2, A - K3, A - K4)

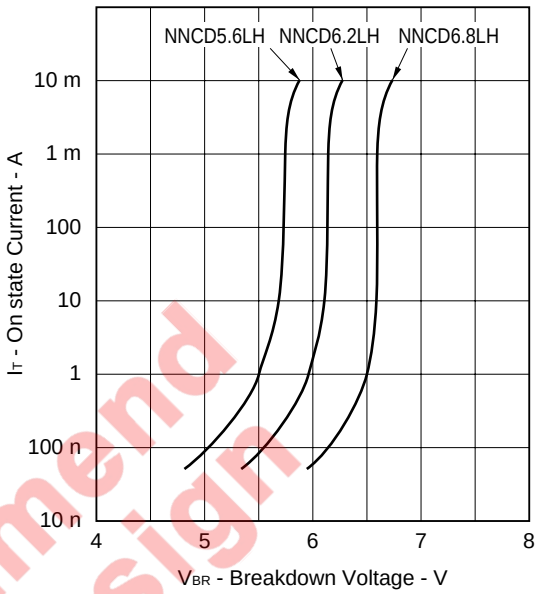


Figure 3. C_t - V_R CHARACTERISTICS

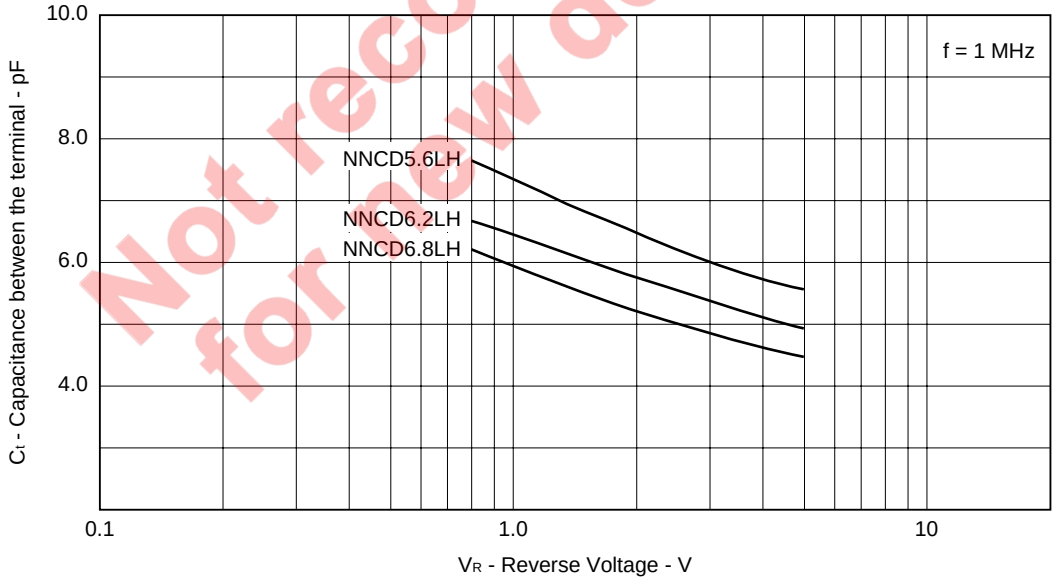


Figure 4. TRANSIENT THERMAL IMPEDANCE

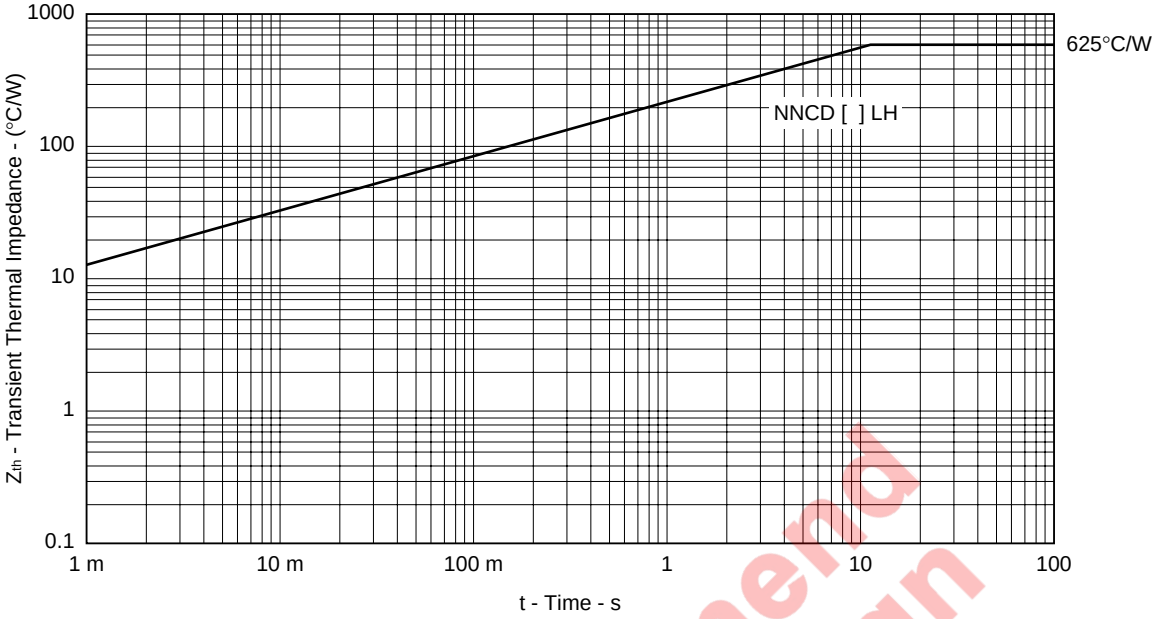
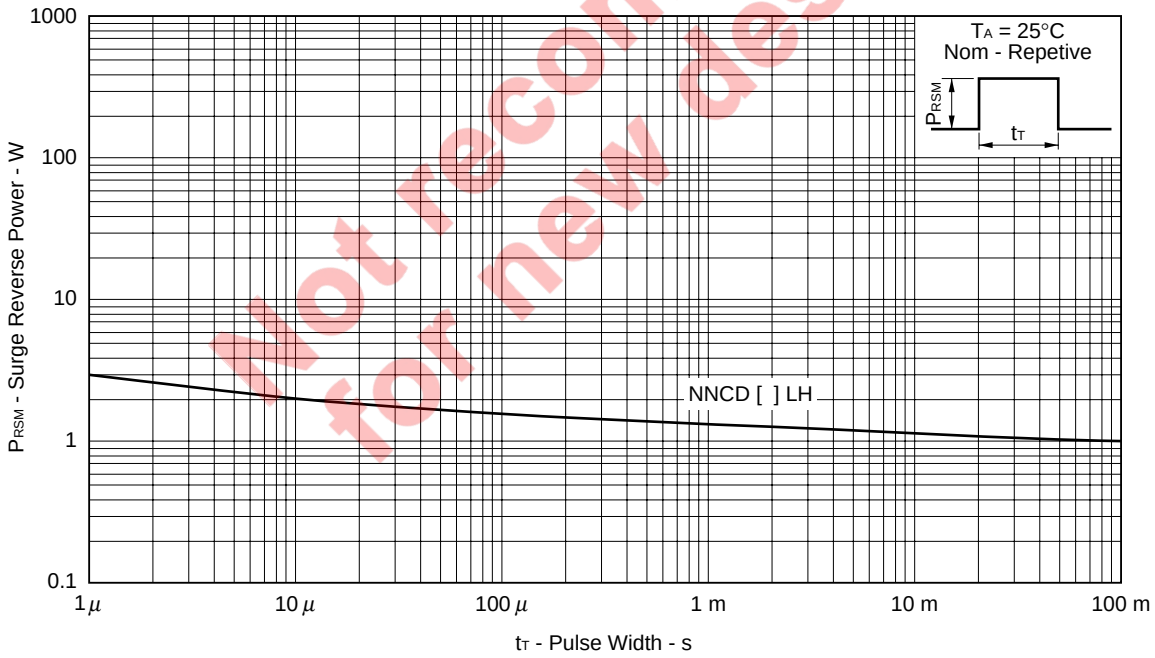


Figure 5. SURGE REVERSE POWER RATING



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

[MEMO]

[MEMO]