

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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# NNCD5.6MG to NNCD6.8MG

## LOW CAPACITANCE HIGH ESD TYPE ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODES (QUARTO TYPE: COMMON ANODE) 5-PIN MINI MOLD

This product series is a low capacitance type diode developed for E.S.D. (Electrostatic Discharge) protection. Based on the IEC61000-4-2 test on electromagnetic interference (EMI), the diode assures an endurance of no less than 30 kV, and capacitance is small with 20 pF TYP. This product series is the most suitable for the ESD protection in the high-speed data communication bus such as USB.

With four elements mounted in the 5-PIN Mini Mold Package, that product can cope with high density assembling.

### FEATURES

- Based on the electrostatic discharge immunity test (IEC61000-4-2), the product assures the minimum endurance of 30 kV.
- Capacitance is small with 20 pF TYP. (at  $V_R = 0$  V,  $f = 1$  MHz). It is excellent in the frequency characteristic.
- With 4 elements mounted (common anode) in the SC-74A package, that product can cope with high density assembling.

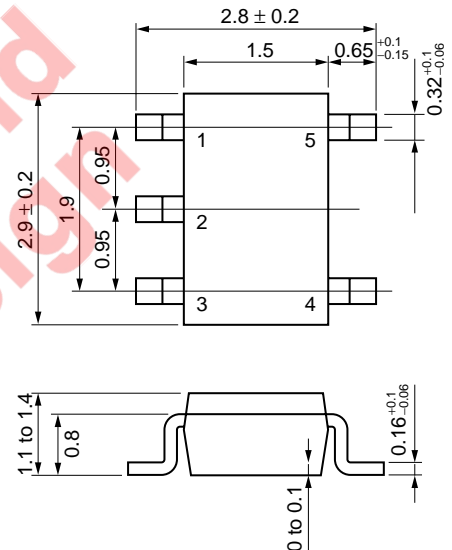
### APPLICATIONS

- External interface circuit E.S.D. protection in the high-speed data communication bus such as USB.

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

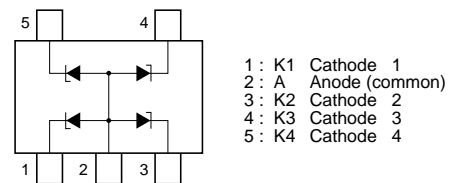
Power Dissipation	P	200 mW (Total)
Surge Reverse Power	$P_{RSM}$	2 W ( $t = 10 \mu\text{s}$ 1 pulse) Fig.5
Junction Temperature	$T_j$	$150^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-55^\circ\text{C}$ to $+150^\circ\text{C}$

### PACKAGE DIMENSIONS (in millimeters)



(SC-74A)

### PIN CONNECTION



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

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**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ ) (A-K1, A-K2, A-K3, A-K4)**

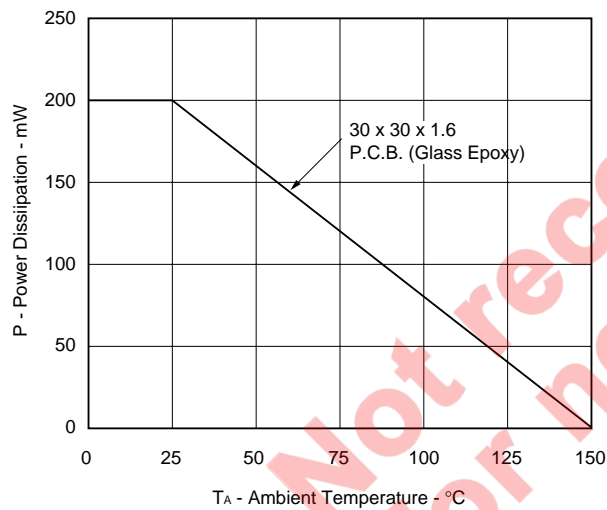
Type No.	Breakdown Voltage <sup>Note 1</sup> V <sub>BR</sub> (V)			Dynamic <sup>Note 2</sup> Impedance Z <sub>Z</sub> (Ω)		Reverse Leakage I <sub>R</sub> (μA)		Capacitance C <sub>i</sub> (pF)		E.S.D Voltage (kV)	
	MIN.	MAX.	I <sub>T</sub> (mA)	MAX.	I <sub>T</sub> (mA)	MAX.	V <sub>R</sub> (V)	TYP.	TEST CONDITION	MIN.	TEST CONDITION
NNCD5.6MG	5.3	6.3	5	80	5	5	2.5	26	V <sub>R</sub> = 0 V f = 1 MHz	30	C = 150 pF R = 330 Ω (IEC61000-4-2)
NNCD6.2MG	5.7	6.7	5	50	5	2	3.0	20		30	
NNCD6.8MG	6.2	7.1	5	30	5	2	3.5	20		30	

**Note 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  $I_T$  vs.  $V_{BR}$  CHARACTERISTICS**

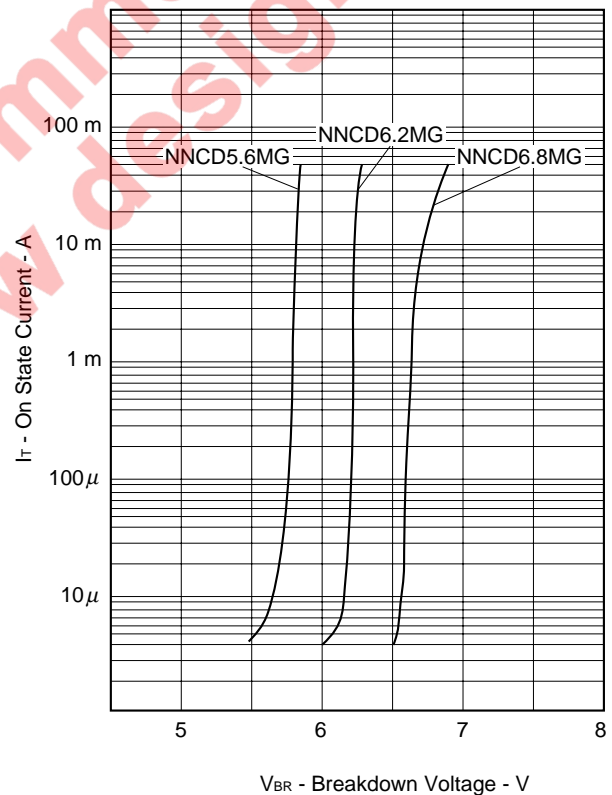


Fig. 3  $C_t$ - $V_R$  CHARACTERISTICS

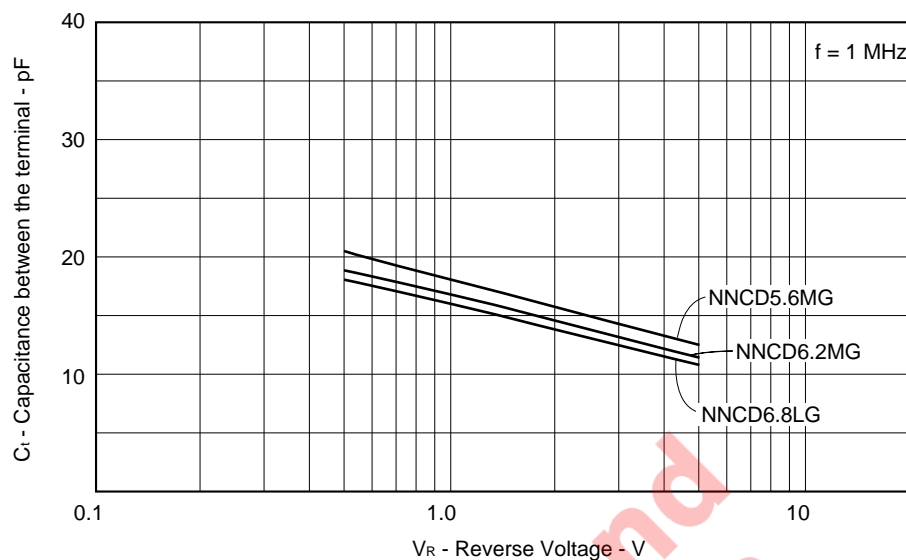


Fig. 4 TRANSIENT THERMAL IMPEADANCE CHARACTERISTIC

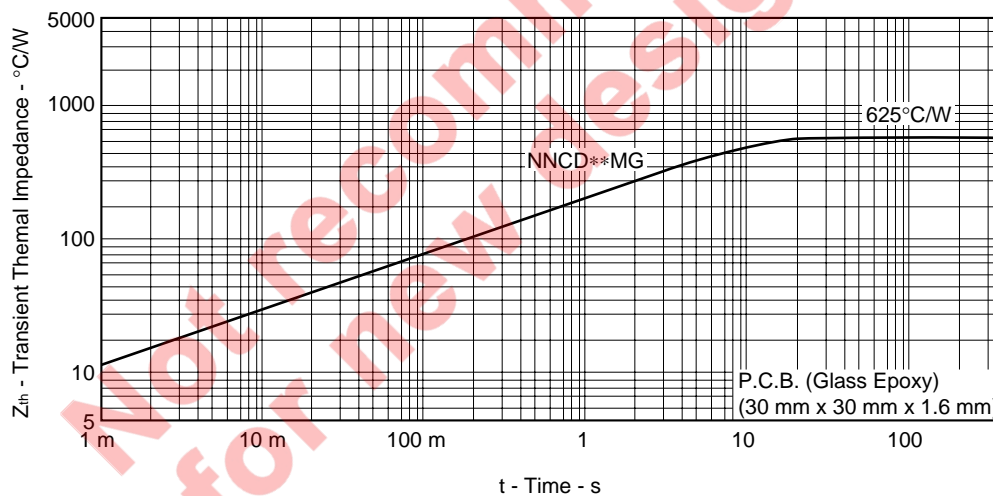
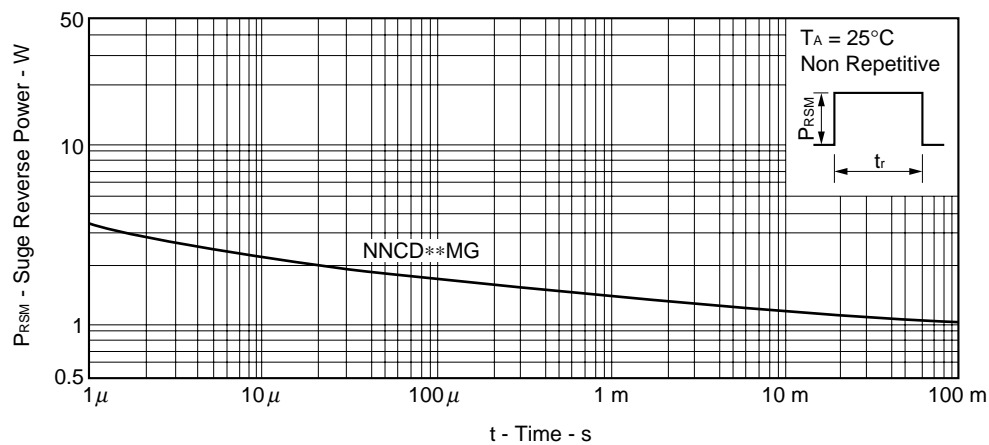


Fig. 5 SURGE REVERSE POWER RATINGS



[MEMO]

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