RENESAS

ESD NOISE CLIPPING DIODE
NNCD2.0DA to NNCD39DA

ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODE
2-PIN SUPER MINI MOLD

DESCRIPTION

These products are the diode developed for ESD (Electrostatic Discharge) noise protection. Based on the IEC61000-4-2 test on electromagnetic interference (EMI), the diode assures an endurance, thus making itself most suitable for external interface circuit protection.

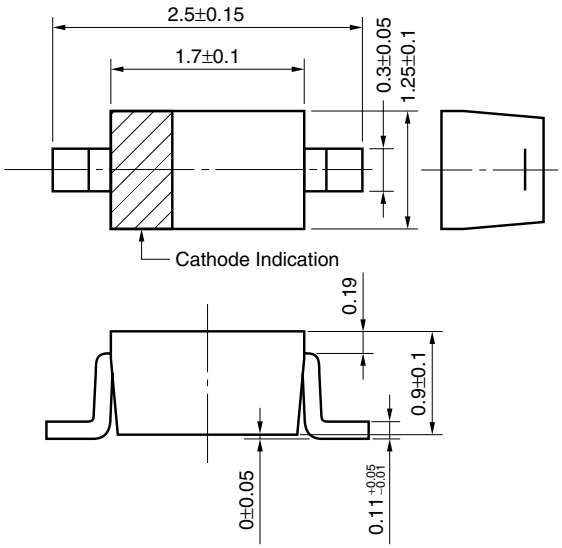
FEATURES

- Based on the electrostatic discharge immunity test (IEC61000-4-2), the product assures the minimum endurance
- Based on the reference supply of the set, the product achieves a series over a wide range (32 product names lined up)
- Package: 2-pin Super Mini Mold (SC-76)

APPLICATIONS

- External interface circuit ESD protection
- Circuits for Waveform clipper, Surge absorber

PACKAGE DRAWING (Unit: mm)



<R> **ORDERING INFORMATION**

PART NUMBER	LEAD PLATING	PACKING	PACKAGE
NNCD∗∗[Note 1]DA-T1-AT[Note 2]	Pure Sn (Tin)	Tape 3000 p/reel	2-pin Super Mini Mold (SC-76)

Notes 1. Type Number

2. Pb-free (This product does not contain Pb in the external electrode and other parts.)

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Rating	Unit	Remark
Power Dissipation	P	200	mW	When surface mounting on 30 mm x 30 mm x 1.6 mmt P.C.B. (Glass Epoxy), refer to **Figure 1**
Surge Reverse Power	P_{RSM}	85	W	t_T = 10 μs, 1 pulse, refer to **Figure 5**
Junction Temperature	T_j	150	°C	
Storage Temperature	T_{stg}	−55 to +150	°C	

Document No. D18879EJ2V0DS00 (2nd edition)
Date Published January 2010 NS
Printed in Japan

The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

<R> **ELECTRICAL CHARACTERISTICS (T_A = 25°C)**

Type Number	Breakdown Voltage V_{BR} (V) Note 1			Dynamic Impedance Z_Z (Ω) Note 2		Reverse Leakage I_R (μA)		Capacitance C_t (pF)		ESD Voltage (kV) Note 3	
	MIN.	MAX.	I_T (mA)	MAX.	I_T (mA)	MAX.	V_R (V)	TYP.	Condition	TYP.	Condition
NNCD2.0DA	1.90	2.20	5	100	5	120	0.5	260	V_R = 0 V, f = 1 MHz	30	C = 150 pF, R = 330 Ω
NNCD2.2DA	2.10	2.40	5	100	5	120	0.7	250		30	
NNCD2.4DA	2.30	2.60	5	100	5	120	1.0	240		30	
NNCD2.7DA	2.50	2.90	5	110	5	120	1.0	235		30	
NNCD3.0DA	2.80	3.20	5	120	5	50	1.0	225		30	
NNCD3.3DA	3.10	3.50	5	130	5	20	1.0	220		30	
NNCD3.6DA	3.40	3.80	5	130	5	10	1.0	210		30	
NNCD3.9DA	3.70	4.10	5	130	5	10	1.0	200		30	
NNCD4.3DA	4.00	4.49	5	130	5	10	1.0	180		30	
NNCD4.7DA	4.40	4.92	5	130	5	10	1.0	170		30	
NNCD5.1DA	4.82	5.39	5	130	5	5	1.5	160		30	
NNCD5.6DA	5.29	5.94	5	80	5	5	2.5	140		30	
NNCD6.2DA	5.84	6.55	5	50	5	2	3.0	120		30	
NNCD6.8DA	6.44	7.17	5	30	5	2	3.5	110		30	
NNCD7.5DA	7.03	7.87	5	30	5	2	4.0	90		30	
NNCD8.2DA	7.73	8.67	5	30	5	2	5.0	90		30	
NNCD9.1DA	8.53	9.58	5	30	5	2	6.0	85		30	
NNCD10DA	9.42	10.58	5	30	5	2	7.0	80		30	
NNCD11DA	10.40	11.60	5	30	5	2	8.0	70		30	
NNCD12DA	11.38	12.64	5	35	5	2	9.0	70		30	
NNCD13DA	12.43	14.00	5	35	5	2	10	55		30	
NNCD15DA	13.80	15.56	5	40	5	2	11	48		30	
NNCD16DA	15.31	17.14	5	40	5	2	12	43		30	
NNCD18DA	16.89	19.08	5	45	5	2	13	38		30	
NNCD20DA	18.80	21.14	5	50	5	2	15	34		30	
NNCD22DA	20.81	23.25	5	55	5	2	17	30		30	
NNCD24DA	22.86	25.66	5	60	5	2	19	29		30	
NNCD27DA	25.10	28.90	2	70	2	2	21	25		30	
NNCD30DA	28.00	32.00	2	80	2	2	23	24		30	
NNCD33DA	31.00	35.00	2	80	2	2	25	23		25	
NNCD36DA	34.00	38.00	2	90	2	2	27	22		20	
NNCD39DA	37.00	41.00	2	100	2	2	30	21		20	

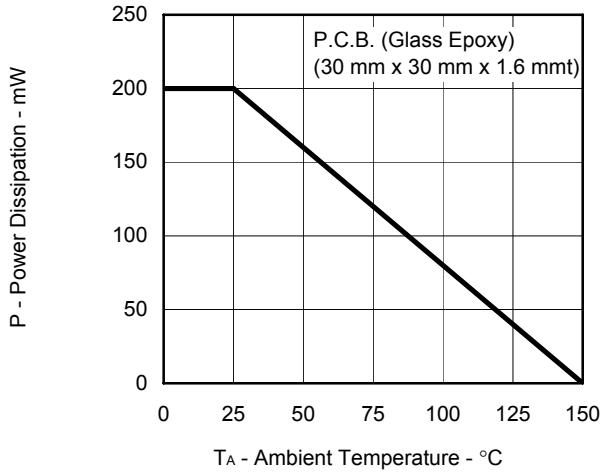
Notes 1. V_{BR} is tested with pulse (40 ms).

2. Z_Z is measured at I_T given a small A.C. signal.

3. Based upon with IEC61000-4-2.

TYPICAL CHARACTERISTICS (T_A = 25°C)

Figure 1. POWER DISSIPATION vs.AMBIENT TEMPERATURE



<R> Figure 2. I_T - V_{BR} CHARACTERISTICS (1/2)

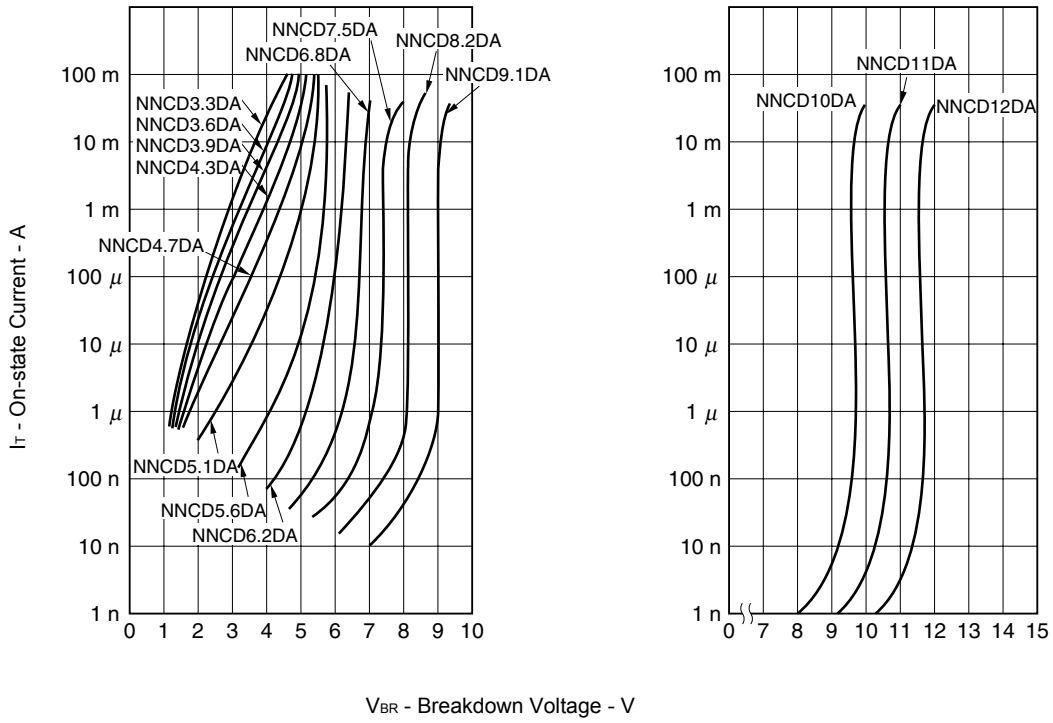


Figure 2. I_T - V_{BR} CHARACTERISTICS (2/2)

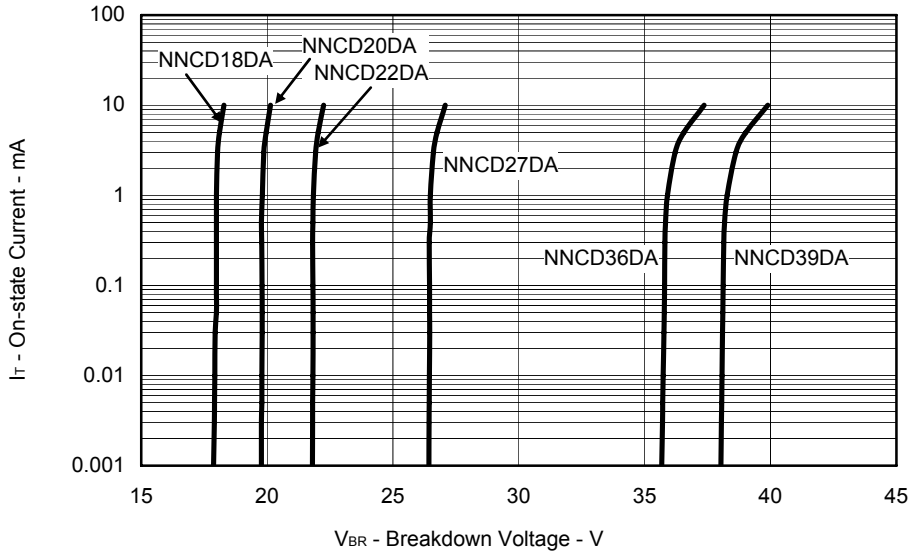


Figure 4. TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

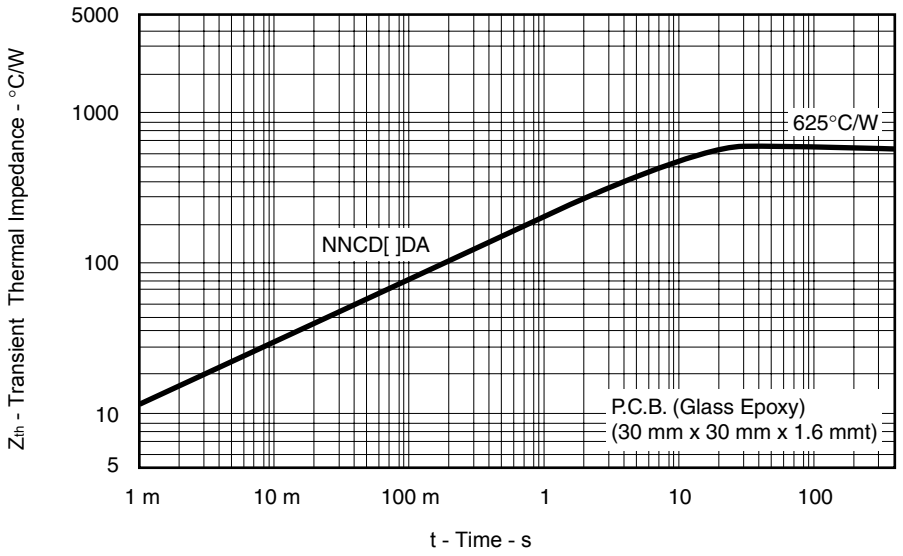
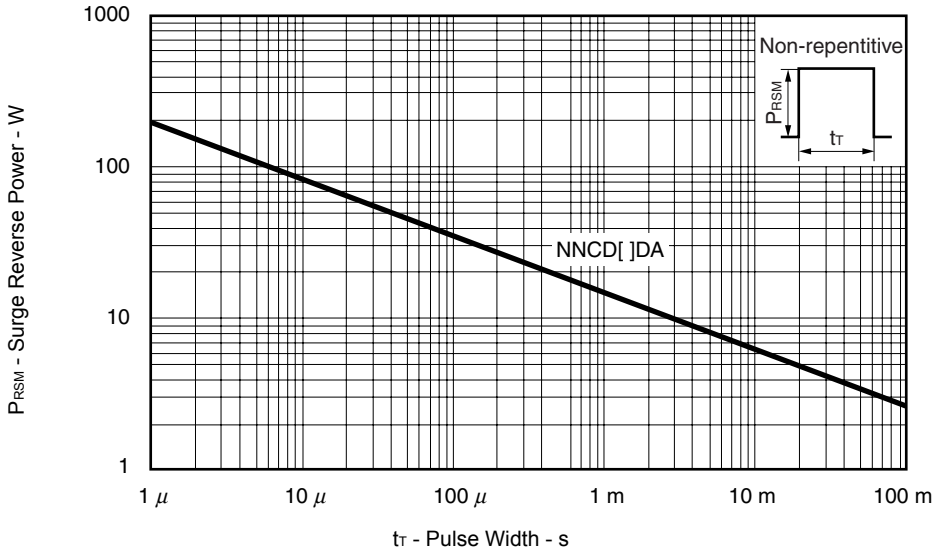
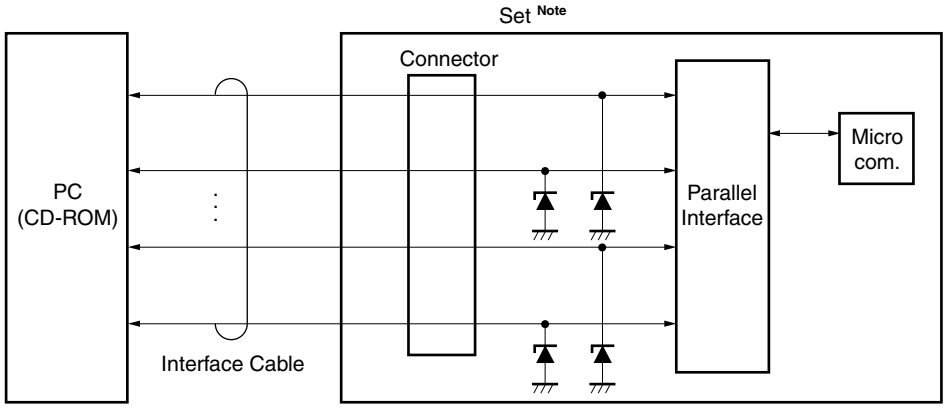


Figure 5. SURGE REVERSE POWER RATINGS



SAMPLE APPLICATION CIRCUIT



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

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April 1st, 2010
Renesas Electronics Corporation

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