NP0TA Series

Low Capacitance Protector

The NP series of low voltage/low capacitance overvoltage protection devices protect high speed xDSL line drivers and chipsets from both Lightning Surge and ESD events. The devices are designed with a low nominal capacitance as well as extremely low differential capacitance across frequency and voltage. The inherent low off−state leakage current provides superior performance in low voltage high speed applications. These characteristics allow protection of the system without distortion of the high speed data signal.

With it’s advanced silicon structure the NP product is able to clamp very fast ESD events, and crowbar high energy surge events to help protect sensitive IC’s all in a small footprint. The convenient flow thru design minimizes trace routing while maximizing circuit performance.

The NP series of low voltage/low capacitance devices helps designers to comply with the various regulatory standards and recommendations including: GR−1089−CORE, IEC 61000−4−5, ITU K.20/K.21/K.45, IEC 60950,

TIA−968−A, FCC Part 68, EN 60950, UL 1950.

Features

- Low Nominal Capacitance
- Extremely Low Differential Capacitance
- Low Leakage (Transparent)
- High Surge Capability
- Precise Clamping Voltage
- Small Package Size
- Bi−directional Operation
- Flow Thru Layout
- IEC 61000−4−2 Level 4 ESD protection
- These are Pb−Free Devices

Typical Applications

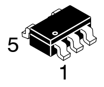
- VDSL, ADSL, Access, Central Office, and Customer Premise modems and gateway IC side line driver chipset protection
- 10/100/1000 Ethernet Protection
- RS−232, RS−485 Transceiver Protection

ELECTRICAL CHARACTERISTICS

	V_{RWM}	V_{BR}	I_R@ V_R=V_{RWM}	C@ V_R = 2 V	Δ°C 0 V−V_{RWM}
Device	**(V)**	**(V)**	**(μA)**	**(pF)**	**(pF)**
NP0080TAT1G	8	9.5	0.5	13	4
NP0120TAT1G	12	12.5	0.5	11	3
NP0160TAT1G	16	18	0.5	11	3

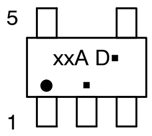
SURGE/ESD RATINGS

Waveform	8x20μA	ESD Air	ESD Contact
Value	50 A	15 kV	8 kV



TSOP−5
SN SUFFIX
CASE 483

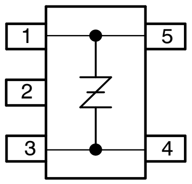
MARKING DIAGRAM



xxA = Specific Device Code (NP0xx0TAT1G)
D = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

PIN CONNECTIONS



(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

ELECTRICAL CHARACTERISTICS TABLE (T_A = 25°C unless otherwise noted)

Symbol	Rating		Min	Typ	Max	Unit
V_{RWM}	**Repetitive peak off–state voltage**: Rated maximum (peak) continuous voltage that may be applied in the off–state condition	NP0080TAT1G			±8	V
		NP0120TAT1G			±12	
		NP0160TAT1G			±16	
V_{BR1}	**Breakdown Voltage**: The minimum voltage across the device in or at the breakdown region. Measured at I_{BR} = 1 mA	NP0080TAT1G	9.5			V
		NP0120TAT1G	12.5			
		NP0160TAT1G	18			
$V_{(BO)}$	**Breakover Voltage**: The maximum voltage across the device in or at the breakover region. Measured at $I_{(BO)}$ = 800 mA	NP0080TAT1G			20	V
		NP0120TAT1G			30	
		NP0160TAT1G			40	
I_R	**Off–state Current**: The dc value of current that results from the application of the off–state voltage				0.5	μA
I_H	**Holding Current**: The minimum current required to maintain the device in the on–state.			50		mA
Co	**Off–State Capacitance**: f = 1.0 MHz, V_d = 1.0 Vrms, V_D = –2 Vdc	NP0080TAT1G			13	pF
		NP0120TAT1G			11	
		NP0160TAT1G			11	
ΔC_1	**Δ Capacitance**: f = 1.0 MHz, V_d = 1.0 Vrms, V_D = | 0 V – Vrwm|	NP0080TAT1G		4		pF
		NP0120TAT1G		3		
		NP0160TAT1G		3		
IPPS	**Peak Pulse Current**: Rated maximum value of peak impulse pulse current that may be applied. 8x20 μs, IEC – 61000 – 4 – 5		50			A
ESD	**Electrostatic Discharge**: Rated maximum value of ESD per IEC–61000–4–2	Contact		8		kV
		Air		15		
T_{STG}	**Storage Temperature Range**		–55		+150	°C
T_J	**Operating Junction Temperature Range**		–40		+125	°C