

Family of Low capacitance TVS Flip Chip Devices

- REVISION 1 -

INTRODUCTION

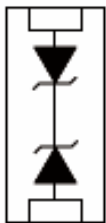
DESCRIPTION

The MN0402-V series is a family of transient voltage suppression devices that are designed to protect low voltage CMOS semiconductors, electronic components and sub assemblies from transients caused by electrostatic discharge (ESD), cable discharge events (CDE), lightning strikes and other surge induced voltages. These devices have a very low capacitance ranging between 20pF and 35pF to improve the signal integrity of the bits coming off this line.

APPLICATIONS

- Cellular Phones
- Notebooks
- Smart Cards
- Personal Digital Assistant (PDA)
- Peripherals

PHYSICAL CHARACTERISTICS



0402 ESD Protection

Electrical
Schematic

ORDERING INFORMATION

MN0402LC"T"- "V"- "P"- TR

"T" for temperature= "C" for commercial (0 - 70°C) or "I" for industrial (-20°C - +85°C) - Default or no indication means "C"

"V" for voltage range= 05, 08, 12, 15, 24

"P" for packaging= "BP" for Bump Flip-Chip, "WF" for wafer*

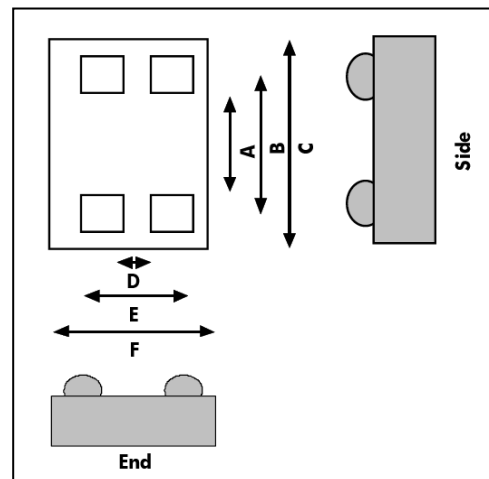
"TR" for Tape and Reel - No indication means delivery in tube (for SOIC only)

* Minimum quantity= 1 wafer

FEATURES

- ESD voltage in excess of 25kV
- IEC61000-4-2(ESD):air-15kV, contact 8 kV
- IEC61000-4-4 (EFT): 40A-5/50ns
- Low capacitance, low leakage current.
- Low operating and clamping voltages
- Voltage ranges are 5V, 8V,12V, 15V and 24V.
- Bidirectional devices
- Available in wafer and 4-Bump Flip-Chip forms

PACKAGE OUTLINES / DIMENSIONS



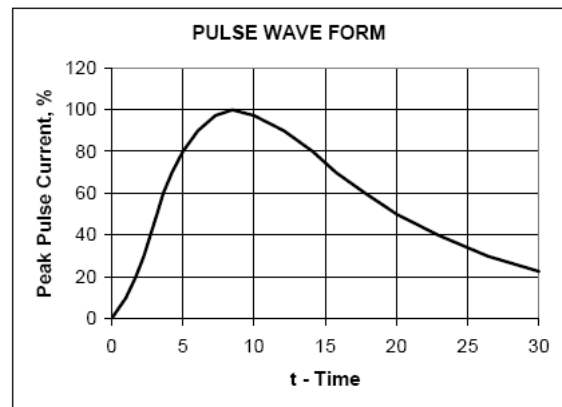
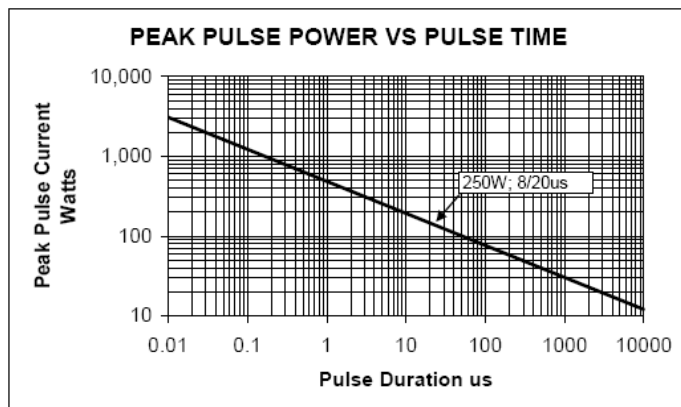
Dim.	Millimeters	Inches
A	0.46 Nom.	0.018 Nom
B	0.86 Nom	0.034 Nom
C	.99±0.0254	0.039 ±0.001
D	0.10 Nom	0.004 Nom.
E	0.35 Nom	0.014 Nom
F	0.483±0.0254	0.019 0 ±.001
G	0.20 Nom	0.008 Nom
H	0.127 max	0.005 max
I	0.406 Nom	0.016 Nom

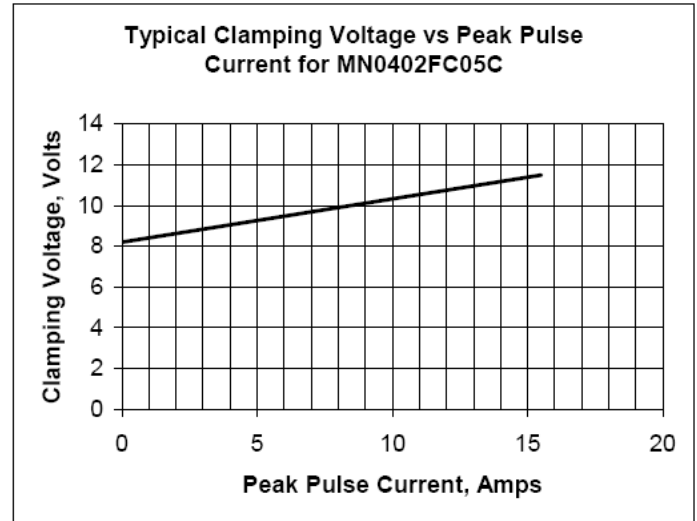
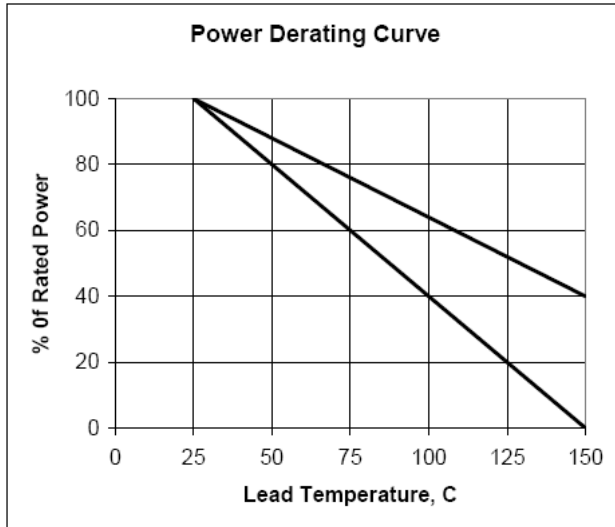
Device Characteristics:

Maximum Ratings @25°C, unless otherwise specified			
Parameter	Symbol	Value	Units
Peak Pulse Power (tp = 8 / 20 μs)	Ppp	200	Watts
Operating Temperature	Tj	-55°C to 150°C	°C
Storage Temperature	Tstg	-55°C to 150°C	°C

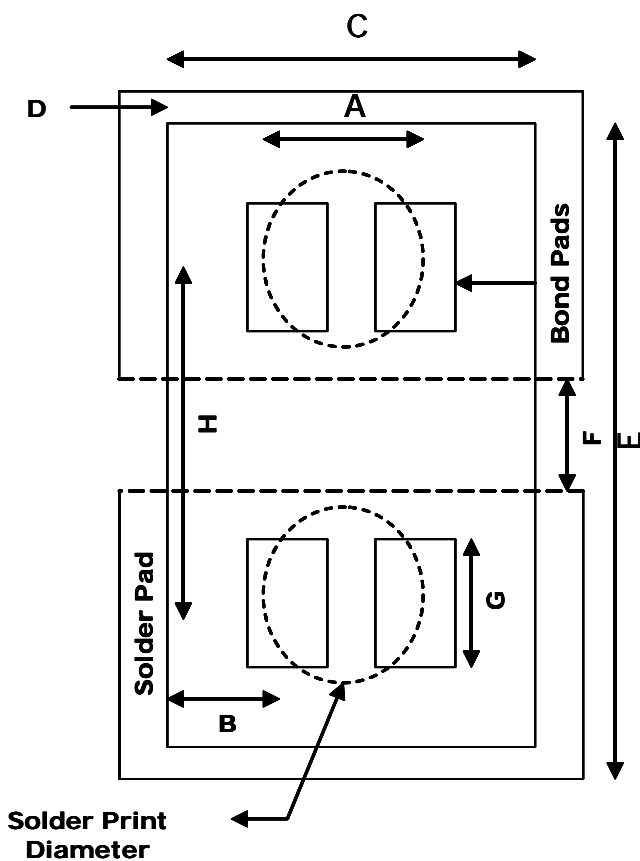
Electrical Characteristics per part number @25 °C, unless otherwise specified						
Part Number	Rated Stand Off Voltage Vso (V)	Minimum break down voltage @ 1mA Vbr (V)	Maximum clamping voltage @Ip=1A Vc (V)	Maximum clamping voltage @8/20μs Vc	Maximum leakage current @ Vso Id (μA)	Typical capacitance @0V 1MHz. C (pF)
MN0402LC-05	5.9	6.0	11	13V@15A	10	35
MN0402LC-08	8.0	8.5	13.2	18V@11A	1	32
MN0402LC-12	12.0	13.3	19.8	26.9V@7.4A	1	30
MN0402LC-15	15	16.7	25.4	34.5V @5.8A	1	25
MN0402LC-24	24	26.7	37.2	50.6V @4A	1	20

Performance Graphs



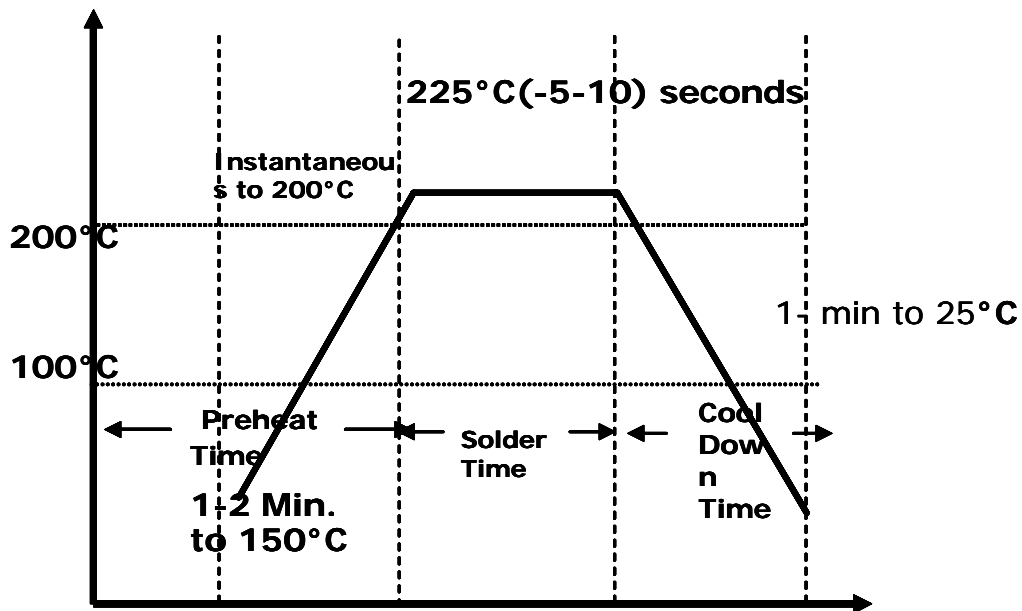


PCB Land Pattern



Dimension	Millimeter	Inches
A	0.23	0.009
B	0.48	0.019
C	0.69	0.027
D	0.46	0.018
E	0.99	0.039
F	0.20	0.008
G	0.66	0.008
H	0.13	0.026

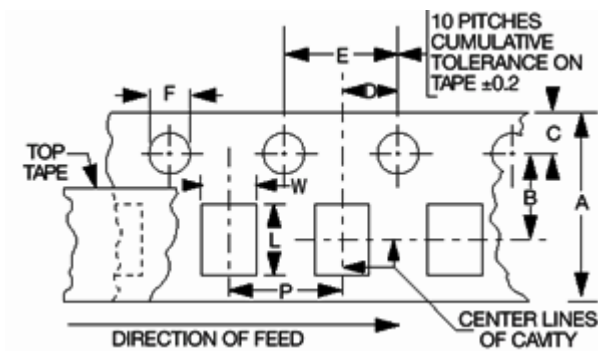
Soldering profile



Tape and Reel:

All tape and reel specifications are in compliance with EIA 481-1A (equivalent to IEC 286 part 3).

- 8mm carrier
- Reeled Quantities:
 - 3000 in a 7" reel
 - 10,000 in a 13" reel.



Dimension	Millimeter	Inches
A	8.0 ± 0.3	0.315 ± 0.012
B	3.5 ± 0.05	0.138 ± 0.002
C	1.75 ± 0.1	0.069 ± 0.004
D	2.0 ± 0.05	0.079 ± 0.002
E	4.0 ± 0.1	0.157 ± 0.004
F	1.5 ± 0.1	0.059 ± 0.004

Note:

Metric dimensions will govern. The inch measurements are rounded and are for reference only.