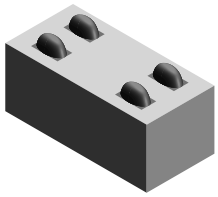
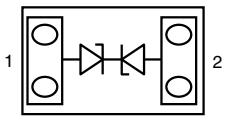
Flip Chip Protection Diode - Chip Size 0402

Description

Flip Chip is a chip with all packaging and interconnections manufactured on the wafer prior to dicing. The interconnections are made of solder bumps on i/o pads.Our device utilizes a silicon P/N junction for excellent clamping (protection) performance with low leakage current characteristic.





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Features

- ESD protection to IEC 61000-4-2 30 kV (air)
- ESD protection to IEC 61000-4-2 8 kV (contact)
- ESD protection to IEC 61000-4-5 (lightning): 8/20 μs, I_{PPM} = 10 A
- 120 W peak pulse power dissipation per line (8/20 μs)
- Suitable for high frequency applications (low capacitance, low parasitic inductance)
- Low clamping voltage
- Minimum PCB space needed (0.5 mm^2), < 0.55 mm height, only 0.47 mg/pcs
- No need for underfill material and/or additional solder
- Can be assembled using standard SMT pick & place equipment, reflow processes per J-STD-020 and assembly methods
- Green product
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Applications

Cellular phones
Personal digital assistants (PDA), notebook computers
MP3 players
GPS
Digital cameras
Bluetooth
Audio amplifiers
DVD
Power management systems
Read write heads for hard drives
Modules for watches
CPU
Digital TV's and sattelites receivers
SMART cards

Mechanical Data

Case: Flip Chip 1005
Standard EIA chip size: 0402
8 mm tape and reel per EIA-481-1-A/IEC60286
Top contacts: 4 solder bumps 80 μm in height (nominal)
Bumps of SnAgCu (lead-free)[1)]

[1)] also available with PbSn bumps

Absolute Maximum Ratings

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak pulse power dissipation[1)]	8/20 µs pulse	P_{PPM}	120	W
Peak pulse current	8/20 µs pulse	I_{PPM}	10	A
ESD Air discharge per IEC 61000-4-2		V_{ESD}	>30	kV
ESD Contact discharge per IEC 61000-4-2		V_{ESD}	>8	kV
Soldering temperature		T_{sd}	260	°C
Soldering time		t	10	s

[1)] Non-repetitive current pulse

Thermal Characteristics

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Operating temperature		T_J	- 55 to + 150	°C
Storage temperature		T_{STG}	- 55 to + 150	°C

Electrical Characteristics

Reverse Stand-off Voltage	Min. Breakdown Voltage	Max. Clamping Voltage		Max. Leakage Current	Capacitance
	V_{BR}	@ I_{PPM} = 1 A @ 8/20 µs	@ I_{PPM} = 10 A @ 8/20 µs		@ V_R = 0 V, f = 1 MHZ
V_{RWM}	@ 1 mA	V_C		@ V_{RWM}	C_D
V	V	V	V	µA	pF
5	6	9	12	20	75

Typical Characteristics (Tamb = 25 °C unless otherwise specified)

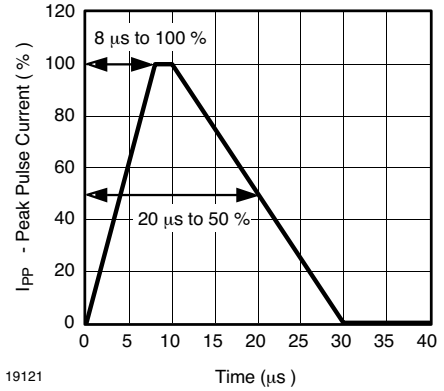


Figure 1. Pulse Waveform 8/20 µs acc. IEC 61000 - 4 - 5

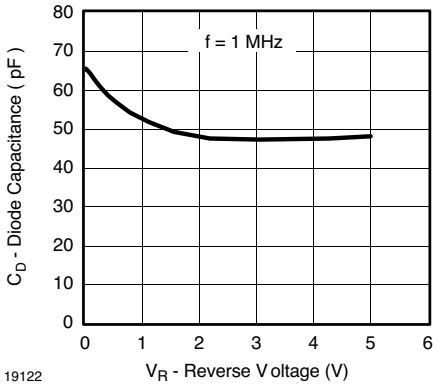


Figure 2. Typ. Diode Capacitance vs. Reverse Voltage

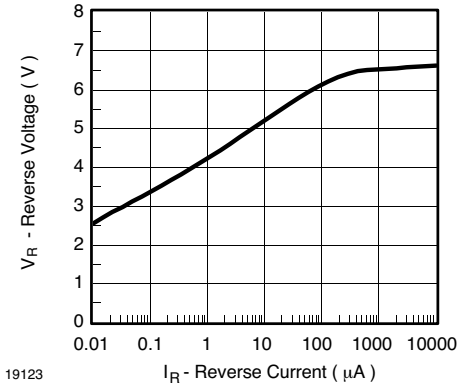


Figure 3. Reverse Voltage vs. Reverse Current

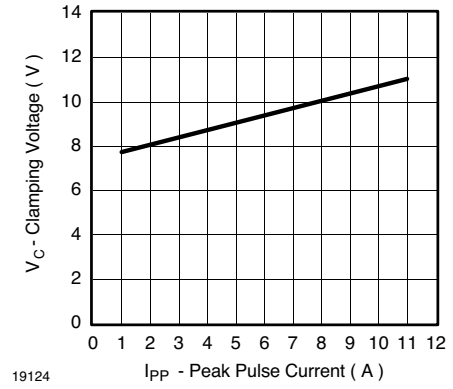
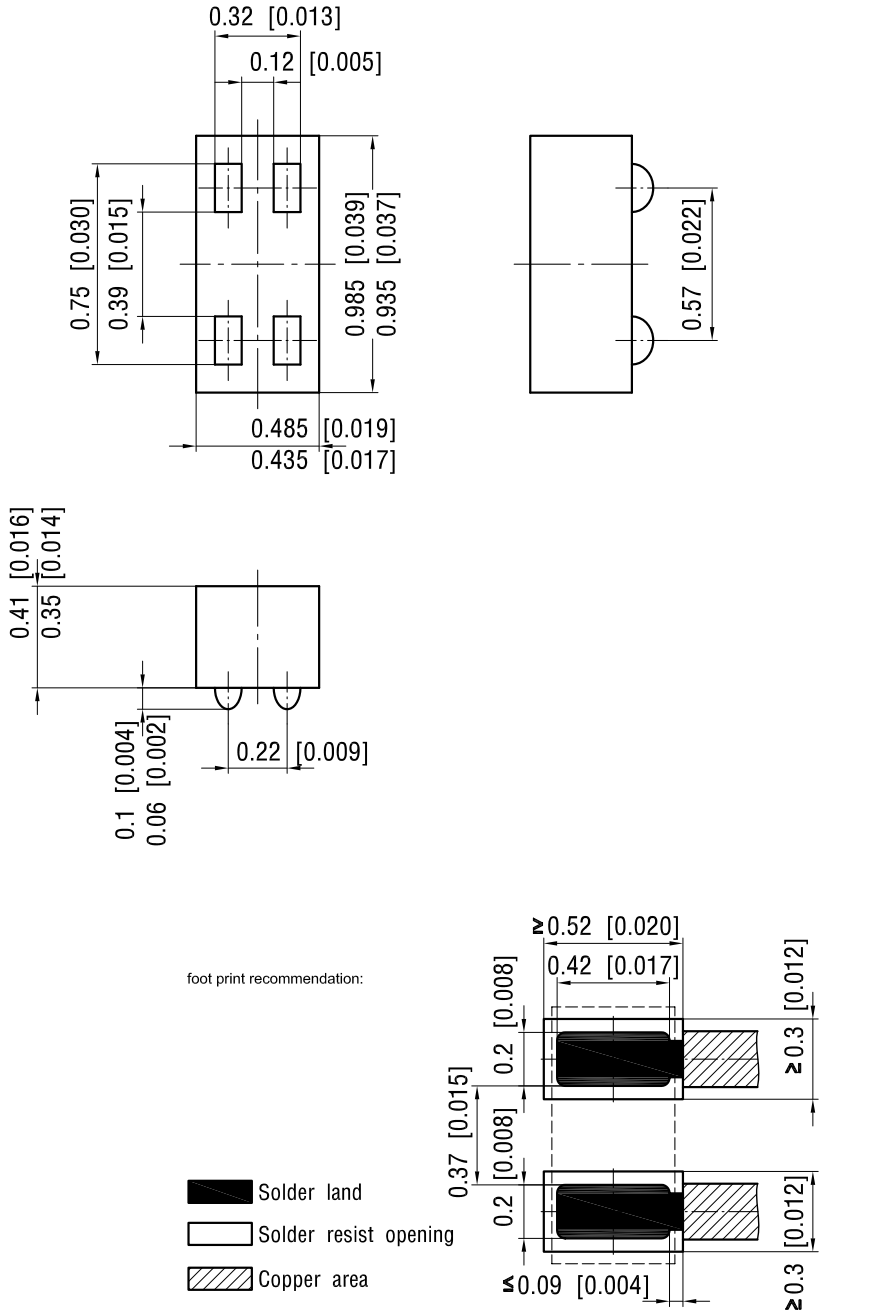


Figure 4. Clamping Voltage vs. Peak Pulse Current

Package Dimensions in mm (Inches)



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Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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