CMS Power-lines Protection Series (CMS-P)

Descriptions

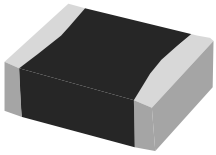
The Ceramic Micro-Surge Protection Device (CMS) is manufactured from semiconducting ceramics which offer rugged protection and excellent transient energy absorption in a small SMD package. These devices are designed to suppress a variety of transient events, including those speified in IEC61000-4-2, IEC61000-4-5 and other standards used for Electromagnetic Compliance (EMC).

These devices are available in ceramic leadless chip form, eliminating lead inductance and assuring fast speed of response to transient surges. In addition, The CMS transient suppressors have temperature independent suppression characteristics, affording protection from -55℃ to 125℃, which is much better than suppressors based on silicon semiconductor technology.

The CMS-P Series is specially designed for power-lines protection applications. It features a very high current protection capability with a very small size, also a very fast response thus a ultra low clamping voltage. These characteristics make CMS-P Series devices the best replacement of TVS and improvement of metal oxide (MOV) in high working voltage applications.

Features

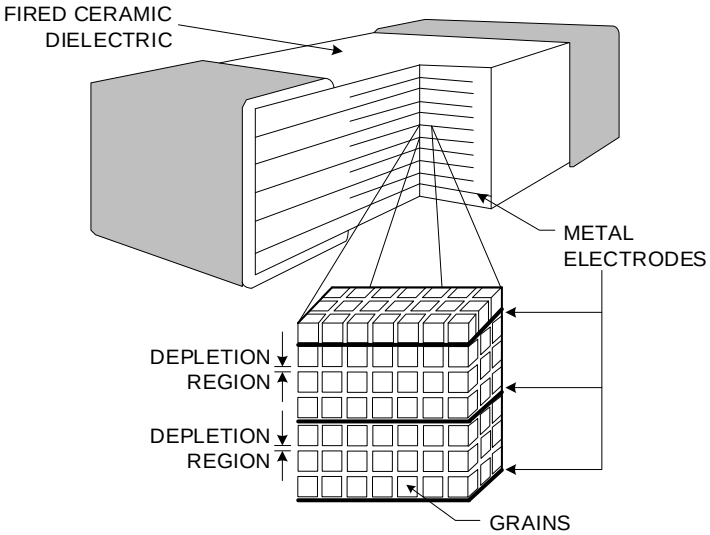
- Multi-Layers Construction Provides Higher Power Dissipation
- Surge Current Capability: 1200A (@8/20μs)
- Better than UL94V-0 Flammability Rating
- No Temperature Derating up to 125ºC Ambient
- Reliable ESD Protection up to 30kV acc. to IEC61000-4-2
- Inherent Bi-directional Clamping
- SMD type Body size 2220
- “Zero” Lead Inductance
- Very low Clamping Voltage
- RoHS compliant



Top View

Order Information

Type	Quantity	Reel Size
CMS2220	2000 pcs	13 Inch (330mm)



Multilayer Internal Construction

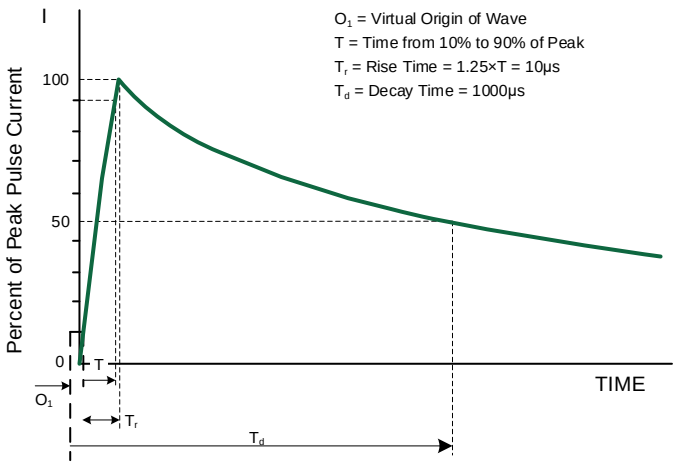
Applications

- LED
- Surge protection for IEC/EN 61547
- Surge protection for IEC61000-4-5
- EFT protection for IEC 61000-4-4 (Level 4)
- ESD protection for IEC 61000-4-2 (Level 4)

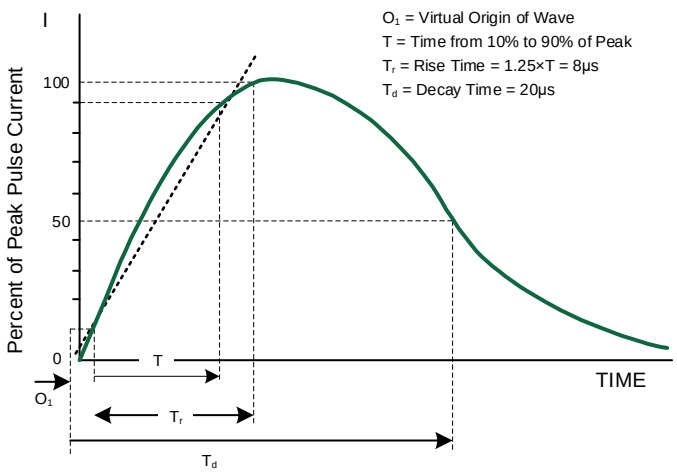
Device Ratings and Specifications

Parameter	Symbol	Condition	Value	Unit
Maximum Continuous a.c. Voltage	$V_{M(AC)}$	50~60Hz	320	V
Maximum Continuous d.c. Voltage	$V_{M(DC)}$		410	V
Nominal Varistor Voltage	V_N	@1mA	459~561	V
Maximum Leakage Current	I_L	@V_M	30	μA
Maximum Clamping Voltage	V_C	@I_C	840	V
Class Current	I_C	tp = 8/20μs	10	A
Peak Pulse Current	I_{PP}	tp = 8/20μs	1200	A
Operating Temperature Range			-55 to +125	°C
Storage Temperature			-55 to +150	°C

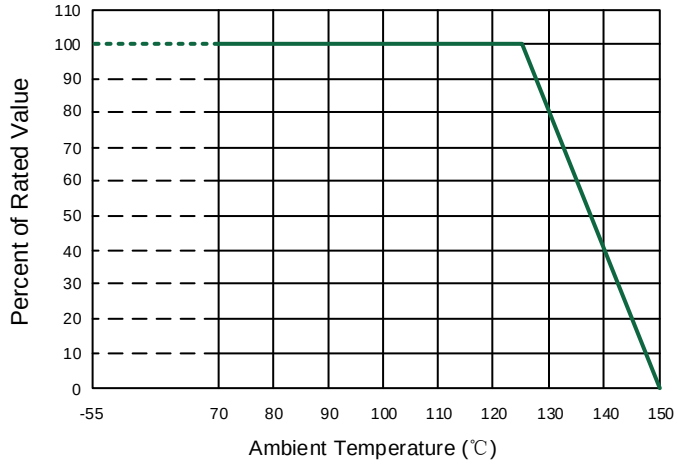
Pulse Waveform - 10/1000μs waveform



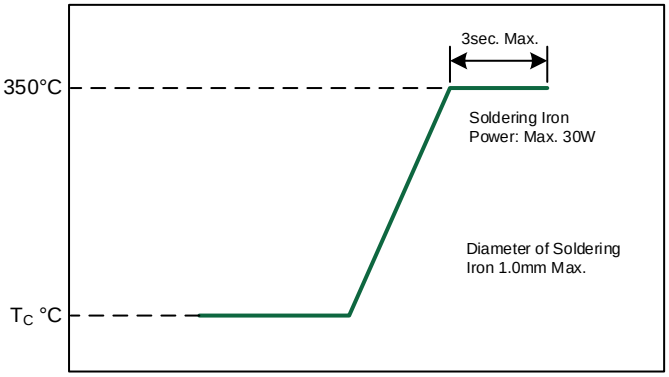
Pulse Waveform - 8/20μs waveform



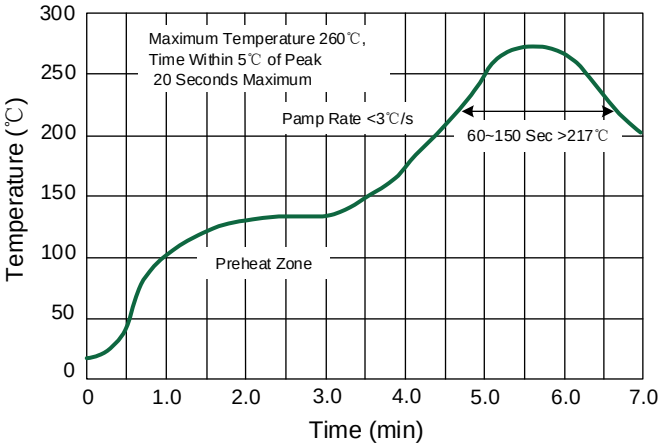
Current, Energy and Power Derating Curve



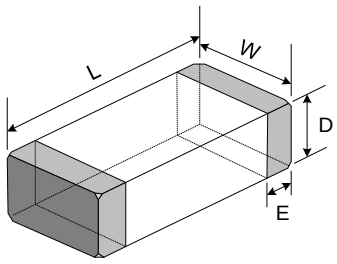
Iron Soldering Profile



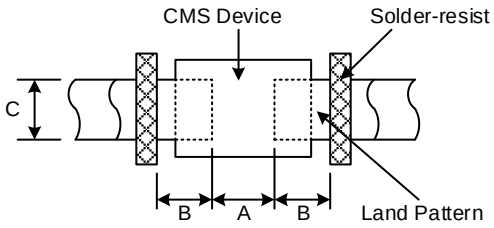
Lead–free Re-flow Solder Profile



Product Dimensions



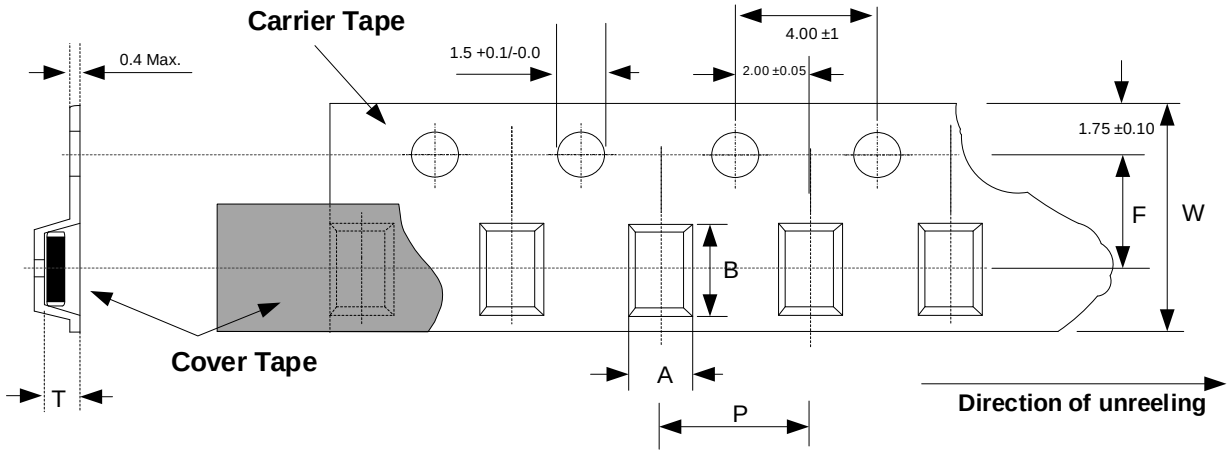
Product Dimensions



Recommended PCB Pattern

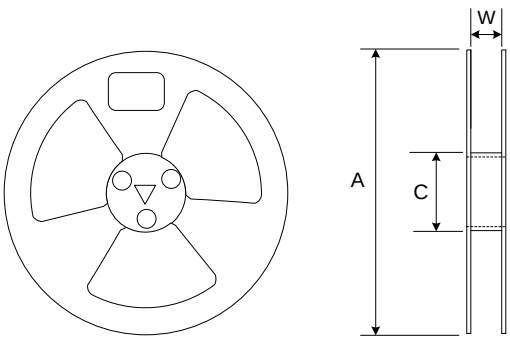
Size	L	W	D	E	A	B	C
2220	6.00+0.70/-0.30	5.30+0.50/-0.30	2.2~4.0	0.25~0.9	4.0~4.4	1.8~2.2	5.2~5.8

Tape Specifications



Type	A	B	T	P	W	F
CMS2220	5.70±0.20	6.35±0.20	4.20Max.	8.00 ±0.10	12.00 ±0.20	5.50 ±0.05

Reel Dimension



Type	Spec.	Dimensions(mm)		
		A	W	C
CMS2220	13"	330	12.4+2.0/-0.0	100

Storage

- Storage temperature range (packaging conditions): -10℃~+40℃ RH 70% (Max.).
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at 40℃ or less and 70% RH or less.
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H_2S).
- Packaging material may be deformed if package are stored where they are exposed to heat of direct sunlight.
- Solderability shall be guaranteed for 12 months from the date of delivery on condition that they are stored at the environment specified in Clause 2. For those parts, which passed more than 12 months shall be checked solder-ability before use.

Environmental Reliability Test

Item	Requirment	Test Condition
High Temperature Storage	• Breakdown voltage change: within ±10% • No mechanical damage	• Temperature: 150 ± 2℃ • Time: 1000 （+24） hours • Test after placing in ambient temperature for 1~2hours
Low Temperature Storage	• Breakdown voltage change: within ±10% • No mechanical damage	• Temperature: -55± 2℃ • Time: 1000 （+24）hours • Test after placing in ambient temperature for 1~2hours
Thermal Shock	• Breakdown voltage change: within ±10% • No mechanical damage	• Temperature, Time:-55（±2）℃/30min~125（±2）℃/30min • Transforming interval: 2~3min. • Tested cycle: 100 cycles. • Test after placing in ambient temperature for 1~2hours
High Temperature Load	• Breakdown voltage change: within ±10% • No mechanical damage	• Temperature: 125 ± 2℃ • Rated working voltage applied • Time: 1000 （+24） hours • Test after placing in ambient temperature for 1~2hours
Damp Heat Load / Humidity Load	• Breakdown voltage change: within ±10% • No mechanical damage	• Temperature: 85±2℃ • Humidity: 85%±2RH • Rated working voltage applied • Time: 500 （+24） hours • Test after placing in ambient temperature for 1~2hours

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