Thermally Protected Varistors

RoHS Compliant

Description

MPTFMOV is a combination of varistors (MOV) and thermal protection component. Since varistor has the characteristics of aging or degrading; MPTFMOV can separate the varistor from the main circuitry by opening the thermal protection component when the varistor (MOV) degrades or fails. It is often used in which requires high reliability and weather withstanding, such as photovoltaic inverters, communication equipment, and power supplies in data centers, etc.

Approvals

UL1449
TUV IEC/EN 61643-11
EN 61643-31

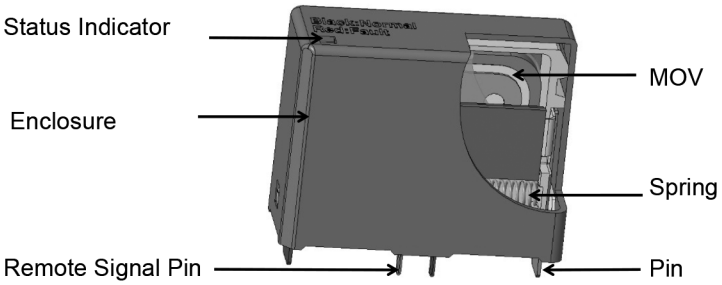
Applications

- Telecom Equipment
- String Inverter in Photovoltaic System
- AC / DC Power Supply
- Uninterruptable Power Supply (UPS)
- Surge Protective Device (SPD)
- Electric Meter
- Power Distribution Unit (PDU)

Features

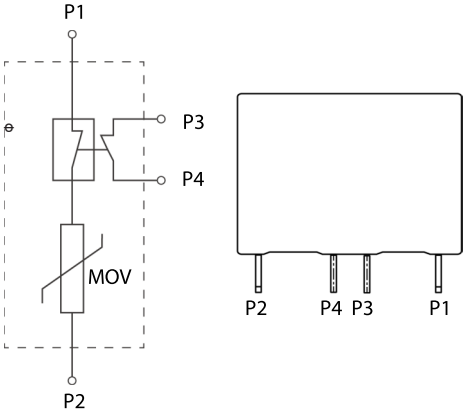
- Thermal Protection, High Reliability
- Small Size
- Remote Signal Contact for Failure Indication (Optional)
- High Energy Capacity
- Epoxy Sealing Material, Flame-retardant to V0 (UL 94)
- Comply with UL 1449 / IEC 61643-11

Diagram

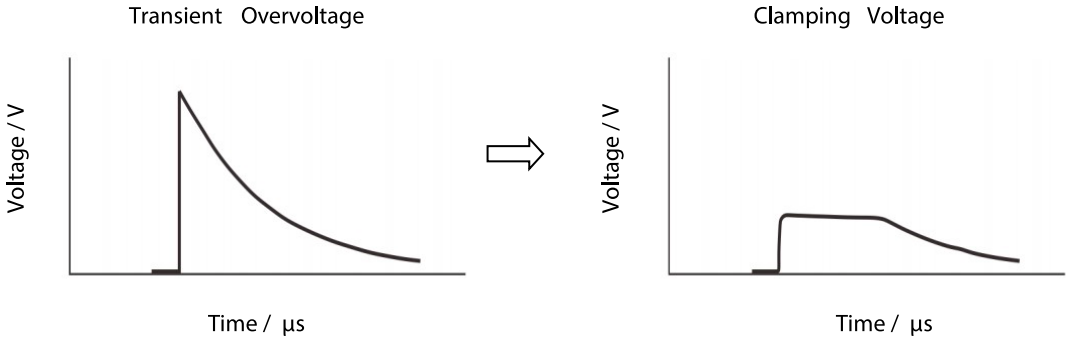


TFMOV(Remote Monitoring)
Mechanical trip

Schematics



Operation Principle



Thermal Protection

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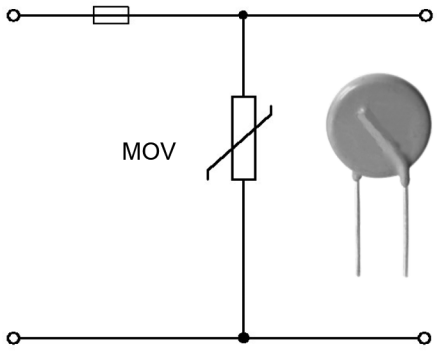


Figure a Typical surge protection circuit

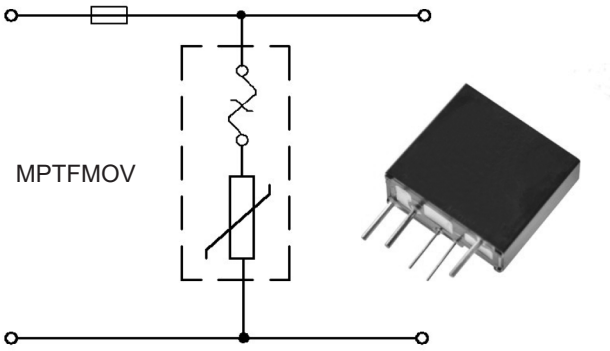
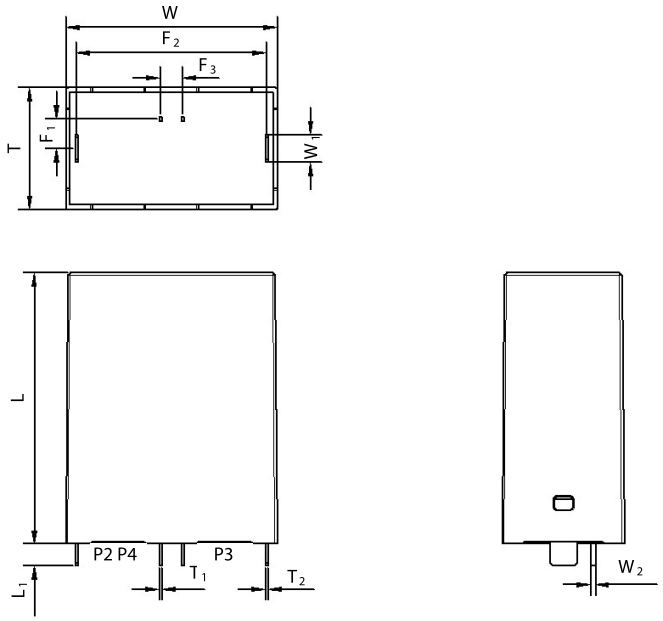


Figure b: High reliability surge protection circuit

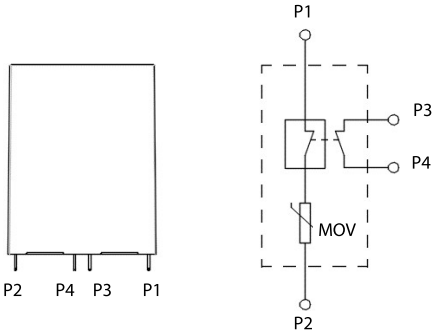
Glossary

Item	Description
V_N	**Nominal Varistor Voltage** Voltage, at specified d.c. current used as a reference point in the component characteristic.
8/20 µs	**8/20 Current Impulse** Current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20µs)
1.2/50 µs	**1.2/50 Voltage Impulse** Voltage impulse with a nominal virtual front time of 1.2 µs and a nominal time to half-value of 50µs.
U_c	**Maximum Continuous Operating Voltage** Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection.
I_n	**Nominal Discharge Current** Crest value of the current through the SPD having a current waveshape of 8/20.
I_{imp}	**Impulse Discharge Current for Class I Test** Crest value of a discharge current through the SPD with specified charge transfer Q and specified energy W/R in the specified time.
I_{max}	**Maximum Discharge Current** Crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n.
V_C	**Clamping Voltage** Peak voltage developed across the varistor terminations under standard atmospheric conditions, when passing an 8/20 µs class current pulse.
C_V	**Capacitance** Capacitance across the MOV measured at a specified frequency and voltage.
Modes of protection	**Mode of protection of an SPD** An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral, neutral-to-earth.
U_p	**Voltage Protection Level** Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and an impulse stress with a discharge current with given amplitude and waveshape.
I_P	**Degree of protection of enclosure** Classification preceded by the symbol IP indicating the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and possibly harmful ingress of waters

Diagram



Schematics



Dimensions : Millimetres

L	L1	W	W1	W2	T
50.0±1.0	4.0±0.5	39.0±1.0	5.0±0.5	0.8±0.3	22.5±1.0
T1	**T2**	**F1**	**F2**	**F3**	
0.5±0.2	0.5±0.2	5.5±0.5	35.0±0.5	4.0±0.5	

Specifications

Features	Specifications
According to Standard	UL 1449, EN 61643-31, EN 61643-11
Alarm	Remote + Indicator
Degree of protection of enclosure	IP20
Installation	PCB
Altitude	≤ 5000 m
Operational Temperature Range	(-40°C to 85°C)
Humidity Range	5% to 95%

Specification Table

Part Number	Nominal System Voltage	Nominal Varistor Voltage @1mA	Max. Continuous Operating Voltage		Nominal Discharge Current (8/20 µs)	Impulse Discharge Current (10/350 µs)	Impulse Discharge Current (10/350 µs)	Impulse Discharge Current (10/350 µs)
	U_n	VDC	VDC		I_n	I_{imp}	U_{max}	U_p
	VAC(V)	(V)	Uc (VAC)	Ucpv (VDC)	(kA)	(kA)	(kA)	(V)
MPTFMOV25M385	277	620	385	505	20	7.5	40	1800
MPTFMOV25M510	347	820	510	670		6.5		2400
MPTFMOV25M550	480	910	550	745				2700
MPTFMOV25M680		1100	680	900		6		3000

Note:

1. The Value of Voltage Protection Level (Up) is determined according to IEC 61643-11:2011 clause 6.4.
   Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

Part Number Table

Description	Part Number
Varistor, MOV, 385V AC, Module	MPTFMOV25M385
Varistor, MOV, 510V AC, Module	MPTFMOV25M510
Varistor, MOV, 550V AC, Module	MPTFMOV25M550
Varistor, MOV, 680V AC, Module	MPTFMOV25M680