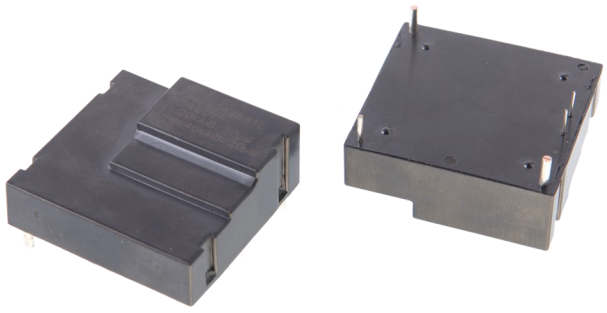


Description

TFMOV34SxxxL series are comprised of MOV and thermal protection element with unique structure design. It is designed to open the circuit in the event of overheating due to sustained overvoltage or degradation of varistor and to ensure the safety of the equipment. TFMOV34SxxxL series, with small size enclosure, can be mounted easily on PCB.

Features

- High Reliability
- Small Size
- Remote Signal Contact for Failure Indication (Optional)
- High Energy Capacity
- Epoxy Sealing Material, Flame-retardant to V0 (UL 94)
- UL 1449 Type 4CA

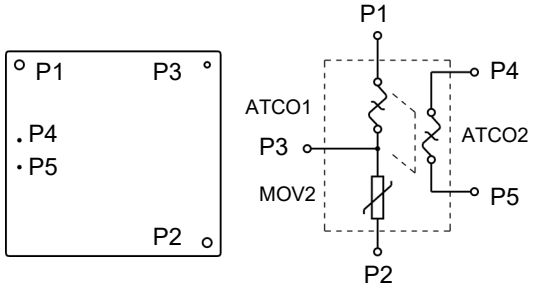
Agency Approvals

Agency	Standards	No.
c UL us	UL1449	on request
Environment	RoHS & REACH	Compliant

Applications

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

Schematics



Bottom View

Part Numbering System

TFMOV 34 S 621 L -IT - 3 - 001

Product Category
TFMOV

MOV Size (mm)
34 mm

MOV Shape
S: Square

Nominal Varistor Voltage

820	621
82×10^{0} =82 V	62×10^{1} =620 V

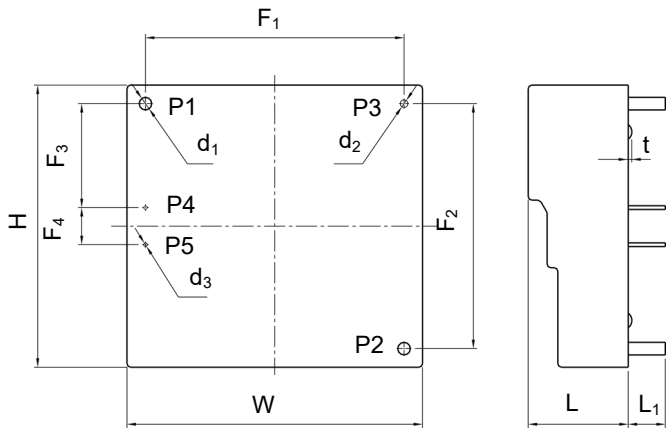
Installation
L: Horizontal

Remote Signal
Default: Without Remote Signal Contact
-IT: With Remote Signal Contact

Pin No.
2: Without Remote Signal Contact or Status Indication
3: With Status Indication
4: With Remote Signal Contact
5: With Remote Signal Contact and Status Indication

Other Options

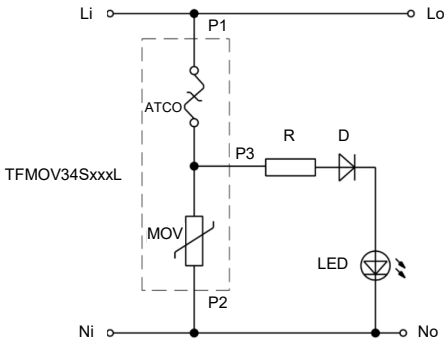
Dimensions (mm)



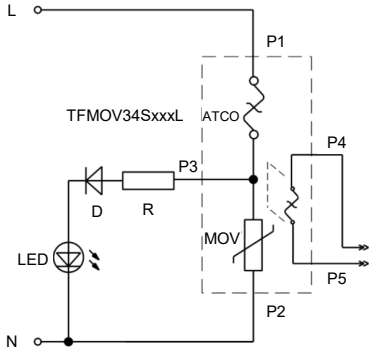
Note:
Pin P3 / P4 / P5 is Optional

Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	H (±1.0)	W (±1.0)	d_1 (-0.05,+0.20)	d_2 (-0.05,+0.15)	d_3 (±0.05)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	t (±0.1)
34S470L - 151L	11.5	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5
34S181L - 561L	13.0	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5
34S621L - 681L	13.5	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5

Application Options



Thermal Protection Indication:
LED is off when the thermal element (ATCO) opens.



Thermal Protection Indication and Remote Signal Alarming:
The built-in discrete thermal element (ATCO) can offer a signal (from close to open) for remote indication when Metal Oxide Varistor (MOV) fails. At the same time, the thermal element (ATCO) in main line opens, the LED turns off.

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 20 µs. — (IEC 61643-11)
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 50 µs. — (IEC 61643-11)
U_c	**Maximum Continuous Operating Voltage** Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection. — (IEC 61643-11)
I_n	**Nominal Discharge Current** Crest value of the current through the SPD having a current waveshape of 8/20 µs. — (IEC 61643-11)
I_{max}	**Maximum Discharge Current** Crest value of a current through the SPD having an 8/20 µs waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n. — (IEC 61643-11)
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.
TCO	**Thermal-Link** A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed.
ATCO	**Alloy Thermal-Link** Alloy Type Thermal-Link, Alloy is the thermal element.

TFMOV

Specifications

Model	Max. Continuous Operating Voltage		Varistor Voltage @1 mA DC		Clamping Voltage (Max.)		Nominal Discharge Current (8/20 μs)	Max. Discharge Current (8/20 μs)	Voltage Clamping Ratio[a]		Max. Energy (Joule)	Typical Capacitance (Reference)	Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV34S470Lx	30	38	42	52	93	60	10	20	4.3	10	96	35000	VQ Series U_r: 690 VAC I_r: 25 A
TFMOV34S560Lx	35	45	50	62	110	60	10	20	3.8	10	115	29500	
TFMOV34S680Lx	40	56	61	75	135	60	10	20	3.8	10	136	24200	
TFMOV34S820Lx	50	65	74	90	135	300	15	30	3.2	15	156	17950	
TFMOV34S101Lx	60	85	90	110	165	300	15	30	3.2	15	195	15000	
TFMOV34S121Lx	75	100	108	132	200	300	15	30	3.2	15	235	12200	
TFMOV34S151Lx	95	125	135	165	250	300	20	40	3.2	20	296	10000	
TFMOV34S181Lx	115	150	162	198	300	300	20	40	2.3	20	350	8250	
TFMOV34S201Lx	130	170	185	225	340	300	20	40	2.3	20	400	6750	
TFMOV34S221Lx	140	180	198	242	360	300	20	40	2.3	20	450	6400	
TFMOV34S241Lx	150	200	216	264	395	300	20	40	2.3	20	480	5650	
TFMOV34S271Lx	175	225	243	297	455	300	20	40	2.3	20	540	5100	
TFMOV34S301Lx	190	250	270	330	500	300	20	40	2.3	20	600	4510	
TFMOV34S331Lx	210	275	297	363	550	300	20	40	2.3	20	656	4150	
TFMOV34S361Lx	230	300	324	396	595	300	20	40	2.3	20	745	3750	
TFMOV34S391Lx	250	320	351	429	650	300	20	40	2.3	20	830	3500	
TFMOV34S431Lx	275	350	387	473	710	300	20	40	2.3	20	920	2950	
TFMOV34S471Lx	300	385	423	517	775	300	20	40	2.3	20	1000	2880	
TFMOV34S511Lx	320	415	459	561	845	300	20	40	2.3	20	1060	2650	
TFMOV34S561Lx	350	460	504	616	925	300	20	40	2.3	20	1150	2450	
TFMOV34S621Lx	385	505	558	682	1025	300	20	40	2.3	20	1250	2200	
TFMOV34S681Lx	420	560	612	748	1120	300	20	40	2.3	20	1250	2000	

Note:

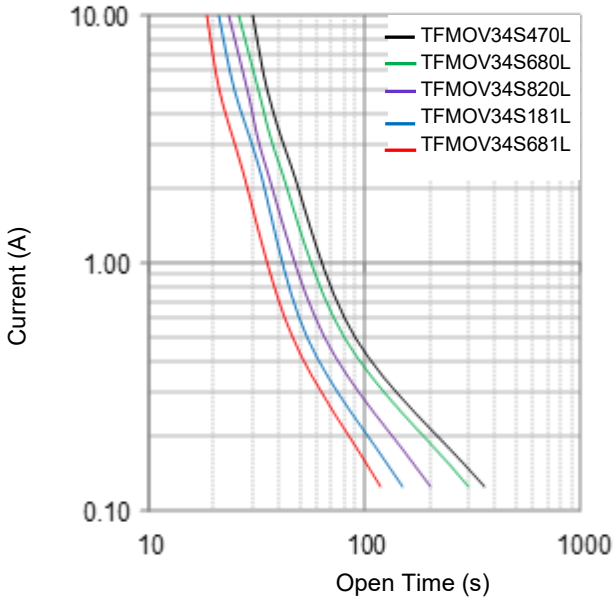
a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.

The Value of Voltage Protection Level (U_p) 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.

Performance Curve for Reference

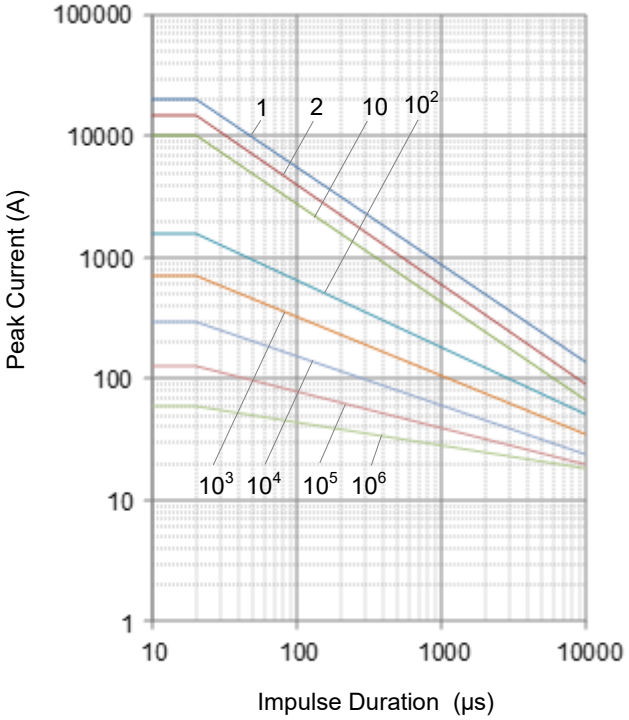
Limited Current Test Curve (UL 1449 4th clause 44.4)



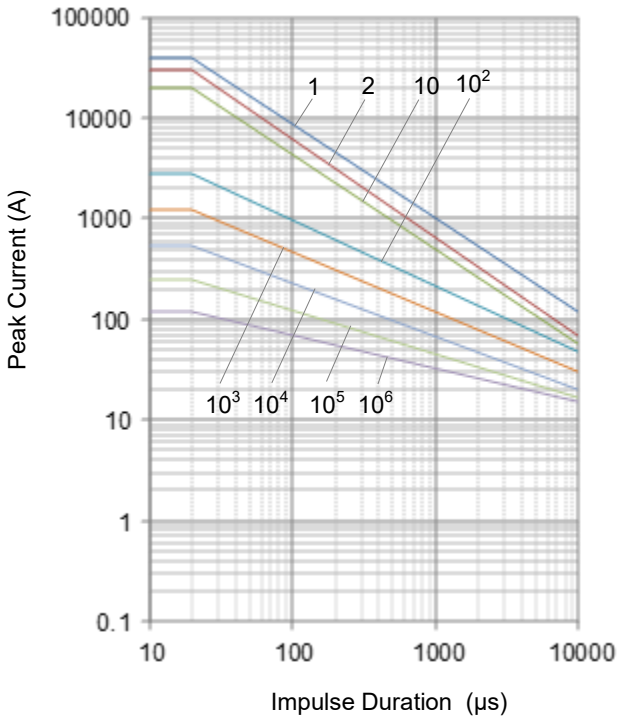
Note: The limited current curve is for reference only.

Max. Peak Current Derating Curve

TFMOV34S470L to TFMOV34S680L

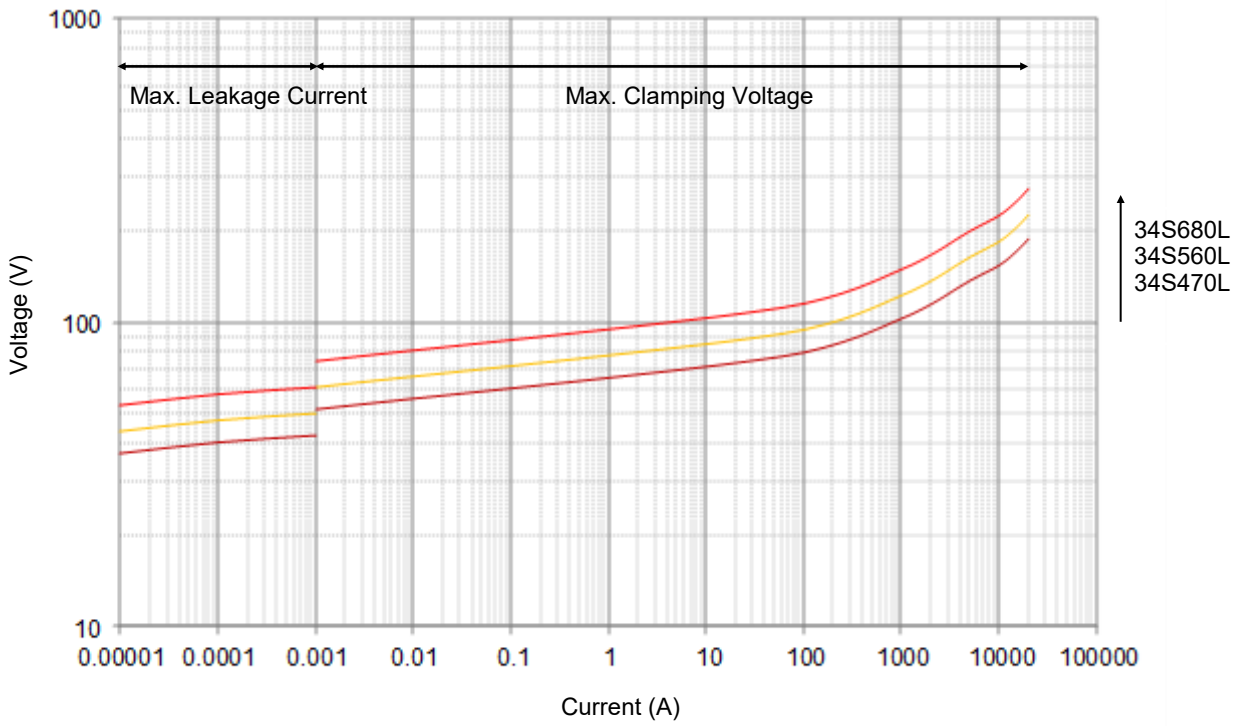


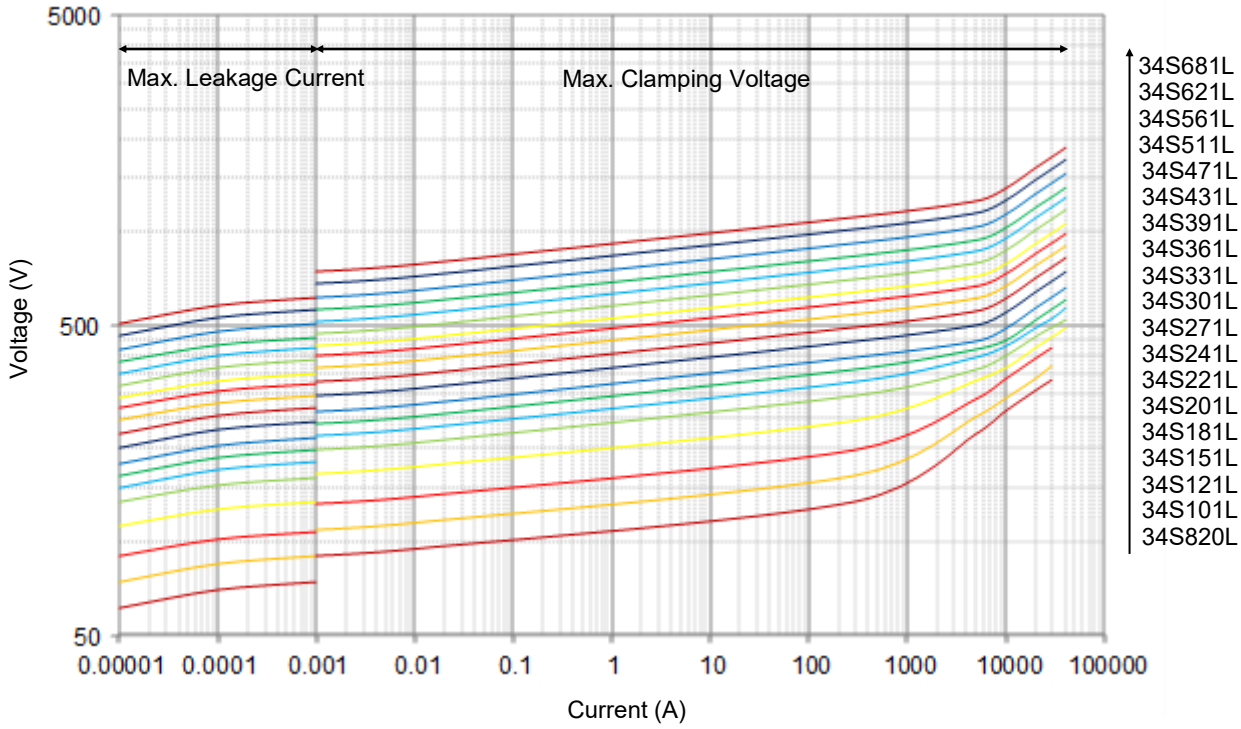
TFMOV34S820L to TFMOV34S681L



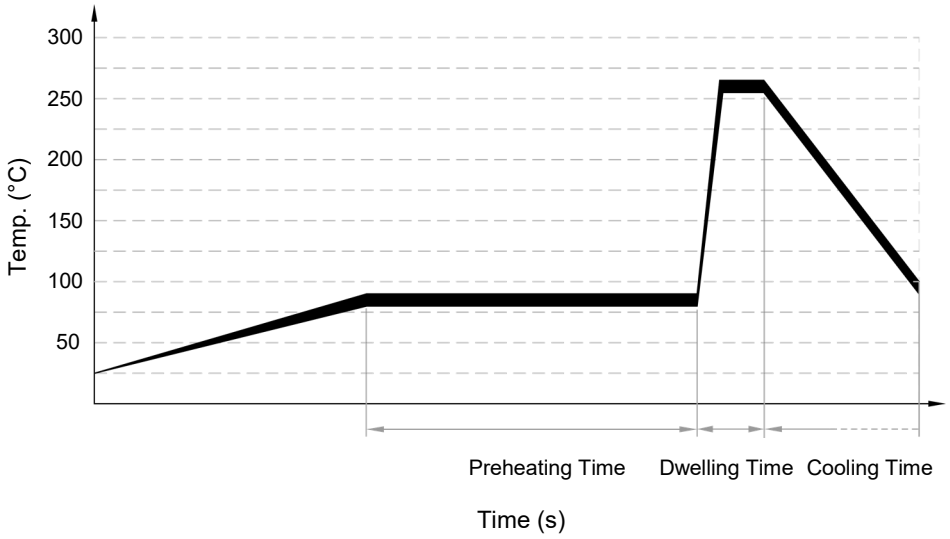
Note: 1, 2, 10, 10^2, 10^3,10^4, 10^5, 10^6 Stand for number of repetitions.

Voltage-Current Characteristic Curves





Wave Soldering Parameters (Reference)

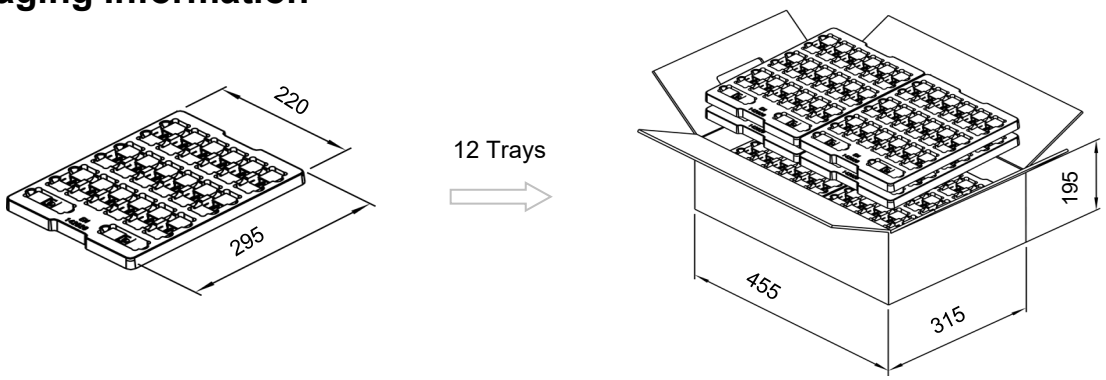


Item	Temp. (°C)	Time (s)
Preheating	80 to 90	60 to 150
Dwelling	250 to 260	2 to 4

Recommended Hand-Soldering Parameters

Item	Condition
Iron Temperature	350 °C (Max.)
Soldering Time	4 seconds (Max.)
Distance between Soldering Point and the Bottom of Product	2 mm (Min.)

Packaging Information



Unit: mm
Please contact us if you have special packaging requirements.

Item	Nominal Varistor Voltage	Tray	Carton
Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
Quantity (PCS)	470 - 681	12	240
Gross Weight (kg)			(7.5 to 12.3) ± 10%

Note:
The gross weight of each carton will be different because of the difference of product model. It depends on the nominal varistor voltage of the product. The gross weight is for reference only, please contact us for more details.

ATTENTION

Usage

1. Frequency range is from 47 Hz to 63 Hz.
2. The voltage applied continuously to the TFMOV can not exceed its maximum continuous operating voltage U_c.
3. When atmosphere press is from 80 kPa to 106 kPa, the related altitude shall be from 2000 meters to - 500 meters.
4. Do not touch the product body or pins directly when power is on, to avoid electric shock.
5. Do not clean the TFMOV with strong polar solvent such as ketone, esters, benzene, halogenated hydrocarbon, to avoid damaging the enclosure.
6. It should have a reliable grounding when using these products.
7. When TFMOV is used in DC system, if the system voltage is 300 V to 500 V, a fuse rated 500 VDC / 1 A should be paralleled with Thermal Fuse. If the system voltage is 500 V to 1000 V, a fuse rated 1000 VDC / 1 A should be paralleled with Thermal Fuse, for DC interrupting effectively.

Replace

TFMOV is a non-repairable product. For safety sake, please use equivalent TFMOV for replacement.

Storage

Do not store TFMOV at high temperature, high humidity or corrosive gas environment. To avoid reducing the solderability of the pins, please use them up within 1 year after receiving the goods.

Installation Position

Do not install the TFMOV on a place that may often suffer severe continuous vibration.

Mechanical Stress

Do not take violent action such as knocking when assembling to avoid mechanical damage.