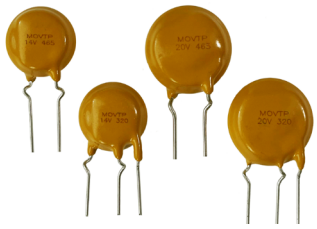
MOVTP

Thermally protected through-hole metal oxide varistor



Product features

- Combination of metal oxide varistor and thermal fuse
- Opens as an open circuit upon end of life
- High peak surge current rating up to 10 kA
- 3-lead version available for lead for indication
- Voltage range: 130 Vac to 465 Vac
  170 Vdc to 615 Vdc
- 14 mm to 20 mm through-hole disc size
- UL 1449 compliant
- Tin plated leads

Applications

- Smart meters
- Surge protective devices
- Uninterruptible power supplies (UPS)
- Power distribution with integrated surge protection
- Power supplies
- White goods

Agency information

- cURus: E340782 per UL1449
- TUV: J 50513318

Environmental compliance

Ordering part number

MOVTP 14 V130 N

Family name
Size
Working voltage (Vac)
Pin code (N=2 lead, T=3 lead)

Powering Business Worldwide

Electrical characteristics (+25 °C)

Part number	Working voltage (Vdc)	(Vac)	Varistor voltage @ 1 mAdc (V) minimium	(V)maximum	Clamping voltage (8/20 µs) (V)	Energy absorption (10/1000 µs) (J)	Rated power (W)	Peak current 8/20 µs (A)	Impulse response time (ns)	Leakage current @ 75% V1 (µA) maximum
MOVTP14V130N/T	170	130	180	220	340 @ 50 A	77	0.6	6000	<25	20
MOVTP14V150N/T	200	150	216	264	395 @ 50 A	94	0.6	6000	<25	20
MOVTP14V250N/T	320	250	351	429	650 @ 50 A	154	0.6	6000	<25	20
MOVTP14V275N/T	350	275	387	473	710 @ 50 A	170	0.6	6000	<25	20
MOVTP14V300N/T	385	300	423	517	775 @ 50 A	192	0.6	6000	<25	20
MOVTP14V320N/T	410	320	459	561	845 @ 50 A	209	0.6	6000	<25	20
MOVTP14V465N/T	615	465	675	825	1240 @ 50 A	247	0.6	6000	<25	20
MOVTP20V130N/T	170	130	180	220	340 @ 100 A	140	1	10000	<25	20
MOVTP20V150N/T	200	150	216	264	395 @ 100 A	170	1	10000	<25	20
MOVTP20V250N/T	320	250	351	429	650 @ 100 A	240	1	10000	<25	20
MOVTP20V275N/T	350	275	387	473	710 @ 100 A	270	1	10000	<25	20
MOVTP20V300N/T	385	300	423	517	775 @ 100 A	350	1	10000	<25	20
MOVTP20V320N/T	410	320	459	561	845 @ 100 A	386	1	10000	<25	20
MOVTP20V465N/T	615	465	675	825	1240 @ 100 A	509	1	10000	<25	20

Dimensions- mm

Drawing not to scale

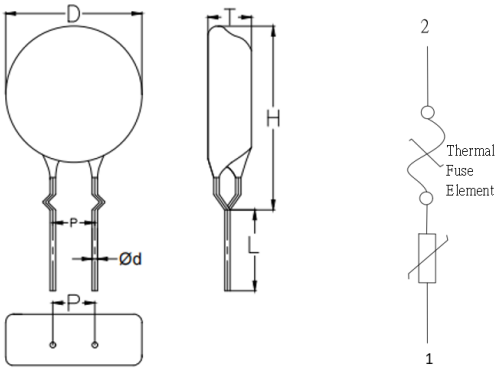


Figure 1.

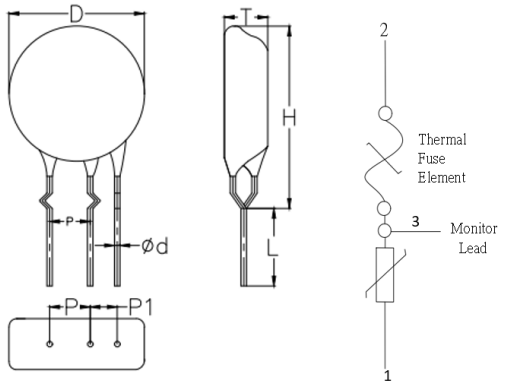


Figure 2.

Dimensions- mm

Part number	Disc size	D	P ±1.0	P1 ±1.0	H maximum	d ±0.05	T maximum	L minimum	Marking	Figure
MOVTP14V130N	14	15.5-18.5	7.5	--	26.5	0.8	8.5	8	MOVTP 14V130	1
MOVTP14V150N	14	15.5-18.5	7.5	--	26.5	0.8	8.8	8	MOVTP 14V150	1
MOVTP14V250N	14	15.5-18.5	7.5	--	26.5	0.8	9.2	8	MOVTP 14V250	1
MOVTP14V275N	14	15.5-18.5	7.5	--	26.5	0.8	8.9	8	MOVTP 14V275	1
MOVTP14V300N	14	15.5-18.5	7.5	--	26.5	0.8	9	8	MOVTP 14V300	1
MOVTP14V320N	14	15.5-18.5	7.5	--	26.5	0.8	9.2	8	MOVTP 14V320	1
MOVTP14V465N	14	15.5-18.5	7.5	--	26.5	0.8	10.3	8	MOVTP 14V465	1
MOVTP14V130T	14	15.5-18.5	7.5	5	26.5	0.8	8.5	8	MOVTP 14V130	2
MOVTP14V150T	14	15.5-18.5	7.5	5	26.5	0.8	8.8	8	MOVTP 14V150	2
MOVTP14V250T	14	15.5-18.5	7.5	5	26.5	0.8	9.2	8	MOVTP 14V250	2
MOVTP14V275T	14	15.5-18.5	7.5	5	26.5	0.8	8.9	8	MOVTP 14V275	2
MOVTP14V300T	14	15.5-18.5	7.5	5	26.5	0.8	9	8	MOVTP 14V300	2
MOVTP14V320T	14	15.5-18.5	7.5	5	26.5	0.8	9.2	8	MOVTP 14V320	2
MOVTP14V465T	14	15.5-18.5	7.5	5	26.5	0.8	10.3	8	MOVTP 14V465	2
MOVTP20V130N	20	19.5-23.5	7.5	--	31.5	0.8	10.2	6	MOVTP 20V130	1
MOVTP20V150N	20	19.5-23.5	7.5	--	31.5	0.8	10.5	6	MOVTP 20V150	1
MOVTP20V250N	20	19.5-23.5	7.5	--	31.5	0.8	10.9	6	MOVTP 20V250	1
MOVTP20V275N	20	19.5-23.5	7.5	--	31.5	0.8	10.6	6	MOVTP 20V275	1
MOVTP20V300N	20	19.5-23.5	7.5	--	31.5	0.8	10.7	6	MOVTP 20V300	1
MOVTP20V320N	20	19.5-23.5	7.5	--	31.5	0.8	10.9	6	MOVTP 20V320	1
MOVTP20V465N	20	19.5-23.5	7.5	--	31.5	1	12	6	MOVTP 20V465	1
MOVTP20V130T	20	19.5-23.5	7.5	5	31.5	0.8	10.2	6	MOVTP 20V130	2
MOVTP20V150T	20	19.5-23.5	7.5	5	31.5	0.8	10.5	6	MOVTP 20V150	2
MOVTP20V250T	20	19.5-23.5	7.5	5	31.5	0.8	10.9	6	MOVTP 20V250	2
MOVTP20V275T	20	19.5-23.5	7.5	5	31.5	0.8	10.6	6	MOVTP 20V275	2
MOVTP20V300T	20	19.5-23.5	7.5	5	31.5	0.8	10.7	6	MOVTP 20V300	2
MOVTP20V320T	20	19.5-23.5	7.5	5	31.5	0.8	10.9	6	MOVTP 20V320	2
MOVTP20V465T	20	19.5-23.5	7.5	5	31.5	1	12	6	MOVTP 20V465	2

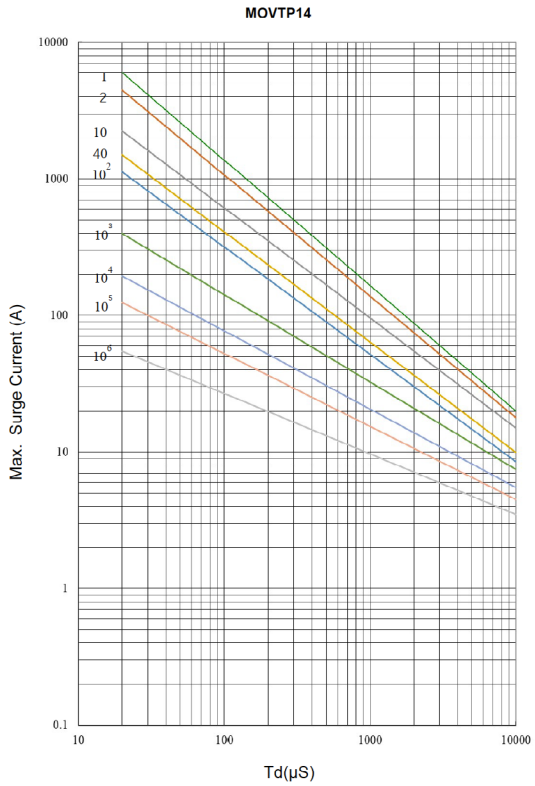
General specifications

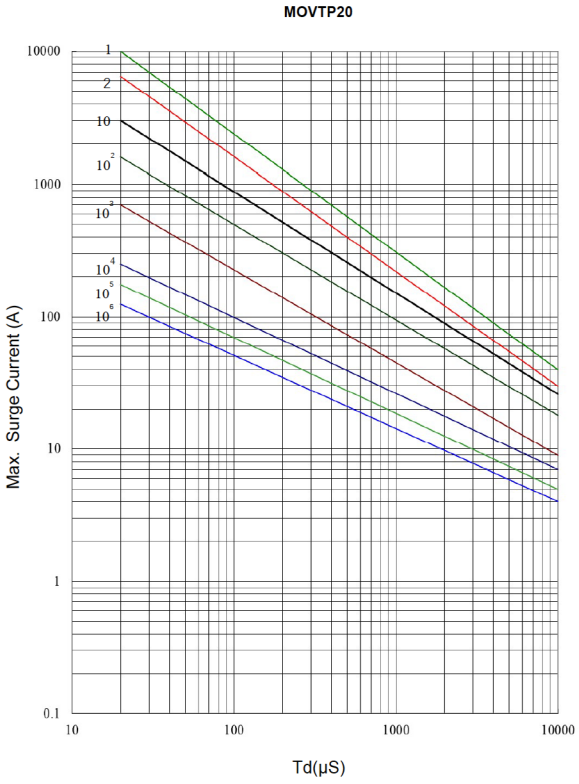
Operating temperature	-40 °C to +105 °C (without derating)
Solderability	IEC60068-2-20, +245±3 °C, 3±0.3 second
High temperature exposure	IEC60068-2-2, Temperature: +110 °C ± 5 °C, Duration: 1000 ± 24 hours unpowered
Rapid change of temperature	IEC60068-2-14, Number of cycles: 5 cycles

Step	Temp./ °C	Period/minutes
1	-40±3	30±3
2	Room temperature	5±3
3	+105±2	30±3
4	Room temperature	5±3

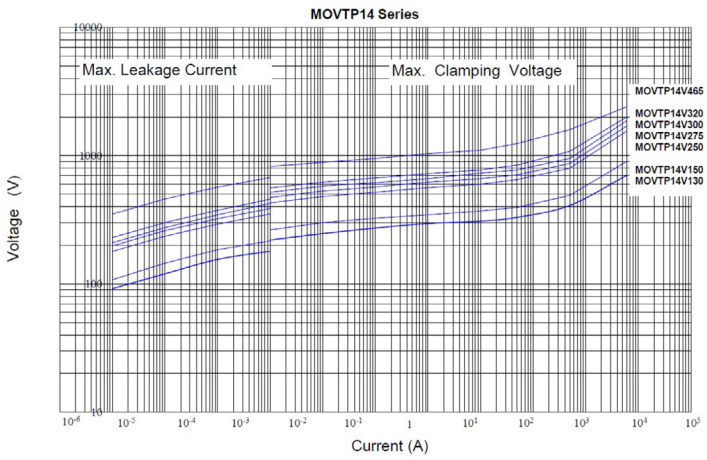
Damp heat, steady state	IEC60068-2-78, a. +40 ± 2 °C, 90~95% R.H., 1344 hours, b. +40 ± 2 °C, 90~95% R.H., at 10% VDC, 1344 hours
High temperature load	MIL-STD-202 Method 108, Temperature: +105 ± 2 °C, Duration: 1000 ± 24 hours, Bias at Vdc or Vrms (max. operating voltage)
Vibration	IEC60068-2-6, Amplitude: 0.75 mm or 98 m/s^2, Frequency range: 10 to 55 Hz, Direction: 3 mutually perpendicular directions, 2 hours each direction
Resistance to soldering heat	IEC60068-2-20, +260 ± 3 °C, 10 ± 1 seconds
Limited current abnormal overvoltage test	UL1449 item 44.1, Short current (Isc): 0.125 A, 0.5 A, 2.5 A and 5 A for MOVTP14, 0.5A, 2.5 A, 5 A and 10 A for MOVTP20
8/20 µs surge life	IEC61051-1 4.6, 8/20 µs waveform, 10 surges, unipolar, interval 30 seconds
10/1000 µs surge life	IEC61051-1 4.6, 10/1000 µs waveform, 10 surges, unipolar, interval 2 minutes
Varistor voltage temp. coefficient	In the operating temperature range of -40 ~ +105 °C, When T>25 °C, TC=100 x (V1 mA at 105 °C - V1 mA at 25 °C)/V1 mA at 25 °C/(105-25) (%/ °C), When T<25 °C, TC=100 x (V1 mA at -40 °C - V1 mA at 25 °C)/V1 mA at 25 °C/(25-(-40)) (%/ °C), -0.05 ≤ Tc ≤ 0.05 (%/ °C)
Voltage proof	IEC61051-1 4.9, Metal balls method, 2500 Vac 1 minute

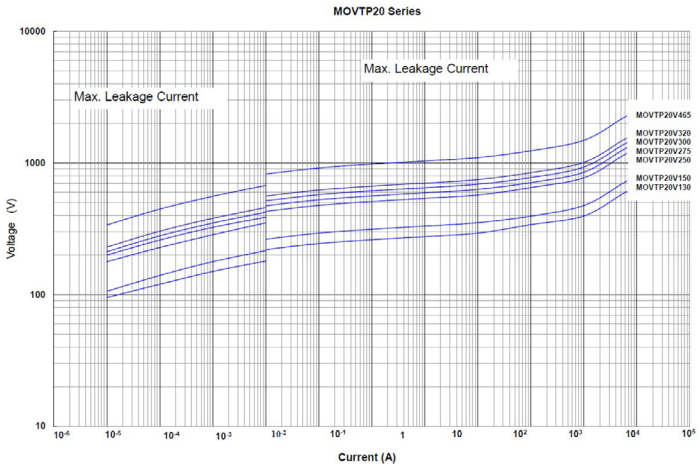
Surge derating curve



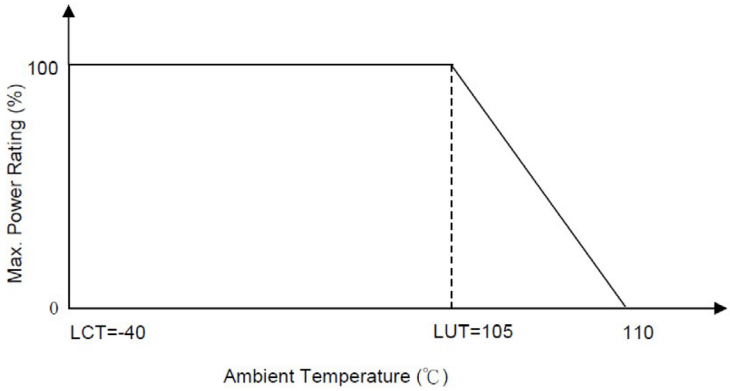


Leakage current and clamping voltage curve





Power derating curve

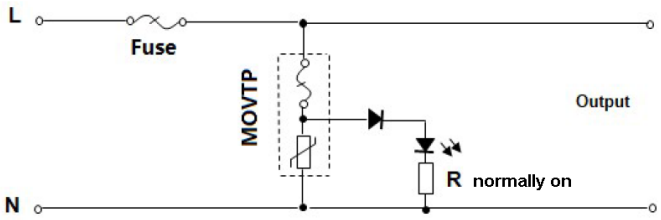


Packaging information

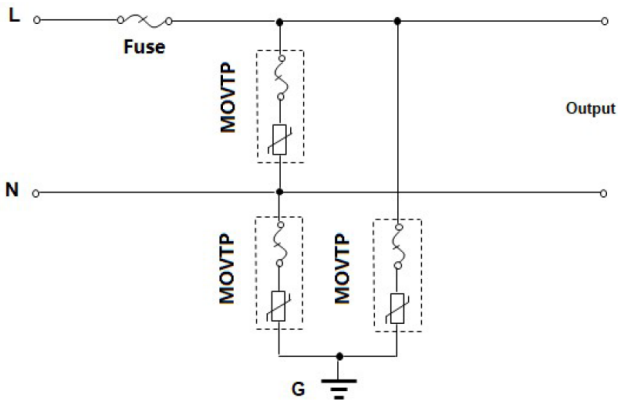
Bulk: MOVTP14 (50 parts per poly bag)
MOVTP20 (20 parts per poly bag)

Applications

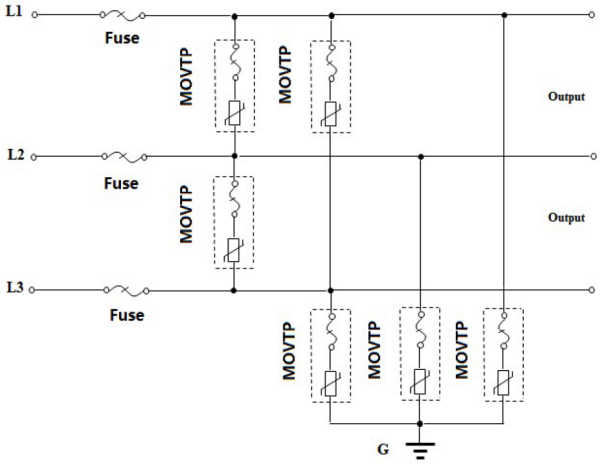
Alarming circuit



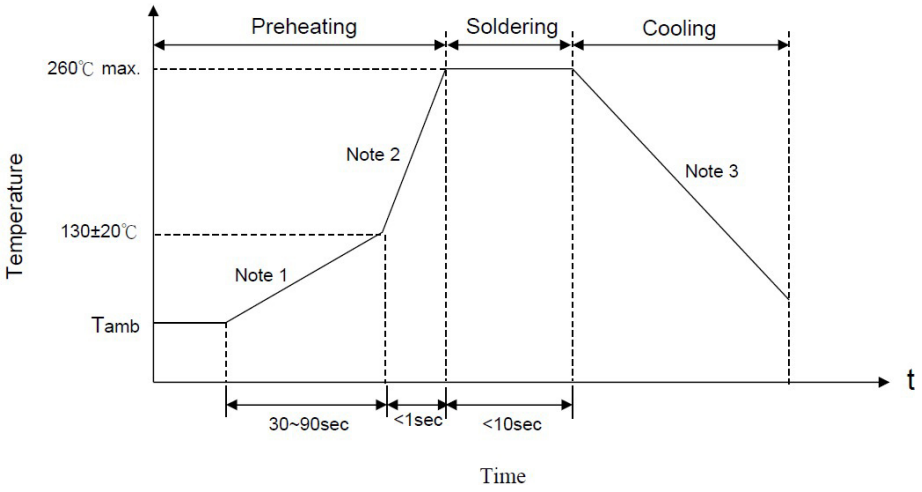
Single-phase protection mode



Three-phase protection mode



Wave solder profile



Profile feature
Note 1: 1-3 °C/sec
Note 2: 200 °C/sec
Note 3: 5 °C/sec maximum

Manual solder

+360 °C (3 seconds maximum by soldering iron, distance from varistor 2 mm minimum), generally manual/hand soldering is not recommended.

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