

NEW PRODUCT BRIEF

Bourns® GMOV™

HYBRID OVERVOLTAGE PROTECTION COMPONENT

FEATURES

- Hybrid design using Bourns® patented FLAT® technology
- Standard 14 mm & 20 mm sizes
- Matched MOV-GDT pairings
- UL 1449 4th edition Type-5 component

BENEFITS

Performance

- Zero standby energy consumption
- Lower capacitance
- GDT isolates MOV from AC line voltage above its MCOV rating
- Low leakage over life (<0.1 μ A)

Optimal design

- Compact form factor
- Drop-in replacement for standard 14 and 20 mm MOV

Safety & Testing

- Trips arc fault detectors in voltage swell situations
- Predictable EOL mode that will consistently blow fuses and trip breakers
- Eliminates need for thermally protected MOV
- Meets UL ring wave requirements

Applications

- AC Power
- DC Power
- Power Line Communications

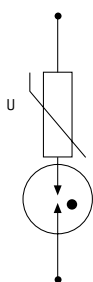
GMOV™ (GDT + MOV) COMPONENT

The Bourns® breakthrough GMOV™ component combines a Metal Oxide Varistor (MOV) and a Gas Discharge Tube (GDT) with our patented space-saving FLAT® technology. This new hybrid product provides a compact form factor that is a drop-in replacement for a standard 14 or 20 mm MOV.

The GMOV™ component is designed to be an enhanced protection solution that minimizes degradation and catastrophic failure issues that can occur with discrete MOV's when subjected to transient surges and temporary overvoltage conditions exceeding maximum rated values. The "on-call but not on-duty" isolation of the MOV from line voltage by the GDT shields the MOV from transients and temporary overvoltage spikes that typically damage the MOV over time. Leakage of the device is eliminated by the series GDT and mitigates damage of the MOV due to watt-loss heating.

CIRCUIT DIAGRAM

GMOV™ component combines a discrete MOV + GDT into a single UL 1449 listed product.



MARKET SEGMENT OVERVIEW/ APPLICATION FIT

Disc MOVs remain a popular solution for AC and DC protection and are estimated to be a \$250M global market, growing at about 8 % annually. Currently, designers are using discrete components for additional protection against unstable electrical service. In many cases, the discrete component solutions are not tested and proven to work together like the GMOV™ component.

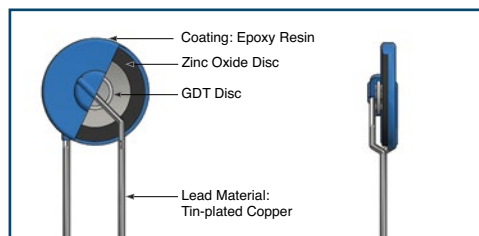
Major markets for varistor products are lighting ballasts, Surge Protective Devices (SPDs), surge strips, switch board apparatus, chargers, solar, data line communications, medical electronics (low/medium risk)*, power supplies, LED lighting and control systems. Any application powered by AC or rectified DC can use a GMOV™ component for overvoltage protection.

* Bourns® products have not been designed for and are not intended for use in "lifesaving," "life-critical" or "life-sustaining" applications nor any other applications where failure or malfunction of the Bourns® product may result in personal injury or death. See Legal Disclaimer Notice <http://www.bourns.com/docs/legal/disclaimer.pdf>.

KEY CHARACTERISTICS

Size	MCOV Ratings	Leakage at MCOV	Max. Capacitance	I _{max} 8/20 μ s	Ring Wave 200 A
14 mm	45 - 320 Vrms	<0.1 μ A	4 pF	6 kA	$\pm$ 250 operations
20 mm	45 - 320 Vrms	<0.1 μ A	4 pF	10 kA	$\pm$ 250 operations

BASIC CONSTRUCTION



A GMOV™ component functions as the GDT isolates the MOV from the circuit until such time as the voltage exceeds the turn-on voltage of the GDT.

The integrated GDT provides isolation of the MOV from line voltage and smaller transients, which over time would damage the MOV resulting in premature failure.

BOURNS® GMOV™ COMPONENT vs. STANDARD MOV

Technology	Clamping Voltage	Leakage Current	Aging	30 % Voltage Swell Response
130 V MOV	340	Least Effective	Least Effective	Possible Fire
275 V MOV	710	Good	Good	Increased Leakage
130 V MOV + TF	340	Least Effective	Least Effective	Possible Fire
GDT + MOV	~360	Excellent	Excellent	Excellent

ELECTRICAL CHARACTERISTICS

Bourns Part No.	Operating				Protection						
	Max. Continuous Operating Voltage (MCOV)		Max. Leakage @ MCOV	Max. Capacitance	I _{nom} UL 1449/4th.	I _{max}	Ring Wave Surge IEEE 62.41	Protection Level Current Class (1) IEC 61051-1		Clamp Transition Time	Energy
	V _{rms}	V _{dc}	A _{rms}	1 MHz	15 Ops.	1 Op.	200 A	Max.	Typ.		8/20 μs
	V	V	μA	pF	A	A	Ops.	V _{fp}	V _c	μs	J
GMOV-14D450K	45	56	< 1	4	3,000	6,000	± 250	900	150	0.3	24
GMOV-14D500K	50	65	< 1	4	3,000	6,000	± 250	800	150	0.3	27
GMOV-14D650K	65	85	< 1	4	3,000	6,000	± 250	800	185	0.3	33
GMOV-14D950K	95	125	< 1	4	3,000	6,000	± 250	800	270	0.3	53
GMOV-14D111K	115	150	< 1	4	3,000	6,000	± 250	800	320	0.3	60
GMOV-14D131K	130	170	< 1	4	3,000	6,000	± 250	800	360	0.3	70
GMOV-14D141K	140	180	< 1	4	3,000	6,000	± 250	950	380	0.3	78
GMOV-14D151K	150	200	< 1	4	3,000	6,000	± 250	950	420	0.3	84
GMOV-14D171K	175	225	< 1	4	3,000	6,000	± 250	950	470	0.3	99
GMOV-14D231K	230	300	< 1	4	3,000	6,000	± 250	1,300	620	0.3	130
GMOV-14D251K	250	320	< 1	4	3,000	6,000	± 250	1,300	675	0.3	140
GMOV-14D271K	275	350	< 1	4	3,000	6,000	± 250	1,300	730	0.3	155
GMOV-14D301K	300	385	< 1	4	3,000	6,000	± 250	1,300	800	0.3	175
GMOV-14D321K	320	415	< 1	4	3,000	6,000	± 250	1,300	875	0.3	180
GMOV-20D450K	45	56	< 1	4	5,000	10,000	± 250	950	150	0.3	49
GMOV-20D500K	50	65	< 1	4	5,000	10,000	± 250	900	150	0.3	56
GMOV-20D650K	65	85	< 1	4	5,000	10,000	± 250	900	185	0.3	70
GMOV-20D950K	95	125	< 1	4	5,000	10,000	± 250	900	270	0.3	106
GMOV-20D111K	115	150	< 1	4	5,000	10,000	± 250	950	320	0.3	130
GMOV-20D131K	130	170	< 1	4	5,000	10,000	± 250	950	360	0.3	140
GMOV-20D141K	140	180	< 1	4	5,000	10,000	± 250	950	380	0.3	155
GMOV-20D151K	150	200	< 1	4	5,000	10,000	± 250	950	420	0.3	168
GMOV-20D171K	175	225	< 1	4	5,000	10,000	± 250	950	470	0.3	190
GMOV-20D231K	230	300	< 1	4	5,000	10,000	± 250	1,300	620	0.3	255
GMOV-20D251K	250	320	< 1	4	5,000	10,000	± 250	1,300	675	0.3	275
GMOV-20D271K	275	350	< 1	4	5,000	10,000	± 250	1,300	730	0.3	305
GMOV-20D301K	300	385	< 1	4	5,000	10,000	± 250	1,300	800	0.3	350
GMOV-20D321K	320	415	< 1	4	5,000	10,000	± 250	1,300	875	0.3	360

(1) Front Level Protection (V_{fp}) defined as measured with 10 % of peak current in accordance with IEC 61051-1.

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