



**THE DATASHEET OF  
GRM21BC81E106ME11L**





## Features

- Hybrid design
- Low leakage
- Bidirectional protection
- Low capacitance
- UL Type 5 Recognized **us**
- RoHS compliant\*



## GMOV™ Series - 14 & 20 mm Hybrid Protection Component

### General Information

Bourns combines its patented GDT with FLAT® technology and a Metal Oxide Varistor (MOV) to create a new and innovative GMOV™ Series Hybrid Protection Component. By combining the best features of both MOV and GDT technologies, the GMOV™ Series achieves high performance as a long life protector with low capacitance and, most importantly, very low leakage. The GMOV™ Series is ideally suited for any number of AC and DC power applications where a high level of performance is required over time.

### Industry Standard Compliance

<b>Standard</b>	<b>UL 1449 4th Edition</b>
File Number	E313168

### Environmental Specifications

Moisture Sensitivity Level ..... 1  
ESD Classification (HBM) ..... N/A

### Absolute Maximum Ratings (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Temperature	T <sub>OPR</sub>	-40	25	+85	°C
Storage Temperature	T <sub>STG</sub>	-40	25	+105	°C

### Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Bourns Part No.	Operating				Protection						
	Max. Continuous Operating Voltage (MCOV)		Max. Leakage @ MCOV	Max. Capacitance	I <sub>nom</sub> UL 1449/4th.	I <sub>max</sub>	Ring Wave Surge IEEE 62.41	Protection Level Current Class (1) IEC 61051-1		Clamp Transition Time	Energy
	V <sub>rms</sub>	V <sub>dc</sub>	A <sub>rms</sub>	1 MHz	15 Ops.	1 Op.	200 A	Max.	Typ.		
	V	V	µA	pF	A	A	Ops.	V <sub>fp</sub>	V <sub>C</sub>	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
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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<sub>fp</sub>) defined as measured with 10 % of peak current in accordance with IEC 61051-1.

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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## Applications

### AC Line Protection

- White goods
- Power line communications
- Smoke alarm systems
- High value consumer goods
- UL1449 SPD

### DC Line Protection

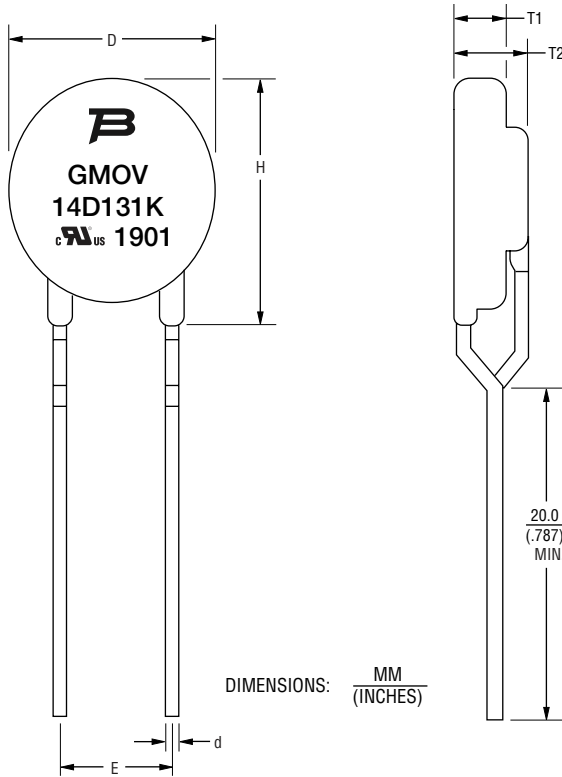
- Solar inverters
- Power supplies
- Distribution systems



## GMOV™ Series - 14 & 20 mm Hybrid Protection Component

**BOURNS®**

### Product Dimensions



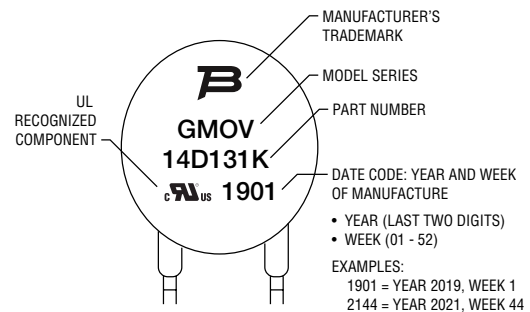
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

Dimension	GMOV-14DxxxK	GMOV-20DxxxK
D (Max.)	$\frac{16.5}{(.649)}$	$\frac{23.0}{(.906)}$
H (Max.)	$\frac{20.0}{(.787)}$	$\frac{26.0}{(1.024)}$
T1 (Max.)	$\frac{5.0}{(.197)}$	$\frac{6.0}{(.236)}$
T2 (Max.)	$\frac{8.0}{(.315)}$	$\frac{9.0}{(.354)}$
d	$\frac{0.8 \pm 0.1}{(.031 \pm .004)}$	$\frac{1.0 \pm 0.1}{(.039 \pm .004)}$
E	$\frac{7.5 \pm 1.0}{(.295 \pm .039)}$	$\frac{10.0 \pm 1.0}{(.394 \pm .039)}$

### Typical Part Marking

Bourns Part Number	Bourns Part Marking
GMOV-14D450K	14D450K
GMOV-14D500K	14D500K
GMOV-14D650K	14D650K
GMOV-14D950K	14D950K
GMOV-14D111K	14D111K
GMOV-14D131K	14D131K
GMOV-14D141K	14D141K
GMOV-14D151K	14D151K
GMOV-14D171K	14D171K
GMOV-14D231K	14D231K
GMOV-14D251K	14D251K
GMOV-14D271K	14D271K
GMOV-14D301K	14D301K
GMOV-14D321K	14D321K

GMOV-20D450K	20D450K
GMOV-20D500K	20D500K
GMOV-20D650K	20D650K
GMOV-20D950K	20D950K
GMOV-20D111K	20D111K
GMOV-20D131K	20D131K
GMOV-20D141K	20D141K
GMOV-20D151K	20D151K
GMOV-20D171K	20D171K
GMOV-20D231K	20D231K
GMOV-20D251K	20D251K
GMOV-20D271K	20D271K
GMOV-20D301K	20D301K
GMOV-20D321K	20D321K



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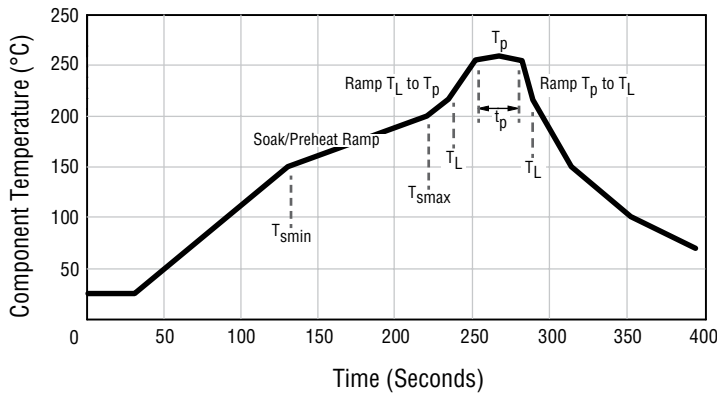
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# GMOV™ Series - 14 & 20 mm Hybrid Protection Component **BOURNS®**

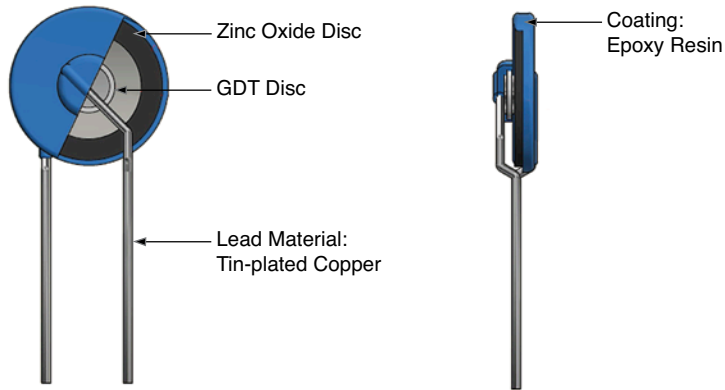
## Solder Profile

Users should ensure that they do not exceed the scope of IPC/JEDEC J-STD-020 (Pb-Free) during solder assembly.

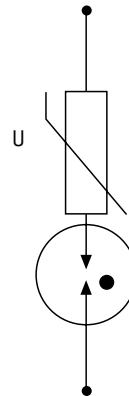


Profile Feature	Profile Limits
Preheat temperature min. ( $T_{smin}$ )	150 °C
Preheat temperature max. ( $T_{smax}$ )	200 °C
Ramp time ( $T_{smax} - T_{smin}$ )	60 – 120 seconds
Ramp-up rate ( $T_L$ to $T_p$ )	3 °C / second max.
Liquidus temperature ( $T_L$ )	217 °C
Time maintained above $T_L$	60 – 150 seconds
Peak package body temperature	260 °C
Time within 5 °C of peak temperature ( $T_p$ )	30 seconds max.
Ramp-down rate ( $T_p$ to $T_L$ )	6 °C / second max.
Time from 25 °C to peak temperature	8 minutes max.

## Construction



## Circuit Diagram



## How to Order

- Model Designator \_\_\_\_\_
- GMOV™ = GDT/MOV Hybrid Protection Component
- Disc Diameter \_\_\_\_\_
- 14D = 14 mm
- 20D = 20 mm
- RMS Voltage \_\_\_\_\_
- See Electrical Characteristics Table
- Multiplier of Voltage Digits \_\_\_\_\_
- 0 = No multiplier
- 1 = nn times  $10^1$
- MOV Disc Voltage Tolerance \_\_\_\_\_
- K = 10 %
- Packaging \_\_\_\_\_
- Blank = Bulk

**GMOV - nnD nn (n) K - \_\_\_\_\_**

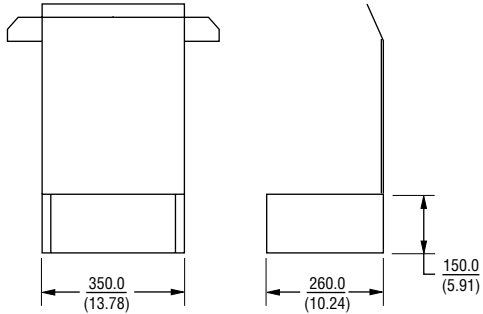
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# GMOV™ Series - 14 & 20 mm Hybrid Protection Component

# BOURNS®

## Packaging Information - 14 mm Disc

### BULK

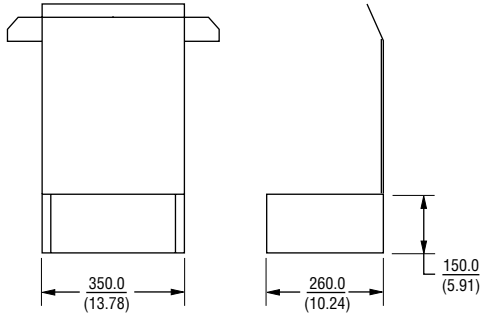


- GMOV-14DxxxK: 1600 pcs. per carton
- 200 pcs. per bag;
  - 2 bags per inner box;
  - 4 inner boxes per carton

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Packaging Information - 20 mm Disc

### BULK



- GMOV-20DxxxK: 1000 pcs. per carton
- 250 pcs. per bag;
  - 1 bag per inner box;
  - 4 inner boxes per carton

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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