

# MICROTEMP<sup>®</sup> Thermal Cutoffs: TYPES & SPECIFICATIONS



MICROTEMP<sup>®</sup> thermal cutoffs are available in a range of temperatures and electrical ratings to meet application requirements (see *Microtemp<sup>®</sup> Operating Temperature Summary and Electrical Rating Summary on page 4*). There are 5 primary types of thermal cutoffs available. Standard dimensions of each TCO series are shown on page 4.

**G Series:** This “Global” series or G designation represents the world standard in thermal cutoffs. MICROTEMP<sup>®</sup> TCOs were the first chemical-pellet spring-type TCO ever developed and continue to be the thermal cutoff of choice for over 35 years.

**E Series:** This new “Environmentally” friendly series holds Agency recognition equivalent to the G series and has been designed to comply with the Restriction of Hazardous Substances in Electrical and Electronic Equipment (ROHS) Directive (2002/95/EC). None of the substances specified in this Directive have been intentionally incorporated into the E-series products.

## **G4 Series**

Rated for continuous operating currents up to 10 amps @ 250VAC (15 amps @ 120VAC, 5 amps @ 24VDC), the G4 series MICROTEMP<sup>®</sup> TCO is the industry standard for over-temperature protection. The G4 series is applied to millions of appliances and personal care products each year, providing reliable back-up protection for temperature controlling thermostats and other over-temperature conditions. The G4 series is also widely applied in office machines, portable heaters and industrial equipment as a thermal safeguard.

## **G5 Series**

Designed for higher voltage and current applications than the G4, the G5 series MICROTEMP<sup>®</sup> TCO is rated for operating currents up to 20 amps @ 250VAC and 277 VAC (25 amps @ 120VAC). Similar in appearance to the G4 series, the G5 series has a different internal construction designed for interrupting higher currents and withstanding higher temperatures.

## **G6 Series**

The G6 series MICROTEMP<sup>®</sup> TCO can be utilized in applications where a higher maximum-overshoot temperature rating is not required, yet it is rated for operating currents up to 16 amps @ 250VAC. It is the same physical size as the G4, G5 and G8 series TCOs.

## **G7 Series**

The G7 series MICROTEMP<sup>®</sup> TCO is designed to satisfy applications requiring miniaturized components that do not need maximum current interrupt capability. The G7 is just 2/3 the size of the G4 and G5, and with a current interrupting capability of 5 amps @ 250VAC (5 amps @ 24VDC), it is capable of meeting the requirements of transformers, motors, battery packs and electronic circuit applications.

## **G8 Series**

Designed for very high-current applications such as major appliances and high-wattage electric heat packages, the G8 series MICROTEMP<sup>®</sup> TCO is rated for operating currents up to 25 amps @ 250VAC (20 amps @ 277VAC). More economical than electromechanical bimetal-type one shot devices, it can be utilized in applications where its small size is an advantage in terms of mounting (it’s the same physical size as the G4, G5 and G6 series TCOs) and thermal response.

# MICROTEMP® TCO Operating Temperature Summary

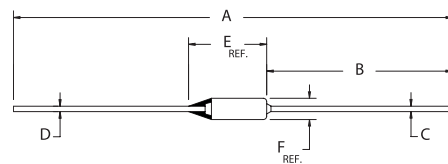
Open Temp T <sub>f</sub> °C	Holding Temperature °C		Maximum Overshoot Temperature °C							
	T <sub>h</sub> °C G4, G5, G7 Series	T <sub>h</sub> °C G6, G8 Series	T <sub>m</sub> °C G4 Series	T <sub>m</sub> °C G5 Series	T <sub>m</sub> °C G6 Series	T <sub>m</sub> °C G7 Series	T <sub>m</sub> °C G8 Series	T <sub>m</sub> °C R9 Series	T <sub>m</sub> °C R7 Series	
070	55	45	130	175	130	125	175	130	125	
072	57	47	100	175	100	—	175	100	—	
073	58	48	130	175	100	—	175	130	130	
075	—	—	125	190	—	125	—	125	125	
077	62	52	125	200	125	125	200	125	125	
081	—	—	125	200	—	125	—	125	125	
084	69	59	125	200	125	125	200	125	125	
087	—	—	140	—	—	140	—	140	140	
093	78	68	140	215	—	140	215	140	140	
098	83	73	140	215	140	140	215	140	140	
100	—	—	—	215	—	130	—	—	130	
104	89	79	150	225	150	—	225	150	—	
110	95	85	150	225	—	140	225	150	140	
115	—	—	160	235	—	140	—	160	140	
117	102	92	160	235	160	150	235	160	150	
121	106	96	160	235	160	150	235	160	150	
125	—	—	185	235	—	150	—	185	150	
128	113	103	205	235	205	150	235	160	150	
134	—	—	205	250	—	175	—	205	175	
141	—	—	205	250	—	175	—	205	175	
144	129	119	240	250	240	175	250	175	175	
147	—	—	205	240	—	175	—	205	175	
152	137	127	205	250	205	175	—	175	175	
158	—	—	240	285	—	200	—	240	200	
167	152	142	240	285	240	200	285	210	200	
172	—	—	240	350	—	200	—	240	200	
184	169	159	210	350	210	200	350	210	200	
190	—	—	310	350	—	270	—	310	270	
192	177	167	210	350	210	—	350	210	210	
205	—	—	310	375	—	300	—	310	300	
216	200	191	375	375	—	—	—	375	—	
229	200	200	375	375	375	—	375	375	—	
240	200	200	450	375	450	—	375	375	—	

- T<sub>m</sub> – Maximum overshoot temperature: temperature up to which TCO will not change status
- T<sub>f</sub> – Functioning open temperature tolerance: +0, -5°C
- T<sub>h</sub> – Maximum temperature of the MICROTEMP® TCO measured at the case end of the thermal cutoff at which the thermal cutoff can be maintained for a period for 168 hours without opening.  
NOTE: it is advised that TCOs are not exposed to continuous operating temperatures in excess of T<sub>f</sub> -25°C.
- C.T.I. – Comparative tracking index (all primary thermal cutoffs): 250VAC
- NOTE: G4, G5, G6, G7 and G8 series TCOs with T<sub>f</sub> ≥ 175°C comply with UL conductive heat aging (CHAT) requirements.

## Electrical Rating Summary

Agency	Electrical Current & Voltage Rating								
	G4 Series		G5 Series	G6 Series	G7 Series		G8 Series	R9 Series	R7 Series
	Resistive	Inductive	Resistive	Resistive	Resistive	Inductive	Resistive	Resistive	Resistive
UL/CSA	10A/250VAC 15A/120VAC 5A/24VDC	8A/250VAC 14A/120VAC	20A/250VAC 25A/120VAC 21A/240VAC 20A/277VAC	16A/250VAC	5A/250VAC 5A/24VDC	4.5A/250VAC 4.5A/120VAC	25A/250VAC	—	—
VDE	10A/250VAC 15A/120VAC 5A/24VDC	8A/250VAC 14A/120VAC	20A/250VAC	16A/250VAC	5A/250VAC 5A/24VDC	4.5A/250VAC 4.5A/120VAC	25A/250VAC	—	—
METI	10A/250VAC	—	15A/250VAC	15A/250VAC	5A/250VAC 5A/24VDC	—	—	15A/250VAC	7A/250VAC 7A/24VDC
CCC	10A/250VAC	—	16A/250VAC	—	5A/250VAC	—	—	—	—

## MICROTEMP® TCO Standard Dimensions



	Dimensions – Inches (millimeters)	G4, G5, G6 & G8 Series	G7 Series
Standard Leads	A Overall Length ± .12 (±3.0)	2.51 (63.8)	N/A
	B Case Lead Length ± .06 (± 1.5)	1.38 (34.9)	N/A
Long Leads	A Overall Length ± .12 (±3.0)	3.26 (82.9)	3.26 (82.9)
	B Case Lead Length ± .06 (± 1.5)	1.38 (34.9)	1.38 (34.9)
Lead Material and Diameter	C Case Lead Diameter	0.040 (1.0)	0.023 (.57)
	C Case Lead Material	Tin-Plated Copper	Tin-Plated Copper
	D Epoxy Lead Diameter	0.040 (1.0)	0.023 (.57)
	D Epoxy Lead Material	Silver-Plated Copper	Silver-Plated Copper
Case Dimensions	E Case Length (Reference)	0.58 (14.7)	0.38 (9.6)
	F Case Diameter (Reference)	0.158 (4.0)	0.118 (3.0)