DF Thermal Cutoffs

ORGANIC THERMAL ELEMENT TYPE

The DF Thermal Cut-Offs are used to prevent fires caused by abnormal heat generation from circuits and other heat producing electrical products. They are a non-resettable thermal fuse which open electrical contacts when temperatures exceed the specified level.

The active component of a thermal cutoff is an electrically insulated thermal pellet. This pellet holds a spring loaded contact against a fixed contact under normal operating temperatures. (See Fig. 1) When the preset temperature of the cutoff is reached, the pellet liquifies, the springs relax, and the spring loaded contact is moved away from the fixed contact, opening the circuit. (See Fig. 2) The DF Series is the right choice for applications requiring an inexpensive limit protector with ISA capability.

Fig. 1

Fig. 2

Thermal Cutoffs are single action devices that open when a preset temperature is reached. They do not reset. The active component of a thermal cutoff is an electrically insulated thermal pellet. This pellet holds a spring loaded contact against a fixed contact under normal operating temperatures. When the preset temperature of the cutoff is reached, the pellet liquifies, the springs relax, and the spring loaded contact is moved away from the fixed contact, opening the circuit. The DF Series is the)ight choice for applications requiring an inexpensive limit protectpr with ISA capability.

Operating Principal:

When the ambient temperature rises to the functioning temperature, the thermal element melts and the springs move the contact away and open the circuit permanently.

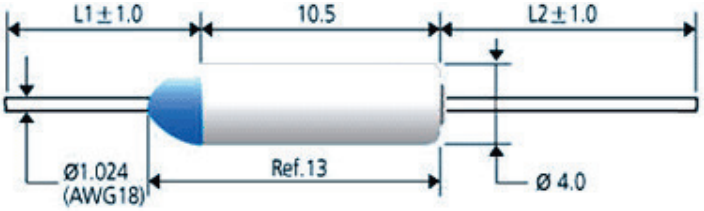
Applications:

- Electric home appliances and heating devices
- Coil-winding products and power supplies
- Office equipment and telecommunication devices
- Automobiles & other electronic components

Approvals:

UL & cUL: E117626
VDE: 115369, 116219
PSE: JET2926-32001-1001-1009
CCC: 2003010205079617
EK: HH05009-2004A-2019A

Dimensions:



Type	A (L1)	B (L2)
Standard	25.4	35.0
Long	35.0	35.0
Option	Custom made	Custom made

Phone: 330-966-3796
Fax: 330-408-7085
sales@calcoelectric.com
2381 Locust St. S., Unit #6
Canal Fulton OH, 44614
www.calcoelectric.com

DF Thermal Cutoffs

ORGANIC THERMAL ELEMENT TYPE

Part No.	UL/cUL	VDE	CCC	PSE	T_F (°C)	T_H (°C)
DF66S	O	O	O	O	66	42
DF72S	O	O	O	O	72	50
DF77S	O	O	O	O	77	55
DF84S	O	O	O	O	84	60
DF91S	O	O	O	O	91	67
DF98S	O	O	O	O	98	76
DF100S	O	O	O	O	100	78
DF104S	O	O	O	O	104	80
DF110S	O	O	O	O	110	86
DF115S	–	–	–	–	115	95
DF119S	O	O	O	O	119	95
DF121S	–	–	–	–	121	95
DF128S	O	O	O	O	128	106
DF132S	–	–	–	–	132	110
DF139S	O	–	–	O	139	117
DF141S	O	O	O	O	141	117
DF144S	O	O	O	O	144	120
DF152S	O	O	O	O	152	128
DF167S	O	O	O	O	167	142
DF169S	–	–	–	O	169	145
DF170S	O	O	O	O	170	146
DF179S	–	–	–	O	179	155
DF184S	O	O	O	O	184	160
DF192S	O	O	O	O	192	162
----------	–	–	–	--	----	----
----------	–	–	–	--	----	----
DF216S	–	O	O	O	216	191
DF222S	–	–	–	O	222	195
DF228S	O	O	O	O	228	193
DF240S	O	O	O	O	240	200
DF260S	–	–	–	O	260	220
DF280S	--	–	–	O	280	230

T_F = Functioning Temperature T_H = Holding Temperature

Rated Voltage & Current Max.	
EK	250V/15A
UL/cUL	125V/15A
	250V/10A
	250V/16A
VDE	250V/15A
PSE	125V/15A
	250V/15A
CCC	250V/15A

O	APPROVED
–	APPLIED FOR
TOLERANCE: +0°C, -5°C	

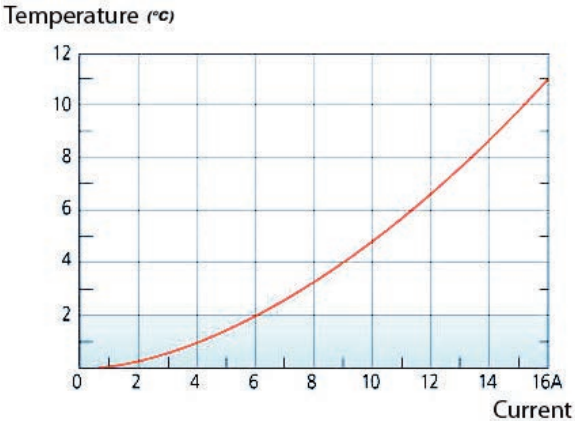
Phone: 330-966-3796
Fax: 330-408-7085
sales@calcoelectric.com
2381 Locust St. S., Unit #6
Canal Fulton OH, 44614
www.calcoelectric.com

DF Thermal Cutoffs

ORGANIC THERMAL ELEMENT TYPE

How to Determine the Proper Series:

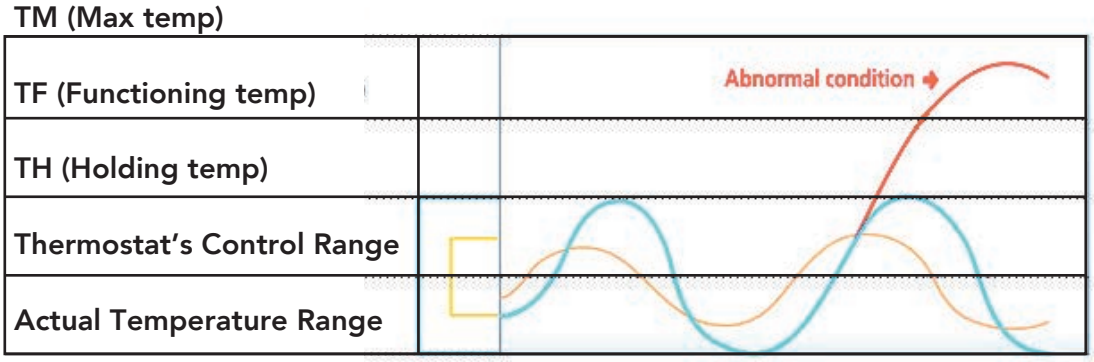
- Tp : The highest temperature of the product to which a cutoff is to be attached.
- Th : The safe temperature range for use of the cutoff.
- Ts : 24°C (Tp-Th) (Apply 35°C for Ts value when Tp is higher than 170°C.)
- To : The heating temperature caused by electrical load (Please refer temperature / current correlation curve)
- +a :
    1. Self heating of lead wire
    2. Structure of ventilation or airtightness
    3. Location of connecting terminal
    4. Thicknes of insulated covering material
    5. Best condition value considering electric voltage changes



Tp + Ts + To +a = Applicable Temperature

Safe Temperature Range:

- The increasing temperature by remaining heat in the cutoff after melting is required to remain below Tm.
- The temperature of the area where a cutoff will be attached should not reach over Th under normal usage conditions.



Phone: 330-966-3796
Fax: 330-408-7085
sales@calcoelectric.com
2381 Locust St. S., Unit #6
Canal Fulton OH, 44614
www.calcoelectric.com

DF Thermal Cutoffs

ORGANIC THERMAL ELEMENT TYPE

Functioning Temperature (TF):

The temperature a thermal cutoff changes its state of conductivity to open a circuit with detection current of 10MA or less as the only load. The temperature tolerance for the UL and CSA standard is +0°C / -l0°C.

Holding Temperature (TH)

The maximum temperature at which a thermal cutoff can be maintained while conducting rated current for 168 hrs. without functioning.

Maximum Temperature (TM)

The maximum temperature at which mechanical and electrical properties of a thermal cutoff can be maintained for 10 minutes without resuming conductivity after functioning.

Phone: 330-966-3796
Fax: 330-408-7085
sales@calcoelectric.com
2381 Locust St. S., Unit #6
Canal Fulton OH, 44614
www.calcoelectric.com

DF Thermal Cutoffs

ORGANIC THERMAL ELEMENT TYPE

Installation:

- Mount the thermal cutoff in a location where uniform radiation of heat is sustained over the body of the unit.
- Keep the leads as long as possible to maximize the area of expo- sure to heat.
- Place and connect the thermal cutoff in a manner so that no external mechanical force will be applied to the body and/or leads of the cutoff.
- Allow adequate space for mounting the thermal cutoff.

Lead Bending:

- When bending a lead, bend at a location 3mm minimum from the body of the thermal cutoff. See below.
- Take caution not to damage either the thermal cutoff body or the lead.
- Keep the thermal cutoff body free from any push, pull or twist force.

Soldering:

NOTE: The special sealant joining the lead wires to the case will soften during soldering. Care must be taken to not move the leads or body during the soldering process as the softened joints could shift and become disconnected. The sealant will resume its initial strength after cooling.

- Minimize the conduction of excessive heat to when soldering the thermal cutoff body
- Maximum soldering time is shown below.
- During soldering, both the thermal cutoff body and leads should be free of any push, pull or twist force.
- After manual soldering, allow the thermal cutoff to cool for 30 seconds minimum without moving it. Automatic wave soldered units must cool for a minimum of 5 minutes.

Precautions:

The following information describes the correct methods of using thermal cutoffs to ensure safe and proper performance. To achieve the full use and capacity of a thermal cutoff is necessary for the customer to exercise proper storage and execute appropriate circuit design proper installation and adequate testing. Calco Electric Corp. does not assume responsibility for problems which occur as a result of improper storage and installation, or inappropriate circuit design, evaluations or tests.

- Do not use thermal cutoffs for purposes other than for what they are intended. Thermal cutoffs operate only when they sense an ambient temperature greater than the factory pre-set temperature. They have no ability to function by current overload and are not current limiting devices.
- Do not use thermal cutoffs in equipment, appliances or devices intended to be used in the aerospace industry, aviation, nuclear power generation systems, life support systems, engine control systems, or safety control systems for transportation. Thermal cutoffs are applicable for electrical household devices, appliances and electronics. Other applications include: office automation equipment, audiovisual equipment, communication systems, measuring instruments and specific transportation systems.
- Do not use thermal cutoffs in applications exceeding the listed ratings in the specification charts.
- Do not use thermal cutoffs in a liquid, in a corrosive atmosphere such as sulfurous gas, or in a high humidity environment.
- Customers shall choose the thermal cutoff appropriate for the application and determine the proper mounting position and/or method. To judge whether the selected thermal cutoff and chosen position and method of mounting is suitable for the final application, we recommend that the customer fully test and evaluate the unit in an environment that duplicates the final application as closely as possible. This includes mounting and securing the thermal cutoff identically to the method that will be used in production.

CALCO ELECTRIC CORP.

Phone: 330-966-3796
Fax: 330-408-7085
sales@calcoelectric.com
2381 Locust St. S., Unit #6
Canal Fulton OH, 44614
www.calcoelectric.com