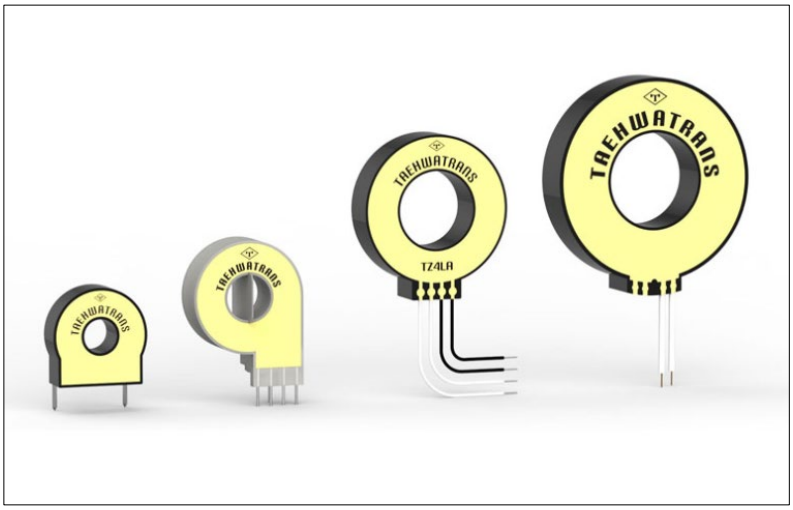
Zero Phase CT



The zero phase CTs are differential sensors passing both line & grounded neutral conductors into the CT aperture so as to make a zero phase sequence in the case of leakage current or fault current on the line. So it is called the differential current as the sensitivity current distinguished from the primary current. The valuable advantage of Taehwatrans CTs is the minimal noise that enables the CT to sense very low current along with almost zero load shift under hair-pin test environment. It means the CT reading sensitivity, the capability of reading very minimal current flow, is not hardly affected even under a variety of field installation environments while generating the same level of output as our testing lab. Therefore they are used in the ground fault circuit interrupter, appliances leakage circuit interrupter which has rated sensitivity less than 5mA or 6mA and the earth leakage circuit breakers with 15mA or 30mA rated sensitivity current.

Differential current transformer

The **differential current transformer** is used in the wide applications such as earth leakage detection devices, ground fault interrupter and appliance leakage circuit interrupter. The role for the differential current transformer is to sense the minimal mA leakage current without any influence from the external electromagnetic noise. Its sensitivity currents are applied in the instruments' functionality from 4mA to 30mA in normal conditions. The differential current transformer is characterized in the highest sensitivity and no-load shift, and excellent hair pin test properties. The usage is wide spread from the GFCI, ELCB, Hair Dryer, lawn mower and so on.

Ground Fault Current Transformer

Ground fault current transformer generally have been used in the North American market. They monitor the fault current and protect the human being or every individual instrument & home appliance from the leakage or in rushed current outbreak. It used to term as the ground fault & arc fault interrupter in the USA. The usage is normally set to the outlet receptacles all through different rooms in the house.
Ground fault current transformer has varied roles for the minimal leakage detection as low as 5mA, and overcurrent protection derived from protection in children drawing the iron stick into the hole of the Receptacle or rats breaking the electrical lines, or fire outbreak. The characteristics must be highly susceptible to the very low current and almost not influenced from the noise out of environments. So, it is tested in the hairpin shaped conductor looking like functioning line current input and grounded neutral current output. The Ground fault current transformer must be offset by both current in and out. The effect of the balanced currents should be shown just like no current flow if it were not affected from the noise which seems to be noise cloud in the oscilloscope.

A variety of technology is involved in the manufacturing such kinds of current transformers from the universal winding, capacitive noise cancellation, shielding method etc. Sometimes it is called a zero phase sequence current transformer. The function approach could be different from how the circuit design is constructed. Some use the system with the electronic type using the amplifying IC which is usually represented in North American countries, Japan and Korea. The other uses the concept of the induction type to break the circuit using the CT itself. But both have the solenoid magnetic latching system to break the circuit.

Application

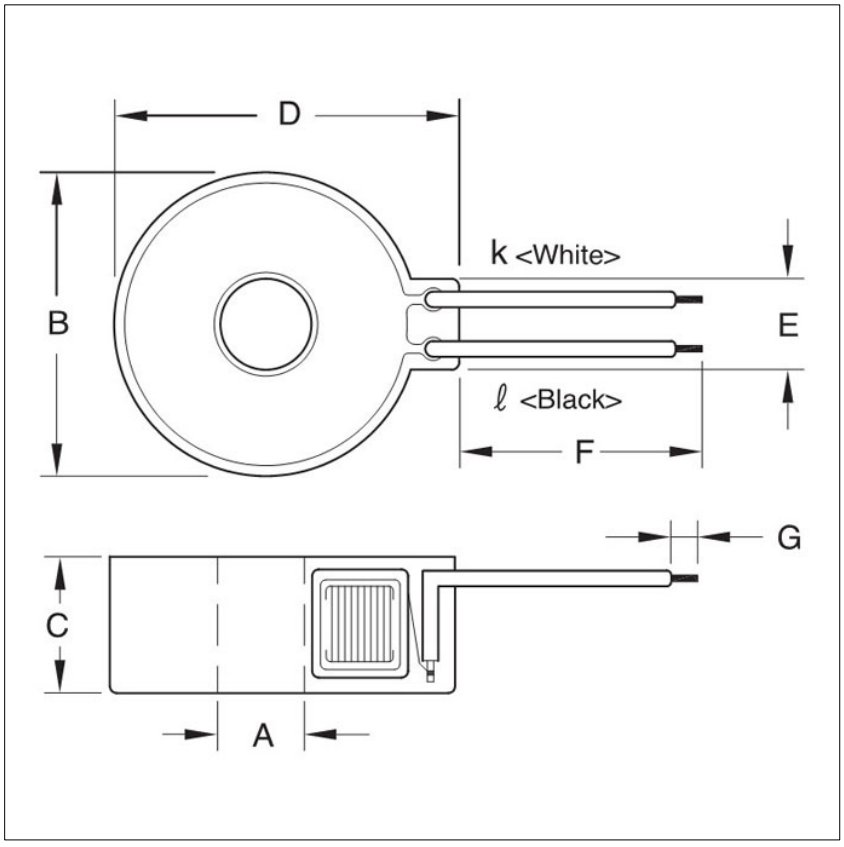
- Residual current circuit breaker (RCCB)
- Earth leakage circuit breaker (ELCB)
- Ground fault circuit interrupter (GFCI)
- Appliance leakage circuit breaker interrupter (ALCI)
- ZCT for energy storage system (ZCT's)
- EV / 2 & 3 Wheeler Charger (Stand/Cable)

Features

- Minimum output voltage tolerance
- Close to zero load shift
- Minimum noise output at 360 degree hair-pin test.
- Excellent thermal properties in minimal variation
- RoHS and REACH compliant

I. Lead Wire Type

Drawing



Lead Wire Type

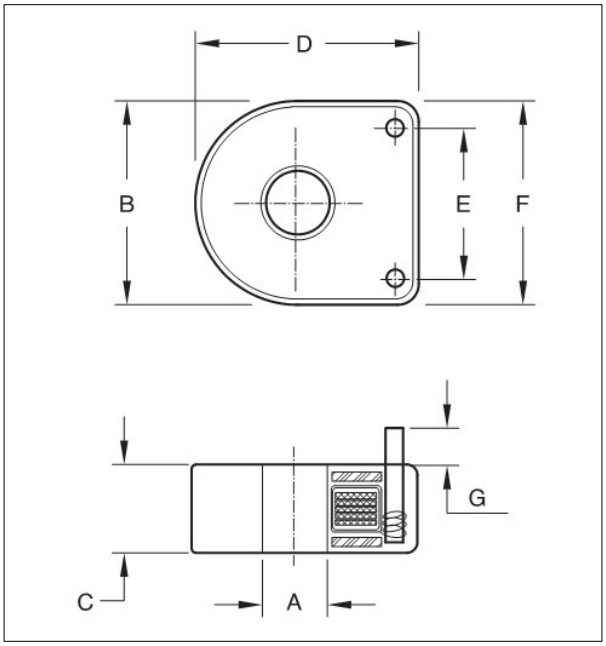
Electrical Property & Dimension

unit : mm/inch

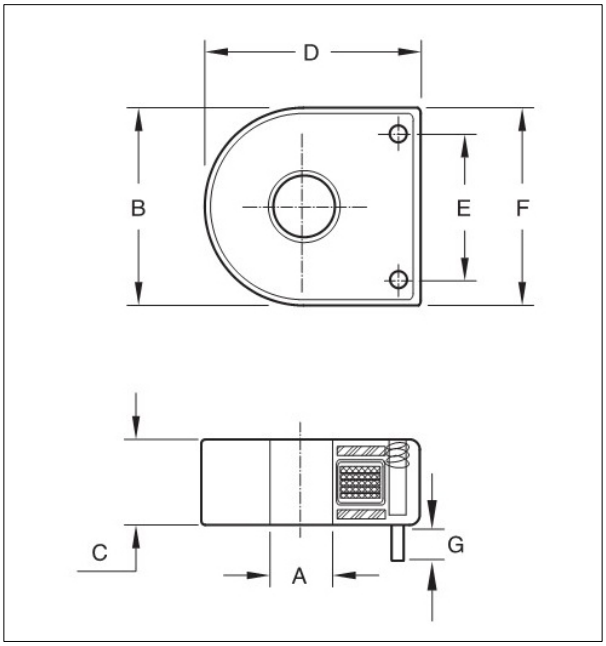
Model NO	Dimension(mm/inch)							Current Rating	Sensitivity Current
	A(min)	B(max)	C(max)	D(max)	E(±0.3)	F(±0.3)	G(±0.5)		
TZ1L	5.9 0.232"	17.4 0.685"	8 0.315"	20.5 0.807"	5.5 0.217"	73 2.874"	3 0.118"	15A-30A	15mA-30mA
TZ53L10	6.9 0.272"	17.1 0.673"	6.7 0.264"	19.1 0.752"	5.2 0.205"	50 1.969"	3 0.118"	15A-30A	
TZ1PL	7.3 0.287"	19.1 0.752"	8.1 0.319"	22 0.866"	7 0.276"	73 2.874"	3 0.118"	15A-30A	
TZ2L9	8.9 0.350"	22 0.866"	8.2 0.323"	25 0.984"	7 0.276"	120±5.0 4.724"	4.0±0.5 0.157"	30A-50A	
TZ3L	9.9 0.390"	24 0.945"	9 0.354"	27 1063"	6 0.236"	73 2.874"	3 0.118"	50A-75A	
TL3L	9.9 0.390"	24 0.945"	9 0.354"	27 1063"	6 0.236"	73 2.874"	3 0.118"	15A-30A	
TZ3PL	12.5 0.492"	26.2 1.031"	9 0.354"	29 1.142"	6.45 0.254"	120±5.0 4.724"	4.0±0.5 0.157"	50A	
TZ4L	15.5 0.610"	30.35 1.195"	9.2 0.362"	33.4 1.315"	6.3 0.248"	73 2.874"	3 0.118"	100A	
TL4L	15.5 0.610"	30.35 1.195"	9.2 0.362"	33.4 1.315"	6.3 0.248"	73 2.874"	3 0.118"	30A~50A	
TG115L	7.1 0.279"	18.8 0.740"	6.7 0.264"	21.5 0.846"	7.2 0.283"	39±3 1.535"	5±3 0.197"	60A	4mA-6mA
TZ5L	19.4 0.764"	40.5 1.594"	10 0.394"	43.5 1.713"	12.1 0.476"	87 3.425"	6 0.236"	100A-150A	
TL5L	19.4 0.764"	40.5 1.594"	10 0.394"	43.5 1.713"	12.1 0.476"	87 3.425"	6 0.236"	30A-50A	

Ⅱ. PCB Mountable Type

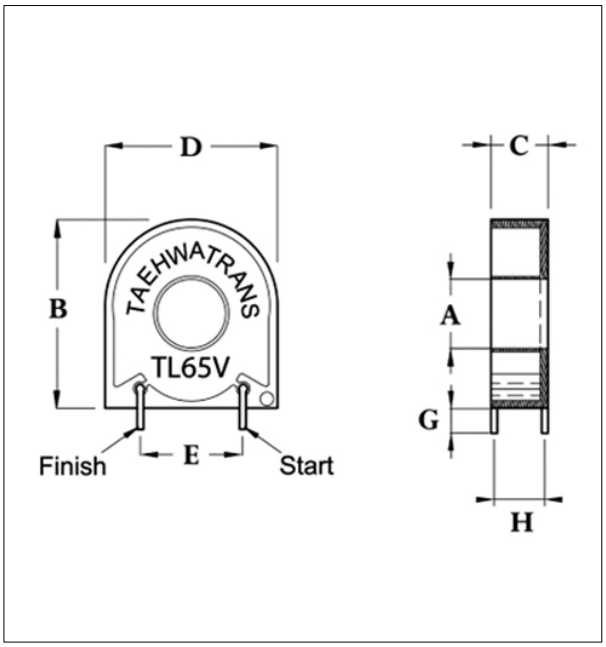
Drawing



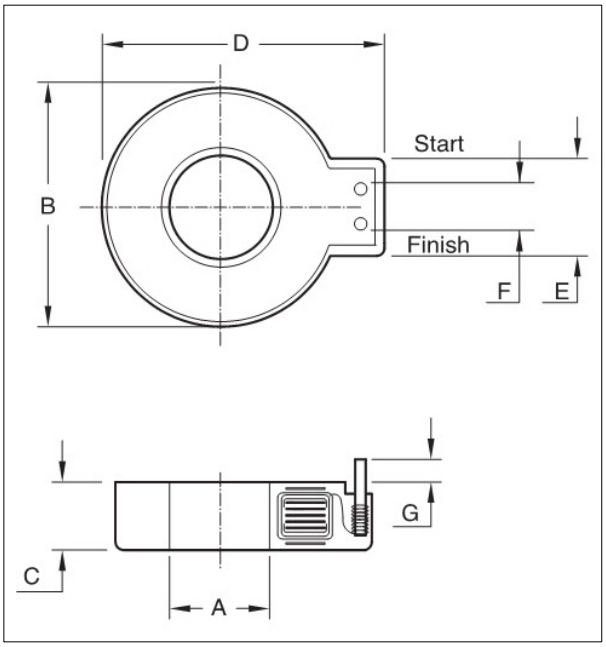
TZ1H



TZ1H3



TL65V



TZ53H

Electrical Property & Dimension

Dimension & Current Rating

unit : mm/inch

Model NO	A(min)	B(max)	C(max)	D(max)	E	F(max)	G	current Rating
TZ1H	5.7 0.224"	17.4 0.685"	8.0 0.315"	17.3 0.681"	11.2 0.441"	17.4 0.685"	6± 1.0 0.236"	15A 20A 30A for 7kw & 11kw EV charger
TZ1H3	6.1 0.240"	17.1 0.673"	7.0 0.276"	18.2 0.717"	10.3 0.406"	17.1 0.673"	2.75 0.108"	
TZ53H	6.9 0.272"	17.1 0.673"	6.0 0.236"	19.1 0.752"	5.2 0.205"	3±0.3 0.118"	6±3.0 0.236"	
TL65V	5.7 0.224"	19.5 0.768"	8.6 0.339"	19.2 0.765"	12.7 0.500"		3.0 0.118"	
TL2PV	9.9 0.390"	25.6 1.008"	10.0 0.394"	23.8 0.941"	15.1 0.594"	19.1 0.752"	3.0 0.118"	

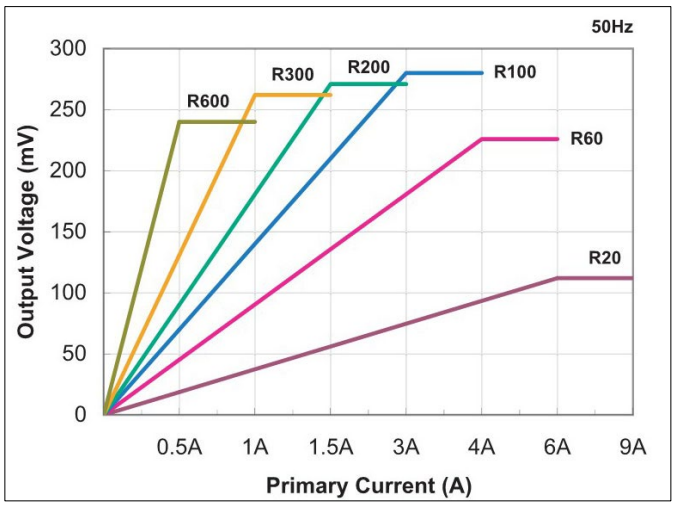
Electrical Property

Based on TZ1L

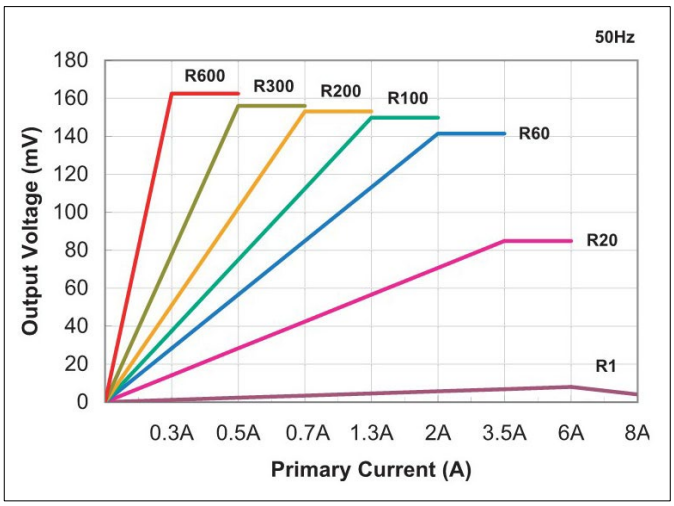
Output Voltage Properties	Vo=15mV (at Io=25mA, R=1kΩ,f=60Hz)
Remanence Magnetism	T=10% Max (at Idc=50AT)
Thermal Properties	200A ~ 1500A
Hair-Pin Properties	V" = 6mV max (at IL=30A)
Pulse Width Properties	Tp=2.5m sec min(at Vo = 15mV level)

1. Output voltage properties is measured after demagnetized.
2. Remanence magnetism: Variation of the output voltage between normal CT's and sataurated CT's.
3. Thermal properties: Variation of the output voltage from -10℃ to +65℃ at ambient temperature.
4. Hair-pin properties: At the balanced current equivalent to 6 times of the rated current along around 360 degree. V" is the maximum output voltage.
5. Pulse width properties: The wave width at Vo=10Mv

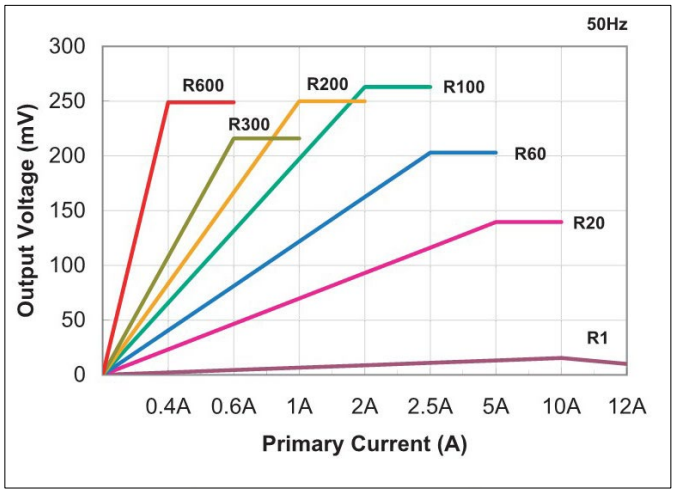
Secondary Burden & Output Voltage Graph



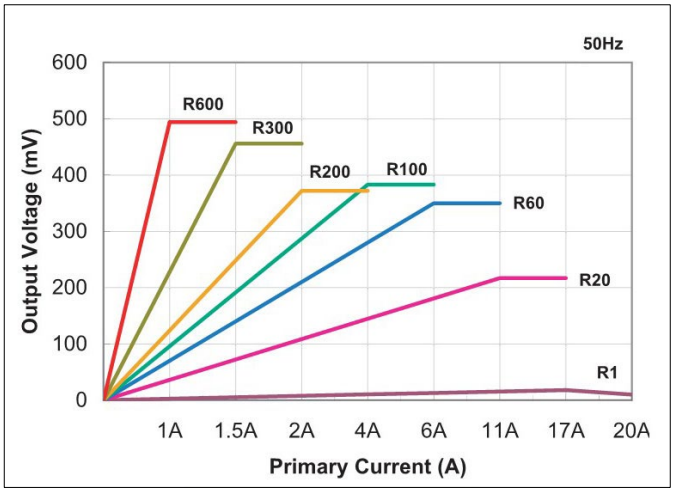
TZ1L



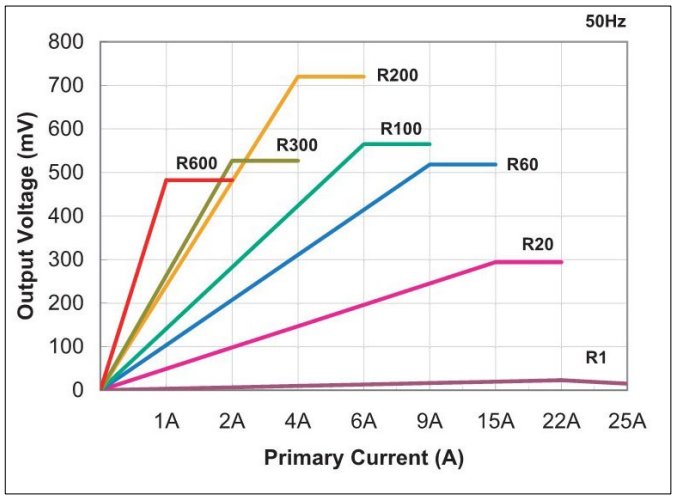
TZ53H/L10



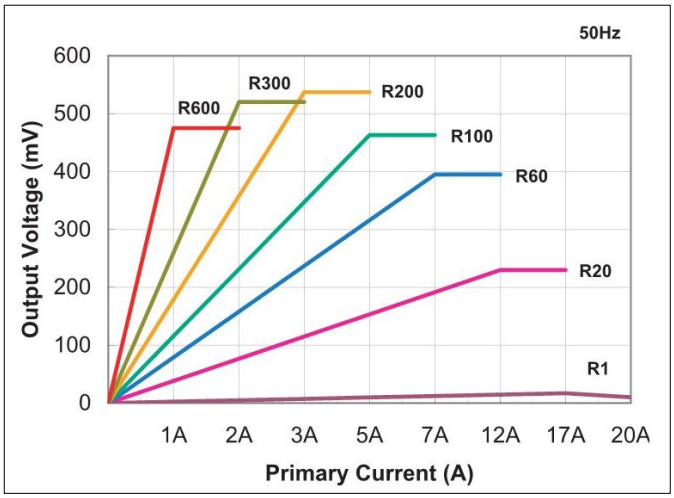
TZ1PL



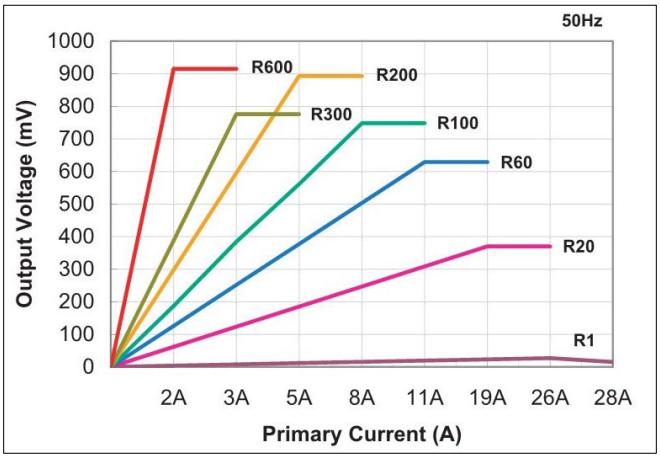
TZ2L9



TZ3L

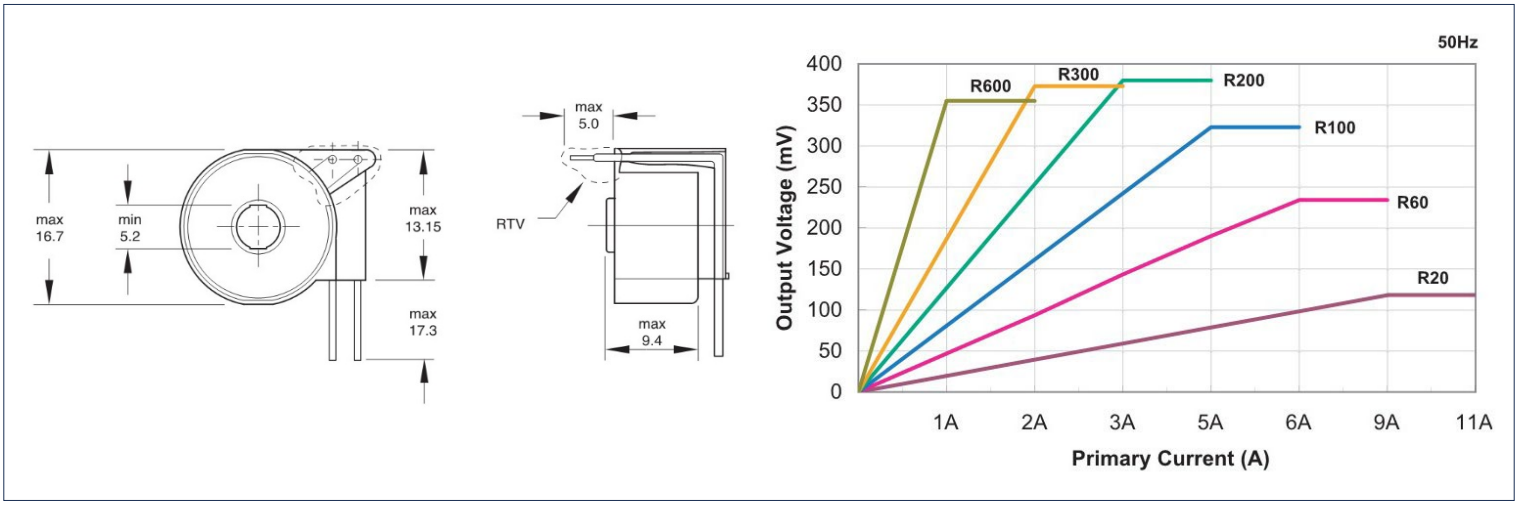


TZ3PL

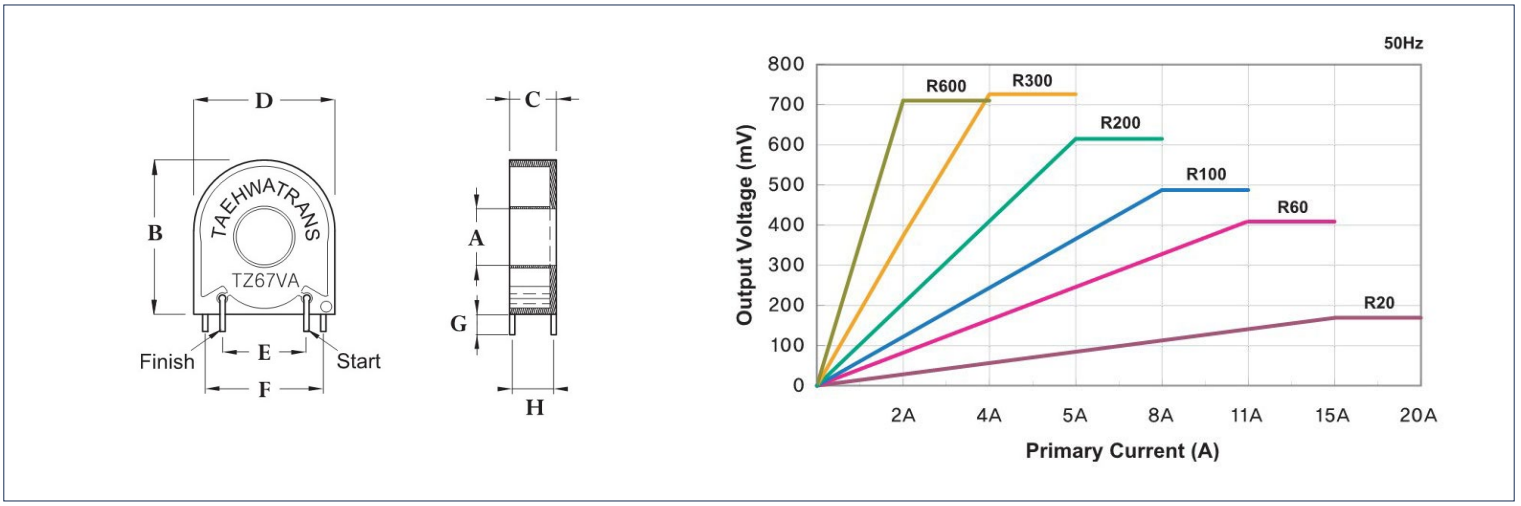


TZ4L

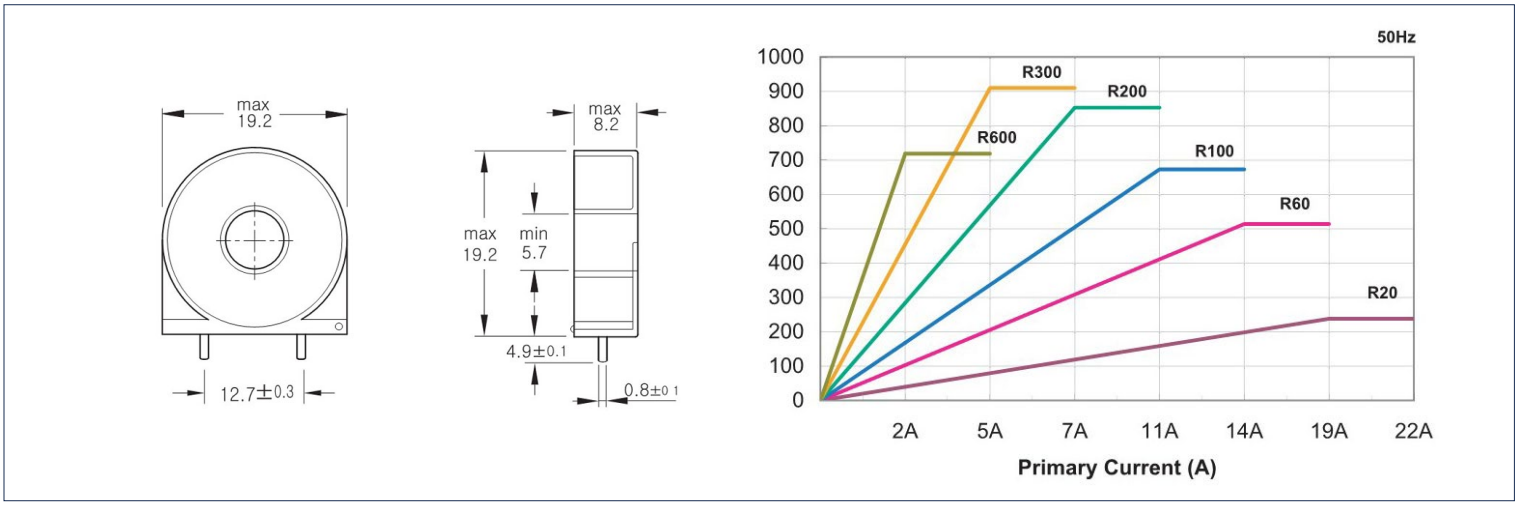
Other GFCI CTs



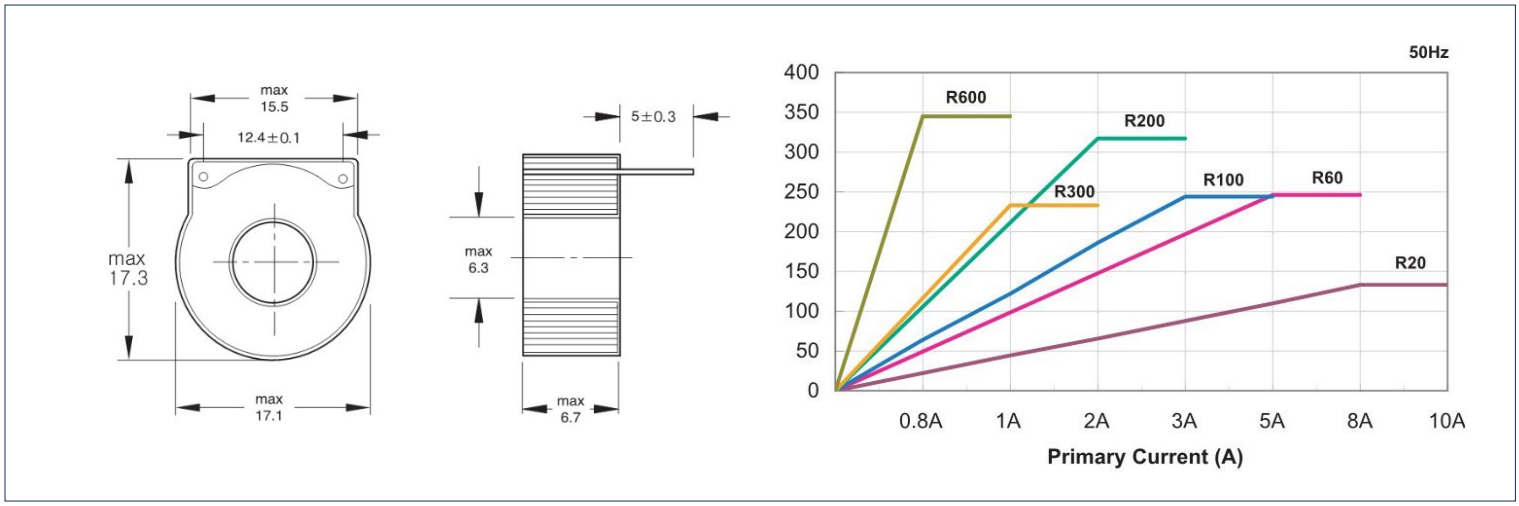
TZ47V



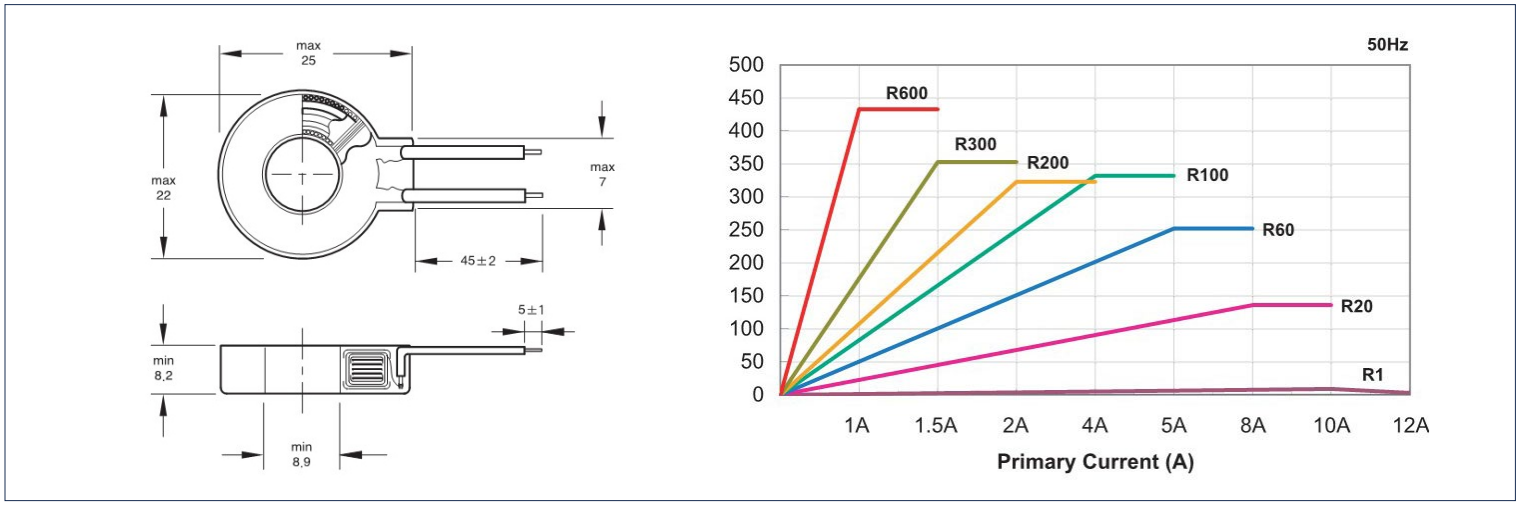
TZ67VA



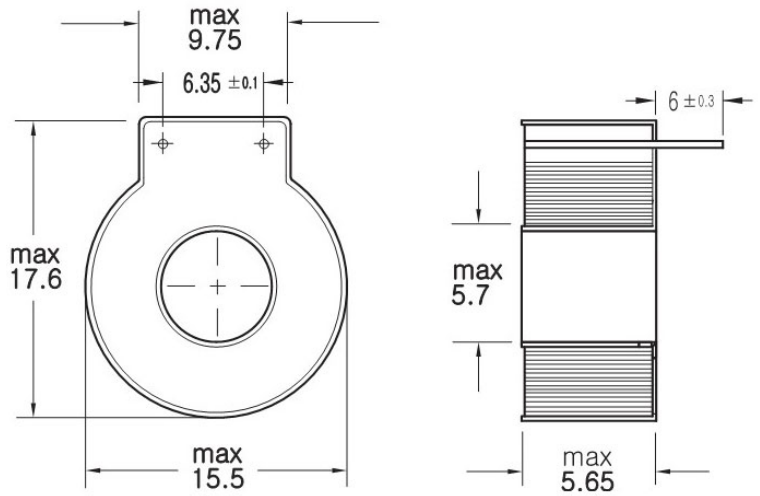
TZ68V1



TG115H



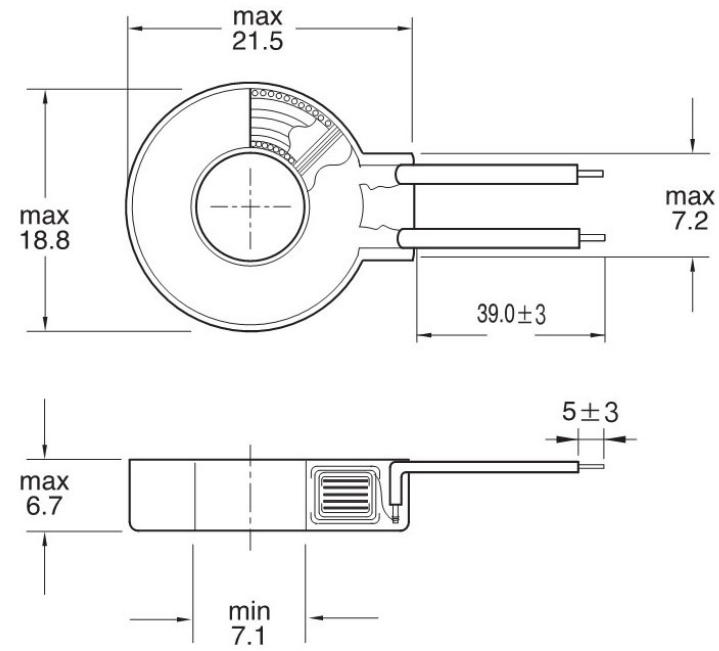
TG115L



Electrical Characteristics

- **Input :** 1kHz
- **Resistance :** 14-160
- **Inductance :** 170 - 310 mH

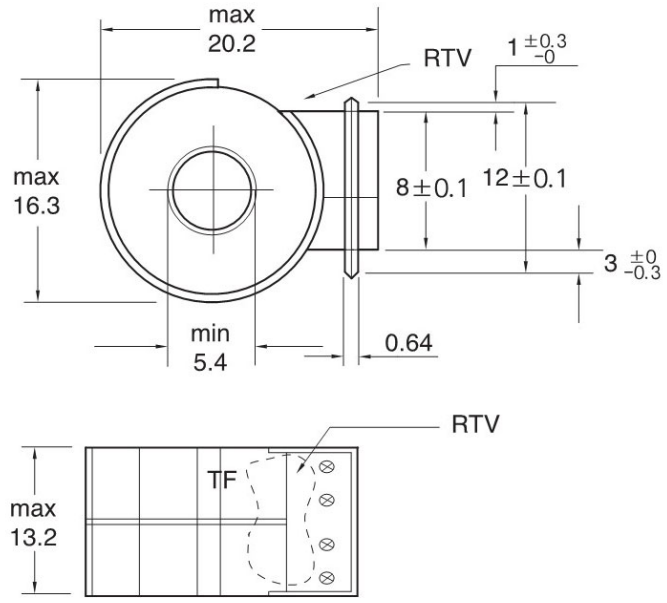
TF115H



Electrical Characteristics

- **Input :** 1kHz
- **Resistance :** 14.5-17.5Ω
- **Inductance :** 270 - 390 mH

TF115L



Electrical Characteristics

- **Input :** 1kHz
- **Resistance :** 14-19Ω
- **Inductance :** 260 - 310 mH

TF111V

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