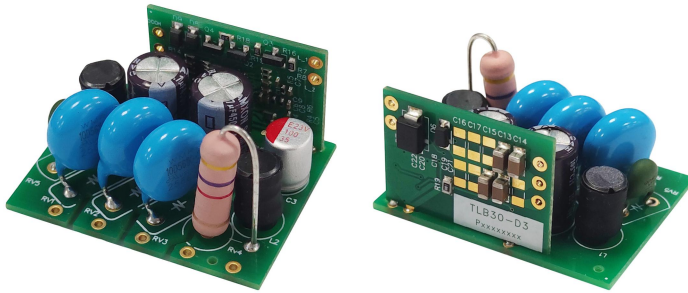


Residual Current Detection Module
TLBxx-D3



RoHS



Features

- Cover type B residual current detection
- Small size, can be built into the circuit breaker for use
- Low response time
- High immunity to external interference
- Meets the requirements of GBT22794-2017 for residual current
- Customization available

TLBxx-D3 series product is a residual current protection module. The fluxgate detection technology is used to detect the residual current of DC, AC and various pulsating waveforms, covering protection features such as B, A, F and AC and a variety of residual current detection. Easy to install, simple, suitable for a variety of occasions.

Application areas: Urban lighting, smart home, smart power grid, etc.

Selection Guide

Certification	Part No.	Rated DC Residual Current (mA)	Rated AC Residual Current (mA)	Input Voltage (VAC)	Power Dissipation (W)
--	TLB30-D3	60	30	220(single-phase)/ 380(three-phase)	0.14
--	TLB100-D3	200	100		
--	TLB300-D3	600	300		

General Characteristics

Item	Symbol	Min	Typ	Max	Unit.
Input Voltage (single-phase/ three-phase)	U_C	187/ 323	220/ 380	242/ 418	V
Operating Temperature	T_A	-40	--	+85	°C
Storage Temperature	T_S	-55	--	+105	
Weight	m	12	15	17	g

EMC Characteristics

Item	Specification
EMI (GB4343.1)	CE CISPR32/EN55032 CLASS B
	RE CISPR32/EN55032 CLASS B
EMS (GB_T18499)	ESD Contact $\pm 6kV$ perf. Criteria A
	RS 3V/m perf. Criteria A
	EFT 4kV, Tr/Th: 5/50ns, repetition frequency: 5kHz perf. Criteria A
	Surge Tr/Th: 1.2/50us, Line to line: 4kV/2 Ω perf. Criteria A
	CS 3Vr.m.s. perf. Criteria A
	Voltage dip, short interruption and voltage variation Voltage dip: 15% of U_C to 100% of U_C , voltage variation: 30% of U_C to 50% of U_C , short interruption: 100% of U_C , the duration is greater than half a cycle to 1s. perf. Criteria A

Performance Characteristic

Item		Min	Typ	Max	Unit.
Residual operating current @AC-50Hz $I_{\Delta N_{AC}}$	TLB30-D3	15	--	30	mA
	TLB100-D3	50	--	100	
	TLB300-D3	150	--	300	
Residual operating current @A0 $I_{\Delta N_{A0}}$	TLB30-D3	10.5	--	42	mA
	TLB100-D3	35	--	140	
	TLB300-D3	105	--	420	
Residual operating current @A90 $I_{\Delta N_{A90}}$	TLB30-D3	7.5	--	42	mA
	TLB100-D3	25	--	140	
	TLB300-D3	75	--	420	
Residual operating current @A135 $I_{\Delta N_{A135}}$	TLB30-D3	3.3	--	42	mA
	TLB100-D3	11	--	140	
	TLB300-D3	33	--	420	
Residual operating current @F $I_{\Delta N_F}$	TLB30-D3	15	--	42	mA
	TLB100-D3	50	--	150	
	TLB300-D3	150	--	420	
Residual operating current @AC+(0.4*1*I ΔN_{ACmax})DC $I_{\Delta N_{AC+DC}}$	TLB30-D3	1	--	30	mA
	TLB100-D3	1	--	100	
	TLB300-D3	1	--	300	
Residual operating current @A0+(0.4*1*I ΔN_{ACmax})DC $I_{\Delta N_{A0+DC}}$	TLB30-D3	1	--	42	mA
	TLB100-D3	1	--	140	
	TLB300-D3	1	--	420	
Residual operating current @AC-150 $I_{\Delta N_{AC150}}$	TLB30-D3	15	--	72	mA
	TLB100-D3	50	--	240	
	TLB300-D3	150	--	720	
Residual operating current @AC-400Hz $I_{\Delta N_{AC400}}$	TLB30-D3	15	--	180	mA
	TLB100-D3	50	--	600	
	TLB300-D3	150	--	1800	
Residual operating current @AC-1000Hz $I_{\Delta N_{AC1000}}$	TLB30-D3	30	--	420	mA
	TLB100-D3	100	--	1400	
	TLB300-D3	300	--	4200	
Residual operating current @DC $I_{\Delta N_{DC}}$	TLB30-D3	15	--	60	mA
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Residual operating current @2PDC $I_{\Delta N_{2PDC}}$	TLB30-D3	15	--	60	mA
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Residual operating current @3PDC $I_{\Delta N_{3PDC}}$	TLB30-D3	15	--	60	mA

Performance Characteristic

Item	Min	Typ	Max	Unit.	
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Response time @AC-50Hz-(1*I _{ΔN_{ACmax}}) T _{ΔN_{AC}}	TLBxx-D3 series	1	--	300	ms
Response time @AC-50Hz-(2*I _{ΔN_{ACmax}}) T _{2ΔN_{AC}}	TLBxx-D3 series	1	--	150	ms
Response time @AC-50Hz-(5*I _{ΔN_{ACmax}}) T _{5ΔN_{AC}}	TLBxx-D3 series	1	--	40	ms
Response time @A0-(1*I _{ΔN_{A0max}}) T _{1ΔN_{A0}}	TLB30-D3	3	--	300	ms
	TLB100-D3				
	TLB300-D3				
Response time @A0-(2*I _{ΔN_{A0max}}) T _{2ΔN_{A0}}	TLB30-D3	3	--	150	ms
	TLB100-D3				
	TLB300-D3				
Response time @A0-(350mA) T _{ΔN_{A0-350}}	TLB30-D3	3	--	40	ms
Response time @A0-(700mA) T _{ΔN_{A0-700}}	TLB100-D3	3	--	40	ms
Response time @A0-(2100mA) T _{ΔN_{A0-2100}}	TLB300-D3	3	--	150	ms
Response time @AC-100Hz-(14*I _{ΔN_{ACmax}}) T _{ΔN_{AC1000}}	TLBxx-D3 series	3	--	300	ms
Response time @F I _{Δ7} *N _F	TLBxx-D3 series	3	--	40	ms
Response time @DC-(2*I _{ΔN_{DC}}) T _{2ΔN_{DC}}	TLBxx-D3 series	3	--	300	ms
Response time @DC-(4*I _{ΔN_{DC}}) T _{4ΔN_{DC}}	TLBxx-D3 series	3	--	150	ms
Response time @DC-(10*I _{ΔN_{DC}}) T _{10ΔN_{DC}}	TLBxx-D3 series	3	--	40	ms
Response time @2PDC-(2*I _{ΔN_{DC}}) T _{2ΔN_{2PDC}}	TLBxx-D3 series	3	--	300	ms
Response time @2PDC-(4*I _{ΔN_{DC}}) T _{4ΔN_{2PDC}}	TLBxx-D3 series	3	--	150	ms
Response time @2PDC-(10*I _{ΔN_{DC}}) T _{10ΔN_{2PDC}}	TLBxx-D3 series	3	--	40	ms
Response time @2PDC-(5000mA) T _{ΔN_{2PDC-5000}}	TLBxx-D3 series	3	--	40	ms
Response time @3PDC-(2*I _{ΔN_{DC}}) T _{2ΔN_{3PDC}}	TLBxx-D3 series	3	--	300	ms
Response time @2PDC-(4*I _{ΔN_{DC}}) T _{4ΔN_{2PDC}}	TLBxx-D3 series	3	--	150	ms
Response time @3PDC-(10*I _{ΔN_{DC}}) T _{10ΔN_{3PDC}}	TLBxx-D3 series	3	--	40	ms
Response time @3PDC-(5000mA) T _{ΔN_{3PDC-5000}}	TLBxx-D3 series	3	--	40	ms
Tenfold half waves	TLBxx-D3 series	--	No-Trip	--	--

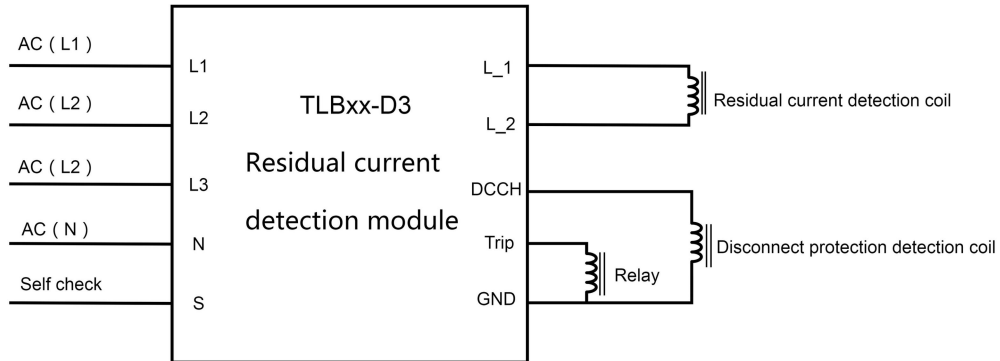
Pin Description

Pin	Mark	Description
1	L1	Live wire input
2	L2	Live wire input
3	L3	Live wire input
4	N	Naught wire input
5	S	Self-check function pin
6	GND	Common terminal
7	Trip	Terminal of relay

Pin Description

Pin	Mark	Description
8	DCCH	Terminal of disconnect protection detection coil (customization)
9	L_1	Terminal of residual current detection coil
10	L_2	Terminal of residual current detection coil

Design Reference



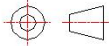
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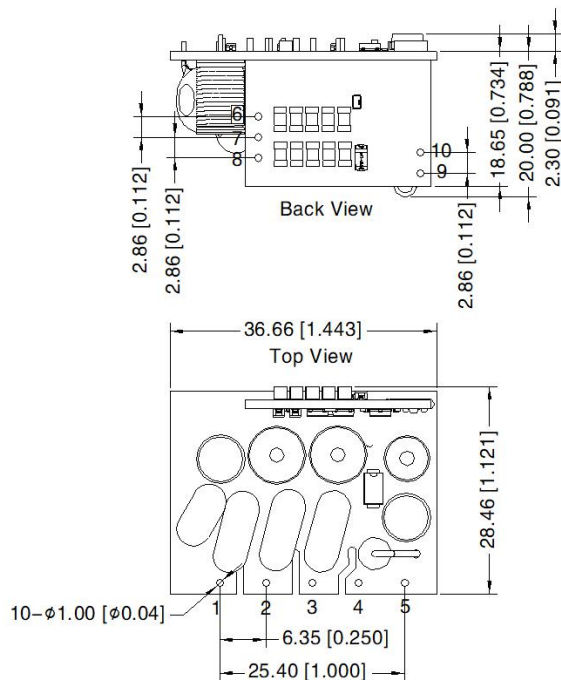
1. Connect L1, L2, and L3 to the live wire of the power supply voltage input terminal, and connect N to the neutral wire.
2. L_1 and L_2 are terminals of residual current detection coil, and Trip and GND are connected to relay.
3. DCCH is an extension pin for disconnect protection, customizable if needed.
4. Hot plug is unavailable.
5. The driving current of this recommended relay is 2.5mA.
6. The size of amorphous magnetic ring and the number of coils are recommended in the table:

Part No.	Inner Diameter	Outer Diameter	height	Coil Turns
TLB30-D3	16.5mm	24mm	5.5mm	25T
TLB100-D3				25T
TLB300-D3				50T

7. We can provide customized products according to the demand of relay driving current, and the customized coil for matching the actual demand size.

Dimensions and Recommended

THIRD ANGLE PROJECTION 



Pin-Out	
Pin	Mark
1	L1
2	L2
3	L3
4	N
5	S
6	GND
7	Trip
8	DCCH
9	L_1
10	L_2

Note:
 Unit: mm[inch]
 Welding holes diameter tolerances: $\pm 0.10 [\pm 0.004]$
 General tolerances: $\pm 0.80 [\pm 0.031]$
 The layout of the device is for reference only, please refer to the actual product

Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58070011;
- All index testing methods in this datasheet are based on company corporate standards;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity < 75%RH with nominal input voltage;
- We can provide product customization service, please contact our technicians directly for specific information;
- This products is used in electronic equipment, please follow the operation and instructions of the manual, and use it in a standard and safe environment;
- Please do not install the product in a dangerous area; beware of the risk of electric shock during operating, some modules may generate dangerous voltages (such as primary wires, power supply wires);
- This products is a build-in device, After installation, the conductive part must not be touched completely. A protective box or shield can be used;
- It is strictly forbidden to disassemble and assemble the products privately to prevent equipment without failure or malfunction;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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