

High voltage sensitive SCR: TS110 in circuit breaker



This SCR enables design of rugged circuit breaker with low power consumption

Thanks to highly sensitive triggering levels ($I_{GT}=100\text{ }\mu\text{A}$), the TS110 SCR Thyristor series are suitable for circuit breaker applications when logic level is required.

The 1250 V direct surge voltage capability of the TS110 series enables high robustness of the whole circuit breaker.

The low leakage current of the TS110 series reduces power consumption over the entire lifetime of the circuit breaker. The TS110 series are available in a through-hole TO-92 package with different pin-outs and in a SMBflat-3L package.

KEY FEATURES

- On-state RMS current: 1.25 A
- Repetitive peak off-state voltage: 700 and 800 V
- Non-repetitive direct surge peak off-state voltage: 1250 V
- Non-repetitive reverse surge peak off-state voltage: 900 V
- Triggering gate current: 100 μA
- High off-state immunity up to 200 V/ μs
- ECOPACK®2 compliant component

KEY BENEFITS

- New standard compliance with no breaker tripping (TS110-8)
- Increased breaker robustness
- Surge voltage immunity up to 5 kV
- EFT transient burst compliance up to 4 kV
- Higher quality & faster assembly
- Low power consumption
- Low profile SMD package

TARGETED APPLICATIONS

- Ground fault circuit interrupter (GFCI)
- Arc fault circuit interrupter (AFCI)
- Residual current device (RCD)
- Residual current circuit breaker with overload protection (RCBO)
- Arc fault detection device (AFDD)
- Home automation switcher

SURGE VOLTAGE IMMUNITY

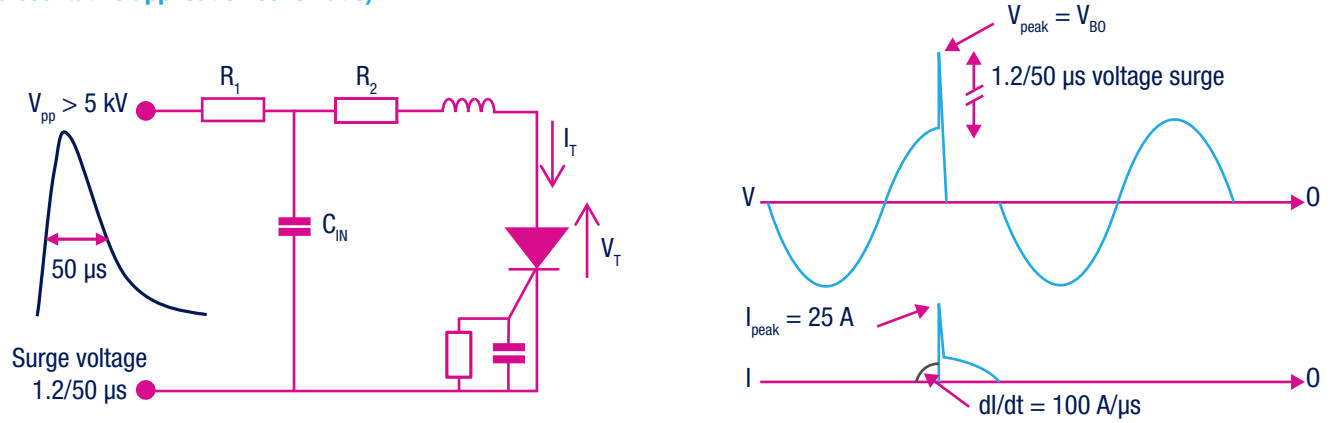
The TS110 is self-protected against over-voltage. Above its break-over voltage, V_{BO} , the TS110 self-triggers safely.

It recovers its blocking voltage capability after the surge removal.

Therefore, the circuit is Class A below 5 kV surge and becomes Class B (no damage) over 5 kV.

IEC 61000-4-5 test circuit

(Representative application schematic)



TS110 SERIES PRODUCT TABLE

Part number	Package	Triggering gate current (I_{GT})	Repetitive peak off-state voltage (V_{DRM} max and V_{RRM}) (@ T_J)	Junction temperature (T_J)	Direct surge voltage capability (V_{DSM})	Max leakage current (I_{DRM} and I_{RRM}) (@ T_J and V_{DRM} , V_{RRM})	Critical rate of rise of on-state current (di/dt) max (@ T_J = 25 °C), Gate open, V_D = V_{BO} , $tr \leq 100$ ns)	Critical rate of rise of off-state voltage (dV/dt) (@ T_J max)
		max (μA)	max (V)	max (°C)	max (V)	max (μA)	max (A/μs)	min (V/μs)
700 V								
TS110-7A1	TO-92* GAK pinout	100	700	125	1250	100	100	15
TS110-7UF	SMBflat-3L	100	700	125	1250	100	100	15
800 V								
TS110-8A1	TO-92* GAK pinout	100	800	125	1250	100	200	200
TS110-8A2	TO-92* KGA pinout	100	800	125	1250	100	200	200
TS110-8UF	SMBflat-3L	100	800	125	1250	100	200	200

* Ammopack is available on request



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