TS110 high-voltage thyristor (SCR) for breakers, RCD and AFCI*

Industrial & Power discretes
ASD & IPAD™ Division

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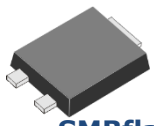
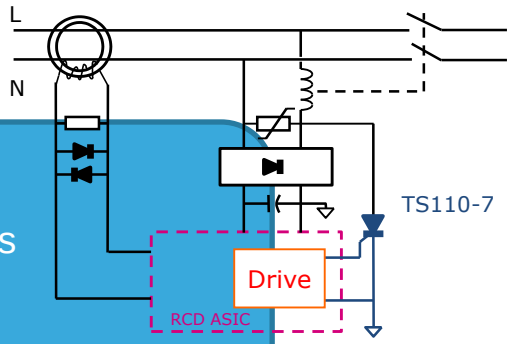
** RCD = Residual Current Device AFCI= Arc Fault Circuit Interrupter*

Robust 1200 V sensitive SCR for electronic breakers



SMBflat-3L

TO-92

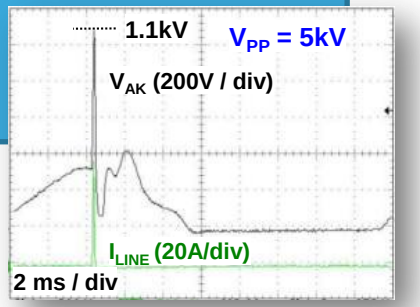


TS110 benefits:

- Resists to applicative **5 kV surge** & **4 kV** burst tests
- Directly driven by RCD* – AFCI* circuit
- Low losses of the circuit breaker
- High quality and faster

TS110 features:

- 700 V thyristor with surge voltage robustness: 1250 V_D – 850 V_R
- High surge current capability : 25 A – 10 ms
- Micro-gate triggering current : < 100 µA



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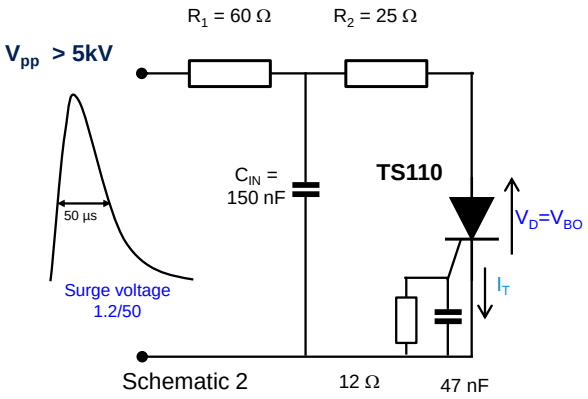
TS110 value proposition

- The TS110 is a unique SCR with higher surge voltage robustness and transient immunity, while its triggering current I_{GT} and its off-state currents I_{DRM} / I_{RRM} are low.
- It enables design of robust circuit breakers with low power consumption.

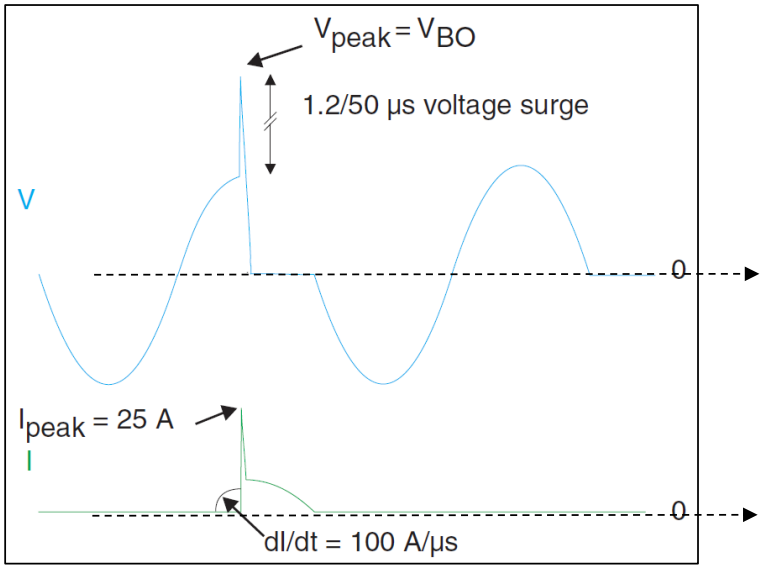
Features		Benefits	Value proposition
V_{DSM}	1250 V	5 kV surge robustness	New standard compliance with no tripping → breaker robustness improved
di/dt ($V_D = V_{BO}$, 25 °C)	100 A/µs	It recovers its blocking voltage capability after the surge	Breaker robustness improved
dV/dt (V_D = 67% V_{DRM}, R_{GK} = 220 Ω, C_{GK} = 47 nF , 125°C)	15 V/µs	IEC 61000-4-4 EFT burst withstand	Surges immunity and EMC compliance
SMB flat 3-lead package		SMD auto assembly process	Higher quality & faster assembly Low profile breakers
$R_{TH\ JC}$	14 °C/W	Excellent thermal behavior	Lower temperature operation

TS110: overvoltage proven

- 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



IEC 61000-4-5 test circuit
(representative application scheme)



When surge voltage is applied, the TS110 self triggers safely.

TS110 electrical characteristics

PARAMETER		VALUE	COMMENT
V_{DRM_RRM}	MAX	700 V	
V_{D_MAX}	MAX	1250 V	R_{GK} = 220 Ω, T=25 °C
V_{R_MAX}	MAX	850 V	R_{GK} = 220 Ω, T=25 °C
I_{TRMS}	MIN	1.25 A	T_L = 100 °C
I_{TSM}	MIN	15 A	t_P=10 ms, 25 x every 5 seconds
I_{GT}	MAX	100 µA	no R_{GK}
dV/dt	MIN	15 V/µs	T_J=125 °C, R_{GK} = 220 Ω
T_{AMB}		- 25 +105°C	
Surge V	MAX	+/- 5 kV	R=2 Ω, level A
EFT Burst	MAX	4 kV	F=400 kHz, level A , R_{GK} = 11Ω, C_{GK} = 47 nF