ACST series TRIACs
Overvoltage-protected AC switches

Need to control AC mains power loads with high electrical immunity?

ACST overvoltage protected series is the answer. Line conducted surges and longer duration overvoltages are common due to the increasing load on the power grid. The new ACST310-8 have been designed to control AC motors and actuators and overcome higher surges than standard TRIACs. The protecting passive networks like MOV and snubbers can be reduced.
The ACST series has 10 and 35 mA gate currents. The power supply to drive the gate can be simpler than with higher gate current TRIACs and relays. Appliance circuit PCBs will be smaller and load control more rugged.

KEY FEATURES

- Auto-protected against AC power mains overvoltage/surges
- 2 ranges of I_{GT}
  - 30/35 mA rugged control
  - 10 mA MCU driven
- Operating junction temp up to 150°C
- Symmetrical blocking voltage up to 800 V
- 2 to 16 A current range

KEY BENEFITS

- Enables compliance with IEC 61000-4-4 and -4-5 EMC standards
- No need of additional RC network and MOV
- Controls AC loads from oven fans to washing machines drum motors
- Mains transients immunity in equipment plugged in 24/7

KEY APPLICATIONS

- Washers/dryers
  - ACST1635: drum motor
  - ACST1010: heater
  - ACST310: pump
  - ACST210: valve
- Refrigerators
- HVAC and fans
- Kitchen top appliances
- Smart home actuators and AC grid/ load controls
- Commercial printer heating elements
- Industrial auxiliary motor and heater controls

ACST - SAFEST AC SWITCH

Solid state building blocks

One of semiconductors' primary missions is to reliably control AC power. ST's overvoltage-protected ACST series has nearly an infinite switching cycle lifetime in good designs/uses, lower gate drive power consumption, and beneficial absence of inductive turn-off sparks in flammable environments (fridge compressors).
But there are more reasons to choose ACST over relays or standard TRIACs: one is a trade-off between the gate low current drive capability and the switch-off capability.
To simplify, let's say that more sensitive gate devices are always prone to sticky on-states and are more difficult to switch off at zero current crossing. This is where the ACST research led by ST has designed a device capable of turning-off big inductive loads even with 10 mA sensitive, MCU-driven gates.
The other unbeatable characteristic of ACST is their ability to resist turn-on at high transient
dV/dt; a fundamental safety feature for all AC mains actuators. Also, the lifetime protection capability of ACSTs is to fold back safely in case of overvoltage. All in all, easy and safe load control features are ensured.

Part Number	Package suffix				$I_{T(RMS)}$ Max. (A)	V_{DRM} / V_{RRM} Max. (V)	I_{GT} Max. (mA)	dV/dt (1) Min. (V/µs)	$(dI/dt)_c$ (1) Min. (A/ms)	T_J Max (°C)
	DPAK	D²PAK	TO-220AB	TO-220AB Full pack						
Logic level										
ACST210-8	B			FP	2	800	10	500	0.5	125
ACST310-8	B			FP	3	800	10	500	1	125
ACST410-8	B			FP	4	800	10	500	2	125
ACST610-8		G	T	FP	6	800	10	500	3.5	125
ACST1010-7		G		FP	10	700	10	200	4	125
ACST1210-7		G	T		12	700	10	200	5	125
Standard gate										
ACST435-8	B			FP	4	800	35	1000	5	125
ACST830-8		G	T	FP	8	800	30	2000	8	125
ACST1035-8				FP	10	800	35	4000 / 2000	7.5 / 5	150
ACST1235-8				FP	12	800	35	4000 / 2000	9 / 6	150
ACST1635-8				FP	16	800	35	1000 / 300	7 / 4	150

Note 1: at T_J MAX or 125°C/150°C