ACST Triac series

Overvoltage-protected AC switches

The home appliance industry is shifting to electronic control on a worldwide basis. At the same time, electronics components can now provide high-voltage robustness, and surge and transient voltage compatibility.
STMicroelectronics, the leading thyristor and Triac supplier, has designed ACST to control the numerous AC loads in appliances. These AC switches meet the requirements for reliability, compactness and mass production capability. They are the perfect solution to replace relays in fridge-compressor control, connected to the mains 24 hours a day. The new generation of 800 V rated ACST ensures overall system reliability and efficiency, and can be directly controlled by a microcontroller.

ACST - ruggedness made easy

The technical and standards constraints were taken into account at the design stage in order to make ACSTs the ideal solution for fridge-compressor control and universal drum-motor control. Furthermore, in addition to the basic reliability tests, several specific functional reliability tests have been performed.
All the test conditions plus test results used for the qualification of the ACST series are summarized in the qualification report.

Key features

- Auto protected against overvoltage
- From 2 to 12 A, up to 800 V
- 2 ranges of I_{GT}:
  - 10 mA sensitive series
  - 35 mA high immunity series (dV/dt ≥ 2000 V/µs)

Key benefits

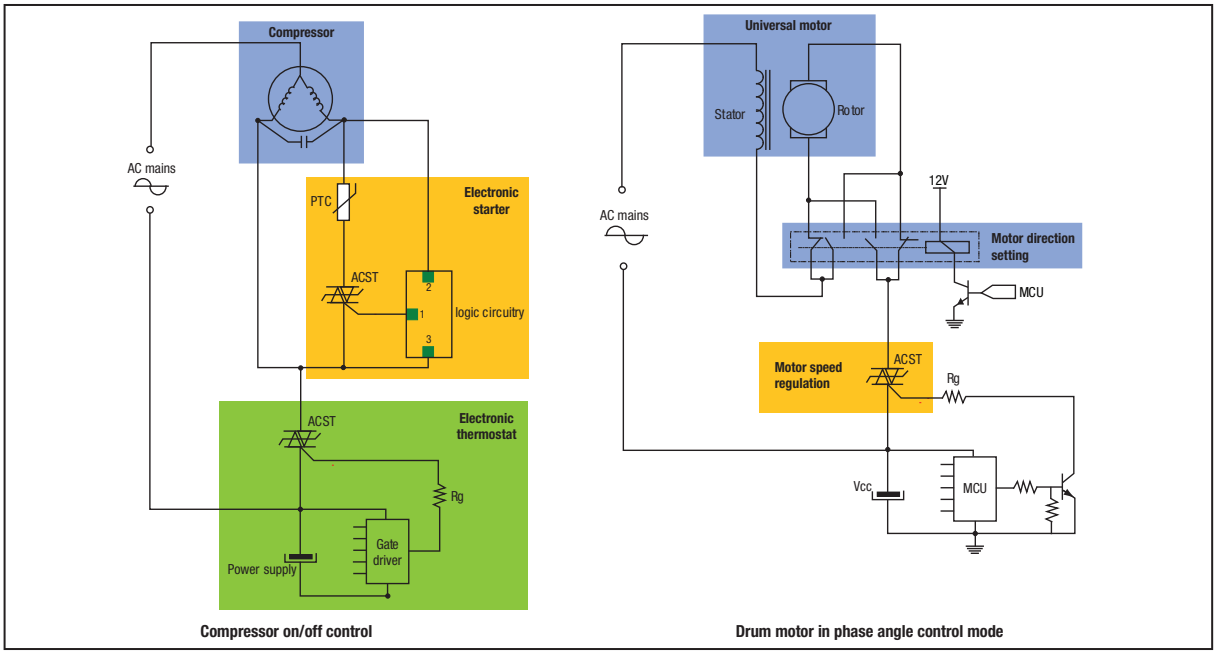
- Enables compliance with IEC 61000-4-4 and -4-5 perturbations
- No need for external components (snubber, MOV)
- Easy board design
- Sensitive series allows direct drive from an MCU

Targeted application

- Compressor control
  - Fridges
  - Air conditioning
- Drum motor control
  - Washing machines
  - Dryers
- Heating elements in printers
- Medium-power load control in industrial systems

www.st.com/acswitch

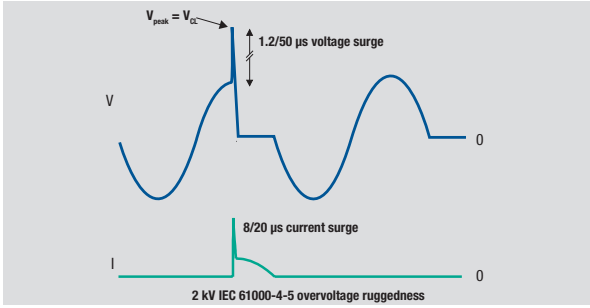
Application diagrams



Compressor on/off control

Drum motor in phase angle control mode

Typical IEC 61000-4-5 waveforms



2 kV IEC 61000-4-5 overvoltage ruggedness

ACST series product table

Part number	$I_{T(RMS)}$ (A)	V_{RRM} / V_{DRM} (V)	V_{CL} @ 100 µA (V)	I_{GT} max (mA)	(dI/dt)c @ Tj = 125 °C (A/ms)	dV/dt @ Tj = 125 °C (V/µs)	Packages
ACST210-8B/FP	2	800	850	10	0.5	500	DPAK, TO-220FPAB
ACST410-8B/FP	4	800	850	10	2	500	
ACST435-8B/FP	4	800	850	35	5	1000	
ACST610-8FP/G/R/T	6	800	850	10	3.5	500	TO-220FPAB, D²PAK, I²PAK, TO-220AB
ACST830-8FP/G/T	8	800	850	30	8	2000	TO-220FPAB, D²PAK, TO-220AB
ACST1010-7FP/T	10	700	850	10	5	200	TO-220FPAB, TO-220AB
ACST1035-7FP/T	10	700	850	35	12	2000	
ACST1210-7G/T	12	700	850	10	5	200	D²PAK, TO-220AB
ACST1235-7G/T	12	700	850	35	12	2000	

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