

# ACS series

## Overvoltage-protected AC switches



### ST's ACS™ series combines robustness, reliability and straightforward design

ST's ACS™ series of AC switches meet the requirements for system reliability and compactness. They are a perfect solution to replace relays used to control water valves or other devices with loads connected to the AC mains 24 hours a day. Due to their low gate current, these AC switches can be controlled directly by a microcontroller. They provide high voltage robustness as well as surge and transient voltage protection.

#### KEY FEATURES

- Auto protected against AC line overvoltage surges
- Symmetrical blocking voltage up to 800 V
- 0.2 to 2 A current range
- 5 and 10 mA gates, only one resistor in series with the microcontroller port
- High inductive load switch-off capability

#### KEY BENEFITS

- RoHS and Halogen-free compliant
- Enables compliance with IEC 61000-4-4 and -4-5 disturbances
- No need for additional components (eliminates RC high voltage network, MOV)
- Direct Drive ensures simple low-power gate control board design

#### KEY APPLICATIONS

- Washing machines
  - Water valves
  - Water pumps
  - Solenoids
- Refrigerators
  - Water valves
- Dryers
  - Water pump



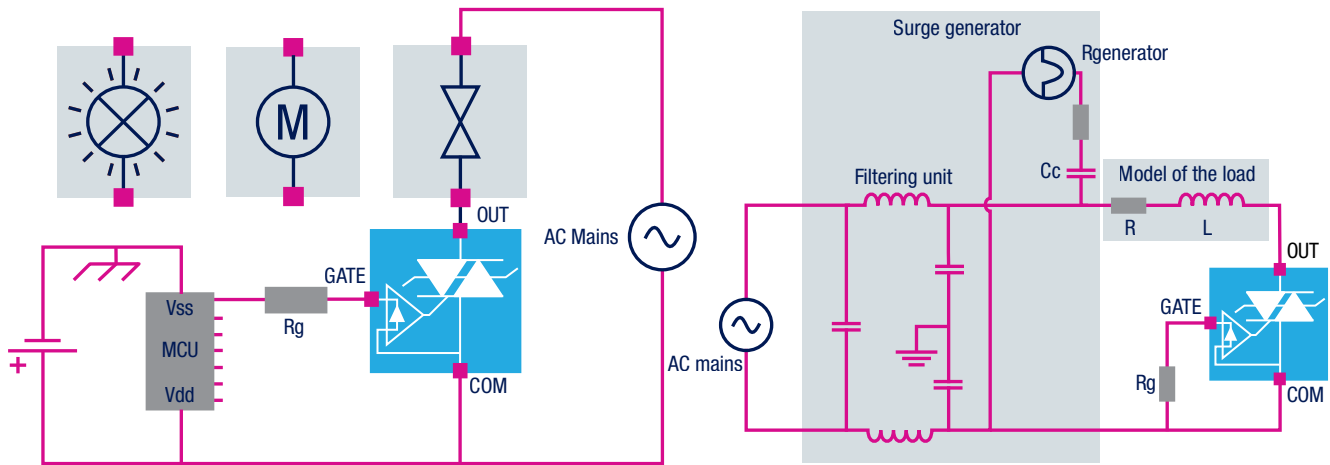
## AC MAINS TRANSIENT VOLTAGE RUGGEDNESS

The AC switches are able to safely withstand the AC mains transients either by clamping the low energy spikes or by folding back when subjected to high energy shocks. The test circuit below shows a final AC switch application, which is also used to test these AC switches according to

the IEC 61000-4-5 standard conditions. Thanks to the load limiting the current, the AC switch is able to withstand voltage spikes up to 2 kV above the peak mains voltage. The protection is based on an overvoltage crowbar technology.

Actually, the AC switch breaks over and folds back safely as shown. The AC switch recovers its blocking voltage capability after the surge and the next current zero crossing. Such non-repetitive tests can be performed 10 times on each AC mains voltage polarity.

## SIMPLIFIED CONNECTION AND SURGE TEST DIAGRAM



Part Number	Current (A)	Voltage (V)	Gate current ( $I_{gt}$ )	Static immunity dV/dt	Switch-off (dI/dt)c	Package
ACS102-6	0.2	600	5	300	0.15	S0-8
ACS108-6	0.8	600	10	2000	2	SOT-223/T0-92
ACS108-8	0.8	800	5/10	300/400	0.8/2	SOT-223/SMBFlat/T0-92
ACS110-7	1	700	10	500	0.5	SOT-223/T0-92
ACS120-7	2	700	10	500	1	DPAK/T0-220/Fullpack
ACS302-6	0.2	600	5	300	0.15	S0-20

