NXP AC Thyristor
ACT108/ACT108W

AC Thyristor with overvoltage handling capability

This new AC Thyristor provides superior reliability compared to traditional 4Q triacs, and is designed for advanced performance in low-current and highly inductive load applications.

Features

- Self-protective turn-on during high energy transients
- Safe clamping of lower energy during overvoltage transients
- Remote gate separates gate driver from effects of load current
- Full-cycle AC conduction
- Exclusive negative gate triggering
- Very high noise immunity
- SOT223, SOT54, and SO8 packages

Applications

- Lower-power, highly inductive, resistive, and safety loads in a wide range of appliances
- Pump and fan motor circuits

The NXP AC Thyristor (ACT) employs our fifth-generation, triple-implanted planar passivated technology. It conforms to the IEC 61000-4-5 standard, withstanding shocks to at least 2 kV, and has a self-clamping feature that improves handling of inductive load back-EMF.

The extra performance and superior reliability of the ACT make it ideally suited for a wide range of applications that deal with lower-power, highly inductive, resistive, and safety loads, including contactors, circuit breakers, valves, dispensers and door locks in washing machines, dishwashers, refrigerators, vending machines, plumbed-in water heaters and coolers, coffee machines, bathroom equipment, drink dispensers, and more. It is also well suited for use in pump and fan motor circuits.

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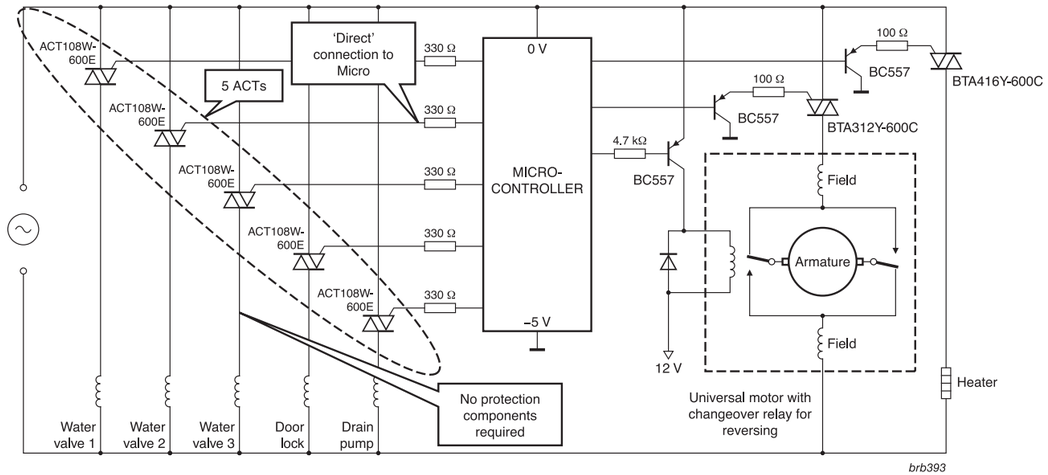
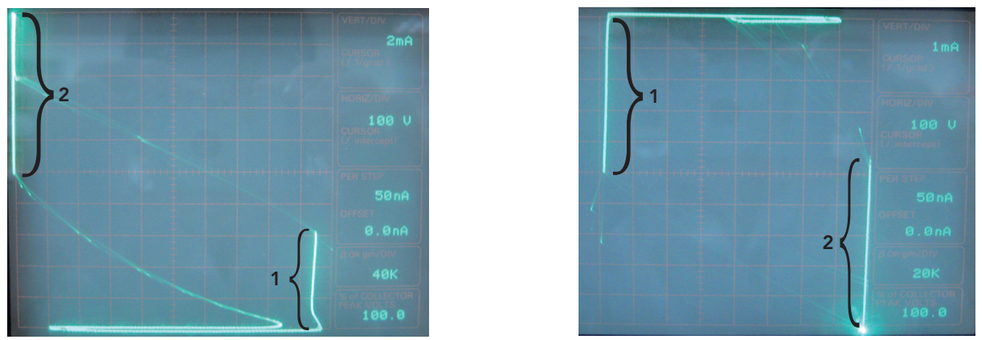
Application diagram: control of horizontal-axis washing machine



Safe voltage clamping

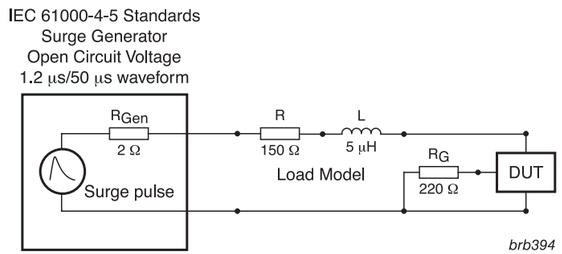


Forward

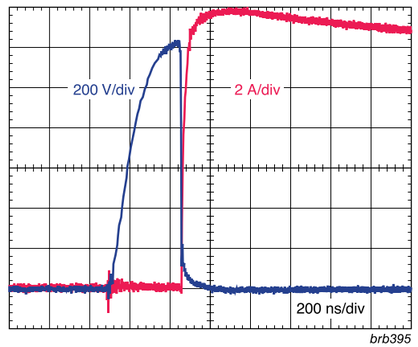
Reverse

1 - During low-energy overvoltage transients, safe clamping minimizes false triggers caused by inductive load back-EMF at commutation
2 - During high-energy overvoltage transients, the ACT automatically turns on, thus letting energy dissipate safely in the load

Self-protective turn-on



Test circuit for verifying overvoltage ruggedness with inductive and resistive loads



Device waveform at 2 kV surge test

- In accordance with IEC 61000-4-5, ACT is guaranteed to withstand energy shocks to at least 2 kV

ACT is guaranteed to 2 kV lightning surge to IEC 61000-4-5

ACT selection table

$IT_{(RMS)}$ (A)	V_{DRM} (V)	I_{GT}(max) (mA)	SOT54 (TO92)	SOT223	SO8
0.2	600	D	ACT102*		ACT102H*
0.8	600	D	ACT108*	ACT108W*	
0.8	600	E	**ACT108**	**ACT108W**	

Types in **bold red** represent new products.
Types with * represent products under development.

NXP
ACT108W-600E

NXP
ACT108-600E