

# Current Limiting Solid State Relays

## Current Limited Solid State Relays

Current limited solid state relays (SSR) are fast becoming the wave of the future as a means for protection against power cross, transients, and lightning strikes. At present, IXYS Integrated Circuits Division offers the current limiting option for many of its 1-Form-A SSRs (“L” suffix is added to part number). The main advantage to using this type of relay is the “twofold” protection it provides. Because the integrated current limiting circuitry instantaneously limits current through the relay, it is in effect self-protecting. In addition to protecting itself, it also protects any circuitry beyond the relay from receiving high current spikes.

As designed, current applied to the input LED results in the emission of light, which is immediately sensed by the photovoltaic (PV) cell in the output circuitry of the relay. Once this occurs, the PV essentially becomes a voltage source. The voltage produced is instantaneously applied to the gates of the output MOSFETs, driving them into the “on” or “closed” state. If a fault occurs at the output while the relay is in this state, then the current limiting feature activates immediately. If the fault is continuous, then the proprietary circuitry will continue to limit the current, and the relay will begin to “shut down”, causing a continuous decrease in the load current passed through the output of the relay.

The key to the current limiting circuitry is that it has a negative temperature coefficient, which keeps the limit of power dissipation to safe levels during high-on voltage conditions. Once these conditions are removed, the SSR resumes normal operation. It is important to realize that operation during the current limiting state is generally recommended for short duration high energy transients, not prolonged overvoltage conditions. This is mainly due to the fact that during the limiting state, the device actually exceeds the maximum total power dissipation rating for its package. Continuous operation under these conditions may eventually damage the SSR internally.

## For additional information please visit our website at: [www.ixysic.com](http://www.ixysic.com)

IXYS Integrated Circuits Division makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in IXYS Integrated Circuits Division's Standard Terms and Conditions of Sale, IXYS Integrated Circuits Division assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of IXYS Integrated Circuits Division's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. IXYS Integrated Circuits Division reserves the right to discontinue or make changes to its products at any time without notice.