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SIDACtor® Protection Thyristors Commercial Product Reliability Information

This report shows reliability general results of commercial product families from Littelfuse's SIDACtor products. All test standards listed are per the Mil-Std-750 unless otherwise stated. For more information about any specific device, please contact Littelfuse for further details.

Test	Standard	Test Condition	Sample Size
Pre-conditioning	JESD22A-113	24 hours bake at 125°C, 168hrs 85°C /85% RH storage, reflow 3times	Prior to TC/AC/ H3TRB
High Temperature Reverse Bias	MIL-STD-750 (Method 1040) JESD22-A-101	80% of Rated VDRM (VAC-peak), Tj, 1008 hours	3 lots 77pcs
Temperature Cycle	JESD22A -104	-55°C to +150°C, 15minutes dwell, 1000 cycles	3 lots 40 pcs
Autoclave	JESD22A-102	121°C,100%RH, 2atm, 168hrs	3 lots 40 pcs
High Humidity High Temp. Reverse Bias	JESD22A-101	52VDC,85°C, 85%rh, 1008hrs	3 lots 40 pcs
High Temperature Storage Life	MIL-STD-750 (Method 1031)	150°C, 1008 hrs	3 lot 40 pcs
Resistance to Solder Heat	MIL-STD-750 (Method 2031)	260°C, 30 seconds	1 lot 30 pcs
Moisture Sensitivity Level	JEDEC-J-STD-020	85%RH, 85°C, 168hrs 3 reflow cycles (260°C peak)	3 lots 10 pcs
Thermal Shock	MIL-STD-750 (Method 1056)	0°C to 100°C, 5-minute dwell,10-second transfer, 10 cycles	3 lot 40 pcs

Estimate of Failure Rate, MTBF, FITS for a Given Operation Temperature (See note 1&2)

Temp °C	% FR/khrs	MTBF (K)	FITS
30	0.00004251	2352588	0
60	0.00133448	74918	13
80	0.00959617	10420	96
100	0.05584068	1790	558
125	0.39351454	254	3935

The Mean-Time-Between-Failure(MTBF) in hours and the percent failure rate per 1000 hours (%FR/khr) are computed at a 60% confidence level using the chi square method and the Arrhenius derating model for various junction operating temperatures. For the calculations, a value of 1 eV was used for the activation energy.