

TVS Diode Arrays General Automotive Product Reliability Information

This report shows general reliability results on automotive product families from Littelfuse's TVS Diode Arrays (SPA[®] Diodes) 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	JESD22- A113	24hrs 125°C soak, 168hrs 85°C /85%RH, 3 Reflows of peak temperature 260°C	TC/AC/ H3TRB
Temperature Cycle	JESD22-A104	55°C to +150°C, 15minutes dwell, 1000 cycles	3 lots 77 pcs
Autoclave	EIA/JESD22-A102B	121°C,100%rh, 2atm, 96hrs	3 lots 77 pcs
Temperature & Humidity with DC Bias	EIA/JESD22-A101B	85°C, 85%rh, VDC, 1008hrs	3 lots 77 pcs
Resistance to Solder Heat	M-2031	260°C, 10s	1 lot 30 pcs
Moisture Sensitivity Level	JESD22-020D	24hrs 125°C soak, 168hrs 85°C /85%RH, 3 Reflows of peak temperature 260°C	3 lots 77 pcs
Solderability	JESD22-B102	Reflow	1 lot 10 pcs
High Temperature DC Blocking	M-1038, Cond. A	150°C, VDC, 1008hrs	3 lots 77 pcs

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

Temp. °C	FR(%/khr)	MTBF (K)	FITS
30	0.000008	12720554	0
60	0.000247	405038	2
80	0.001775	56335	18
100	0.010330	9680	103
125	0.072800	1373	728

1. The Mean-Time-Between-Failure(MTBF) in hours and the percent failure rate per 1008 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.

2. The maximum operation temperature is 150°C