

HSMx-C170, HSMx-C130, HSMx-C190, HSMx-C191



Surface Mount Chip LEDs

Reliability Data Sheet

Description

The following cumulative test results have been obtained from testing performed in accordance with the latest revision of JEDEC standards. The actual performance customer obtains from Broadcom parts depends on the electrical and environmental characteristics of application but will probably be better than the performance outlined in [Table 1](#).

Table 1 Life Tests - Demonstrated Performance

Colors	Test Conditions	Units Tested	Units Failed
GaP (HER, Green, Orange, Yellow)	$T_A = 25^{\circ}\text{C}$, $I_F = 20\text{ mA}$, 500 hrs	100	0
As/Ts AlInGaP (Red, Orange, Amber)	$T_A = 25^{\circ}\text{C}$, $I_F = 25\text{ mA}$, 500 hrs	100	0
As AlInGaP (Green)	$T_A = 25^{\circ}\text{C}$, $I_F = 20\text{ mA}$, 500 hrs	100	0
As AlGaAs (Red)	$T_A = 25^{\circ}\text{C}$, $I_F = 25\text{ mA}$, 500 hrs	100	0
InGaN (Blue, Green, White)	$T_A = 25^{\circ}\text{C}$, $I_F = 20\text{ mA}$, 500 hrs	100	0

Table 2 Environmental Tests

Test Name	Reference	Test Conditions	Units Tested	Units Failed
Temperature Cycle	JESD22-A104	-40°C to 85°C , 15 min dwell, 5 min transfer, 100 cycles	400	0
High Temperature Storage Life	JESD22-A103	85°C , 500 hours	400	0
Low Temperature Storage Life	JESD22-A119	-40°C , 500 hours	400	0
High Humidity High Temperature Operating Life	JESD22-A101	60°C , RH = 90% $I_F = 18\text{ mA}$ (AlInGaP, GaP, AlGaAs), 10 mA (InGaN), 500 hours	400	0

Table 3 Mechanical Tests

Test Name	Reference	Test Conditions	Units Tested	Units Failed
Mechanical Shock	JESD22-B104	1500 G for 0.5 ms. 5 shocks each X1, X2, Y1, Y2, Z1, Z2	30	0
Vibration Variable Frequency	JESD22-B103	20 G min 20 Hz to 2 KHz, 4 cycles, 4 min each X, Y, Z axis	30	0
Solderability	JESD22-B102	245°C, 5 sec	30	0
Resistance to Soldering Heat (Reflow Soldering)	JESD22-B106	260°C for 10 sec	30	0

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