Light Emitting Diode

【Annex】

Thermal Resistance Values of the Nichia 121, 131, or 170 Series LEDs

Nichia 121 Series

Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)	Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)
NC2W121D	2.6	NC2W121D-S1	2.6
NC3W121D	2.0	NC3W121D-S1	2.0
NC4W121D	1.5	NC4W121D-S1	1.5
NC5W121D	1.2	NC5W121D-S1	1.2
NC2W121F	2.5	NC3W121F	1.9
NC4W121F	1.4	NC5W121F	1.2

Nichia 131 Series

Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)	Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)
NCSA131C	7.0	NCSW131C	5.7
NC2A131C	4.2	NC2W131C	3.4
NCSA131D	7.0	NCSW131D	4.9
NCSW131D-PCA	5.2	NC2A131D	4.2
NC2W131D	2.6	NCSA131F	6.8
NCSB131F	7.0	NCSE131F	8.3
NCSG131F	8.4	NCSR131F	7.2
NCSW131F	4.8	NCSW131F-SA	5.1
NCSY131F	6.8	NC2A131F	4.0
NC2W131F	2.5	NCSA131G	7.2
NCSW131G	5.1	NCSW131G-SA	5.4
NCSW131G-SB	5.6		

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Nichia 170 Series

Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)	Part Number	Thermal Resistance $R_{\theta JMP}$ (°C/W)
NCSA170C	7.0	NCSW170C	5.7
NC2A170C	4.2	NC2W170C	3.4
NJSW170C	8.6	NCSA170D	7.0
NCSW170D	4.9	NCSW170D-PCA	5.2
NC2A170D	4.2	NC2W170D	2.6
NJSW170D	7.7	NCSA170F	6.8
NCSB170F	7.0	NCSE170F	8.3
NCSG170F	8.4	NCSR170F	7.2
NCSW170F	4.8	NCSW170F-SA	5.1
NCSY170F	6.8	NC2A170F	4.0
NC2W170F	2.5	NJSA170F	9.6
NJSW170F	7.6	NJSW170F-SA	7.7
NCSA170G	7.2	NCSW170G	5.1
NCSW170G-SA	5.4	NCSW170G-SB	5.6
NC2W170G	2.7		

- The $R_{\theta JMP}$ is the thermal resistance from the chip of the LED to the measurement point Nichia specifies (i.e. the T_{MP} measurement point).
  (PCB used for the $R_{\theta JMP}$ measurement: Aluminum-core PCB with a thickness of 1.5mm, Copper layer thickness: 105µm)

- The estimated value of the junction temperature (T_J) of the LED can be calculated by measuring the T_{MP} (i.e. the temperature of the T_{MP} measurement point) of the LED mounted on a PCB and using the $R_{\theta JMP}$ value provided above. For details of how to calculate the T_J, refer to the application note: How to Calculate the Junction Temperature for the Nichia 121, 131, or 170 Series LEDs.

- $R_{\theta JMP}$ values are values measured under Nichia's measurement conditions. The $R_{\theta JMP}$ values provided above are the maximum values calculated from the measurement results; these values should be used for reference purposes only.

- For the LEDs that do not have the $R_{\theta JMP}$ values provided above, contact a local Nichia sales representative.

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