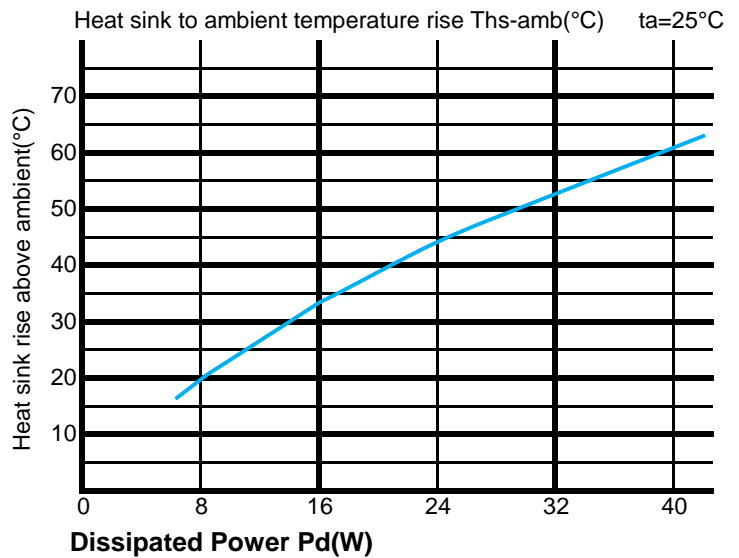# EtraLED

EtraLED-110 Series Φ110mm Material AL6063-T5 COB Star Heat Sinks Thermal Data

The thermal data table

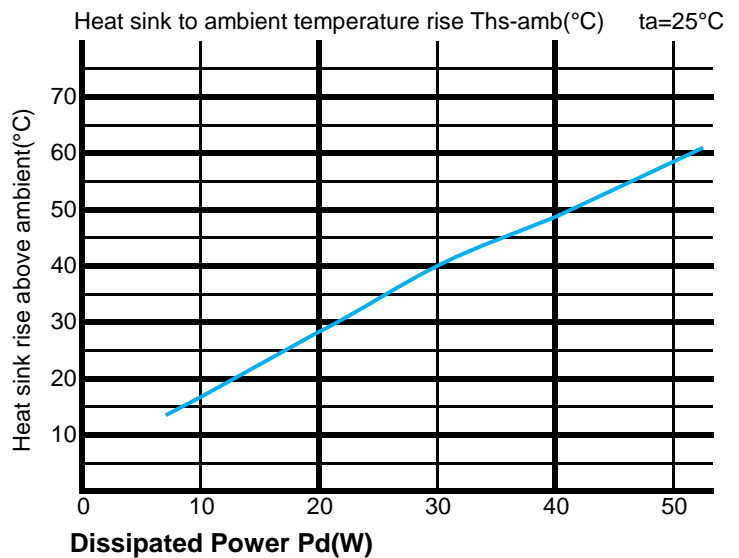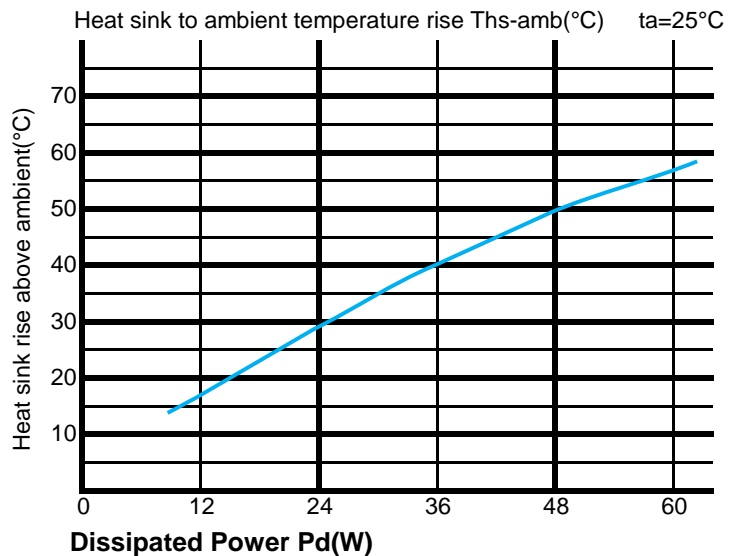#### EtraLED-11020 thermal data

Pd = Pe x (1-ηL)		Heat sink to ambient thermal resistance Rhs-amb (°C/W)	Heat sink to ambient temperature rise Ths-amb (°C)
		EtraLED-11020	EtraLED-11020
Dissipated Power Pd(W)	8	2.5	20
	16	2.06	33
	24	1.83	44
	32	1.63	52
	40	1.5	60

Heat sink to ambient temperature rise Ths-amb(°C)   ta=25°C

EtraLED-11050 thermal data

Pd = Pe x (1-ηL)		Heat sink to ambient thermal resistance Rhs-amb (°C/W)	Heat sink to ambient temperature rise Ths-amb (°C)
		EtraLED-11050	EtraLED-11050
Dissipated Power Pd(W)	10	1.6	16
	20	1.4	28
	30	1.33	40
	40	1.23	49
	50	1.16	58

Heat sink to ambient temperature rise Ths-amb(°C)   ta=25°C

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The thermal data table

EtraLED-11080 thermal data

Pd = Pe x (1-ηL)		Heat sink to ambient thermal resistance Rhs-amb (°C/W)	Heat sink to ambient temperature rise Ths-amb (°C)
		EtraLED-11080	EtraLED-11080
Dissipated Power Pd(W)	12	1.33	16
	24	1.21	29
	36	1.11	40
	48	1.03	49.5
	60	0.95	57

Heat sink to ambient temperature rise Ths-amb(°C)   ta=25°C

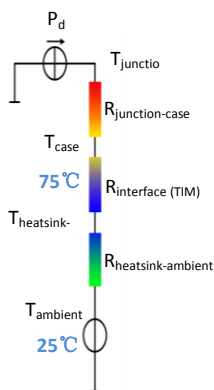* Please be aware the dissipated power Pd is not the same as the electrical power Pe of a LED module.

*To calculate the dissipated power please use the following formula: Pd = Pe x (1-ηL).

  Pd - Dissipated power ; Pe - Electrical power ; ηL = Light effciency of the LED module;

*The aluminum substrate side of the package outer shell is thermally connected to the heat sink via TIM (Thermal interface material).

 MingFa recommends the use of a high thermal conductive interface between the LED module and the LED cooler.

 Either thermal grease,A thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended.

P_d

$T_{junctio}$

$R_{junction-case}$

T_{case}

75℃

$R_{interface (TIM)}$

$T_{heatsink-}$

$R_{heatsink-ambient}$

$T_{ambient}$

25℃

*Thermal resistance is a heat property and a measurement of a temperature difference by which an object or material resists a heat flow.

  Geometric shapes are different, the thermal resistance is different. Formula: $\theta = (Ths - Ta)/Pd$

  θ - Thermal Resistance [℃/W] ;   Ths - Heatsink temperature ;   Ta - Ambient temperature ;

*The thermal resistance between the junction section of the light-emitting diode and the aluminum substrate side of the package outer

shell is $R_{junction-case}$，the thermal resistance of the TIM outside the package is $R_{interface (TIM)}$ [℃/W], the thermal resistance with the

heat sink is $R_{heatsink-ambient}$ [℃/W], and the ambient temperature is $T_{ambient}$ [℃].

*Thermal resistances outside the package $R_{interface (TIM)}$ and $R_{heatsink-ambient}$ can be integrated

  into the thermal resistance $R_{case-ambient}$ at this point.Thus, the following formula is also used:

  $T_{junction} = (R_{junction-case} + R_{case-ambient}) \cdot Pd + T_{ambient}$

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