

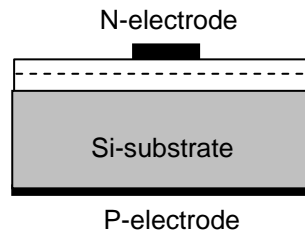
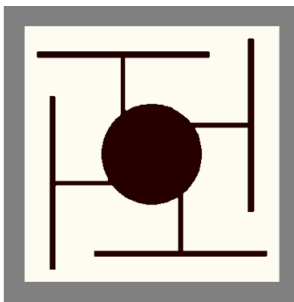
> Mechanical Specification:

(1) Dimension

- Chip size: 14 mil x 14 mil ($340\pm 25\ \mu\text{m}$ x $340\pm 25\ \mu\text{m}$)
- Thickness: 8.8 mil ($225\pm 25\ \mu\text{m}$)
- N bonding pad: 4.5 mil ($115\pm 10\ \mu\text{m}$)

(2) Metallization

- Topside N electrode: Au alloy
- Backside P electrode: Au alloy



Features:

- Long-term supply
- High luminous intensity
- Thin film structure
- Vertical electrode
- High driving current

Applications:

- Automotive

> Electro-optical Characteristics at 25°C:

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Forward Voltage	Vf1	If = 10μA	1.3	-	-	V	
	Vf2	If = 20mA	-	2.1	2.5	V	
Reverse Current	Ir	Vr = 25V	-	-	5.0	μA	
Peak Wavelength	λ_p	If = 20mA	-	631	-	nm	
Dominant Wavelength ⁽¹⁾	λ_d	If = 20mA	619	-	629	nm	
Spectra Half-width	$\Delta\lambda$	If = 20mA	-	15	-	nm	
Luminous Intensity ⁽²⁾⁽³⁾	Iv	If = 20mA	E20	700	-	-	mcd
			E21	770	-	-	
			E22	850	-	-	
			E23	950	-	-	

Note:

(1) Basically, the wavelength span is 10nm; however, customers' special requirements are also welcome.

(2) Customers' special requirements are also welcome.

(3) Luminous intensity is measured by EPISTAR's equipment on bare chips.

> Absolute Maximum Ratings⁽¹⁾:

Parameter	Symbol	Condition	Rating	Unit
Forward DC Current	If	Ta = 25°C	≤ 70	mA
Reverse Voltage	Vr	Ta = 25°C	≤ 10	V
Junction Temperature	Tj	-	≤ 125	°C
ESD withstand voltage(HBM) ⁽²⁾	V _{ESD}		Up to 2	kV
Storage Temperature	Tstg	Chip	-40 ~ +85	°C
		Chip-on-tape/storage	5 ~ 35	°C
		Chip-on-tape/transportation	-20 ~ +65	°C
Temperature during Packaging	-	-	280(<10sec)	°C

Note: (1)Maximum ratings are package dependent. The above maximum ratings were determined using a Printed Circuit Board (PCB) without an encapsulant. Stresses in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.

(2)According to ANSI/ESDA/JEDEC JS-001

> Characteristic Curves:

Fig.1 – Relative luminous Intensity vs. Forward Current

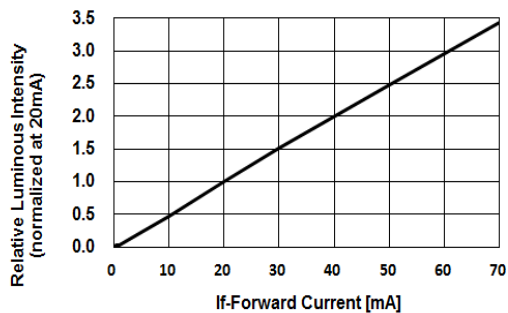


Fig.2 – Forward Current vs. Forward Voltage

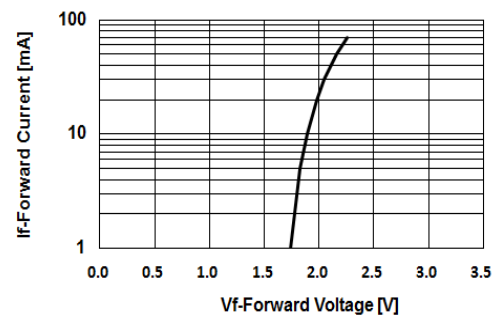


Fig.3 – Relative Intensity (@20mA) vs. Ambient Temperature

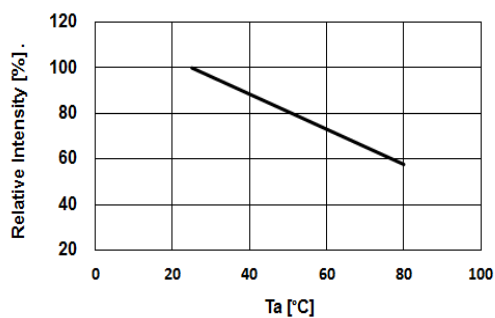


Fig.4 – Forward Voltage (@20mA) vs. Ambient Temperature

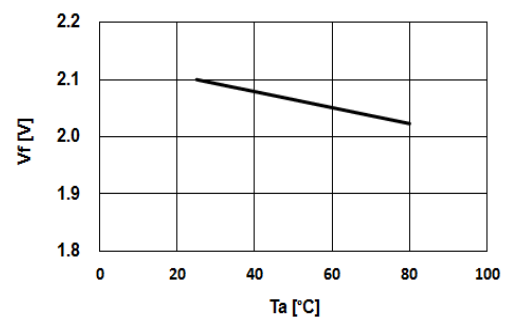


Fig.5 – Dominant Wavelength (@20mA) vs. Ambient Temperature

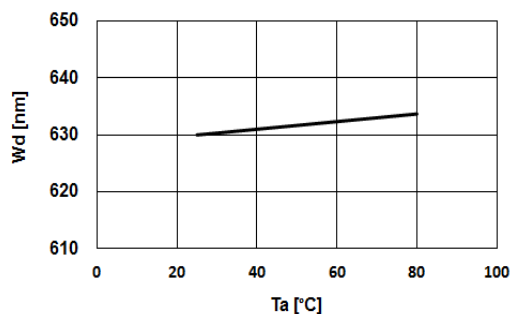
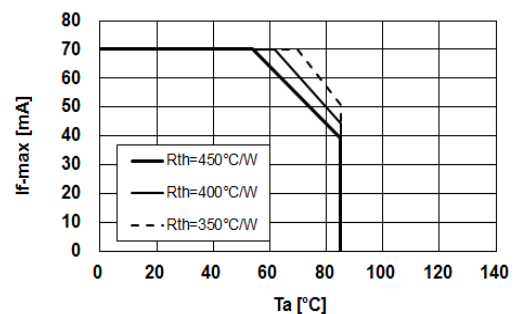


Fig.6 – Maximum Driving Forward DC Current vs. Ambient Temperature (De-rating based on Tj max. = 125°C)



> Qualification :

- ¹⁾ EPICSTAR's LED chips and epi-wafers are designed and manufactured according to the quality management system that complies to the IATF 16949:2016 requirements (IATF No: 0325277/ Certificate Registration No: 20000910 IATF16).
- ²⁾ The chip qualification test plan is based on the guidelines of AEC-Q101-REV-D, Failure Mechanism Based Stress Test Qualification for Discrete Semiconductors in Automotive Applications.

> Revision :

Version	Page	Subjects	Date of Modification
A		Initial Release	Apr. 2017
B	1	Add Iv rank E20	Nov. 2018
C	3	ISO/TS 16949:2009 Revision (IATF 16949:2016)	November. 2018