EPISTAR

ES-VMHRPN20R

AlGaInP PN-series LED Chip

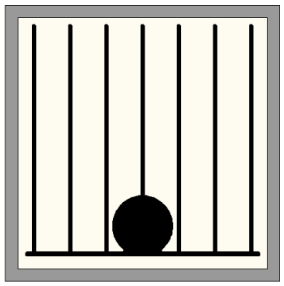
> Mechanical Specification:

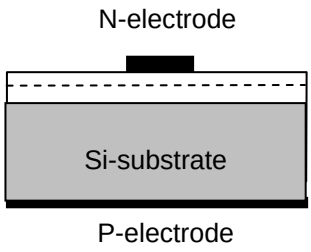
(1) Dimension
- Chip size: 20 mil x 20 mil (500±25 μm x 500±25 μm)
- Thickness: 8.8 mil (225±25 μm)
- N bonding pad: 4.5 mil (115±10 μm)

(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 = 150mA	-	2.3	2.8	V
Reverse Current	Ir		Vr = 25V	-	-	5.0	μA
Peak Wavelength	λp		If = 150mA	-	631	-	nm
Dominant Wavelength[(1)]	λd		If = 150mA	619	624	629	nm
Spectra Half-width	Δλ		If = 150mA	-	20	-	nm
Luminous Intensity[(2)(3)]	Iv	H10	If = 150mA	5300	-	-	mcd
		H11		6300	-	-	

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	≤ 200	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 Metal Core Printed Circuit Board (MCPCB) 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

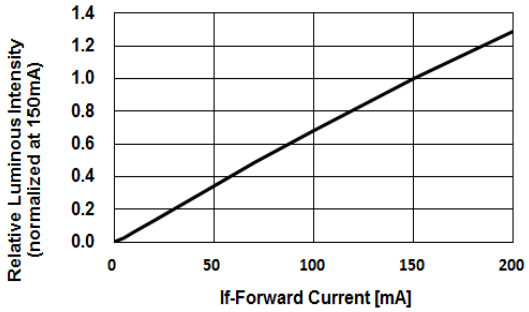


Fig.2 – Forward Current vs. Forward Voltage

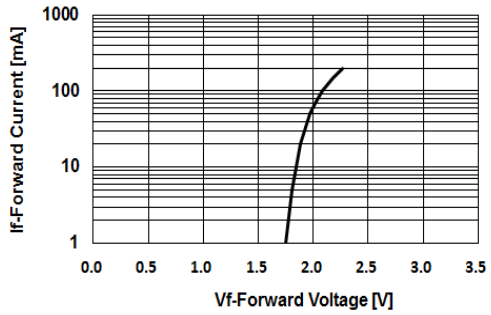


Fig.3 – Relative Intensity (@150mA) vs. Ambient Temperature

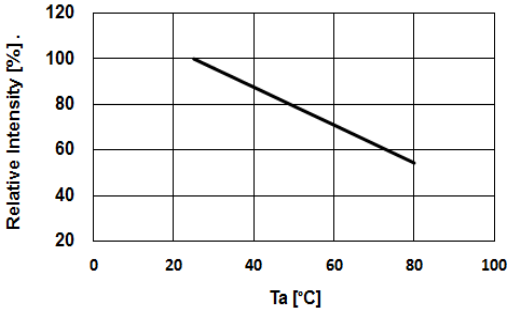


Fig.4 – Forward Voltage (@150mA) vs. Ambient Temperature

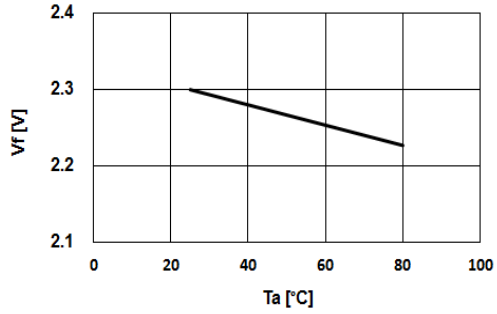


Fig.5 – Dominant Wavelength (@150mA) vs. Ambient Temperature

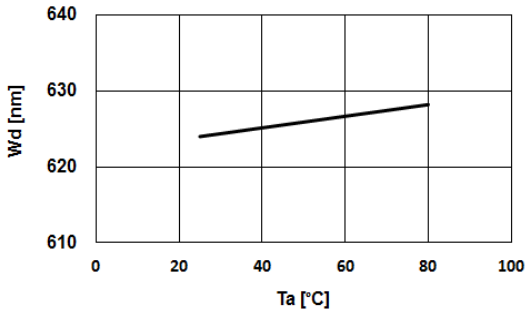
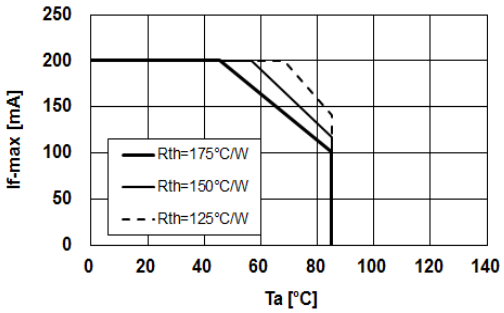


Fig.6 – Maximum Driving Forward DC Current vs. Ambient Temperature (De-rating based on Tj max. = 125°C)



> Qualification :

[1] EPISTAR's LED chips and epi-wafers are designed and manufactured according to the quality management system that complies to the ISO/TS 16949:2009 requirements (IATF No: 0194279/ Certificate Registration No: 20000908 TS09).

[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	Mar. 2017