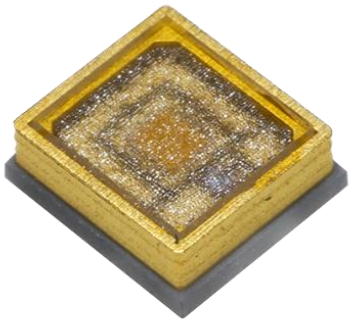
IR Laser

EDVCSEL 3235 850nm 2W(Time of Flight)

DATASHEET

Edison offers VCSEL solutions for 3D sensing, AGV logistics, smart factories, and wearables. High-power VCSELs enable ToF and structured light, while low-power VCSELs suit biometric sensing and beauty devices. Edison ensures precision, efficiency, and reliability across industries.



Features

- Vertical Cavity Surface Emitting Laser (VCSEL) Technology.
- Various Rectangle Emitting Light Pattern.
- Compact Package Size: 3.2×3.5×1.45mm.
- Narrow spectral width (< 4 nm typ.).
- High Power Applications.
- Photodiode Detection Mechanism.
- High Reliability.

Applications

- 3D TOF Applications.
- Gesture.
- Distance Detection.
- Infrared Uniform Lighting.

Table of Contents

Ordering Code Format

R	V	IC	20	12	S4	xxxx	06
X1	X2	X3-X4	X5-X6	X7-X8	X9-X10	X11-X14	X15-X16

X1		X2		X3-X4		X5-X6	
Type		Component		Substrate		Series	
R	Infrared	V	EDVCSEL	IC	Ceramics	20	3235

X7-X8		X9-X10		X11-X14		X15-16	
code		Wavelength		Beam angle		code	
-	-	S4	850nm	6045	60°x45°	-	-
				7258	72°x58°		
				7865	78°x65°		
				8767	87°x67°		

Product Code Information

Part No.	Description
RVIC2012S4604506	EDVCSEL_3235(TOF)_850nm_60x45_2700mA
RVIC2012S4725806	EDVCSEL_3235(TOF)_850nm_72x58_2700mA
RVIC2012S4786506	EDVCSEL_3235(TOF)_850nm_78x65_2700mA
RVIC2012S4876706	EDVCSEL_3235(TOF)_850nm_87x67_2700mA
RVIC2012S4B09006	EDVCSEL_3235(TOF)_850nm_110x90_2700mA

Optical and Electrical Characteristics

at room temperature, Ta=25°C

Parameter	Symbol	Operating Pulse Condition	Value			Units
			Min.	Typ.	Max.	
Radiant Power	P_o	I_F=2.7A, t_p=500μs	-	2,100	-	mW
Threshold Current	I_{th}	-	-	350	-	mA
Forward Voltage	V_F	I_F=2.7A, t_p=500μs	1.8	2.0	2.2	V
Slope Efficiency	η_s	I_F=2.7A, t_p=500μs	0.8	0.9	-	W/A
Power Conversion Efficiency	PCE	I_F=2.7A, t_p=500μs	36	39	42	%
Center Wavelength	λ_c	I_F=2.7A, t_p=500μs	840	850	860	nm
Spectral Width (FWHM)	-	I_F=2.7A, t_p=500μs	1	4	6	nm
Chip Via Numbers	-	-	-	462	-	-
PD Forward Voltage	V_{FPD}	I_{FPD}=10mA	0.5	-	1.3	V
PD Reverse Breakdown Voltage	V_{BRPD}	I_{RPD}=100μA	35	-	-	V
PD Reverse Dark Current	I_D	V_{RPD}=10V	-	0.2	10	nA
Light Current	I_L	V_g=5V, 1mW/cm^2	-	0.85	-	mA
PD Junction Capacitance	C_J	V_{RPD}=3V, F=1MHZ	-	0.5	-	pF
PD Peak Sensing Wavelength	-	-	-	940	-	nm

NOTE:
1. Forward Voltage tolerance is ±0.1 V
2. Optical output power tolerance is ±10%.
3. The pulse operation was tested on good thermal management with 2.25 cm^2 MCPCB.

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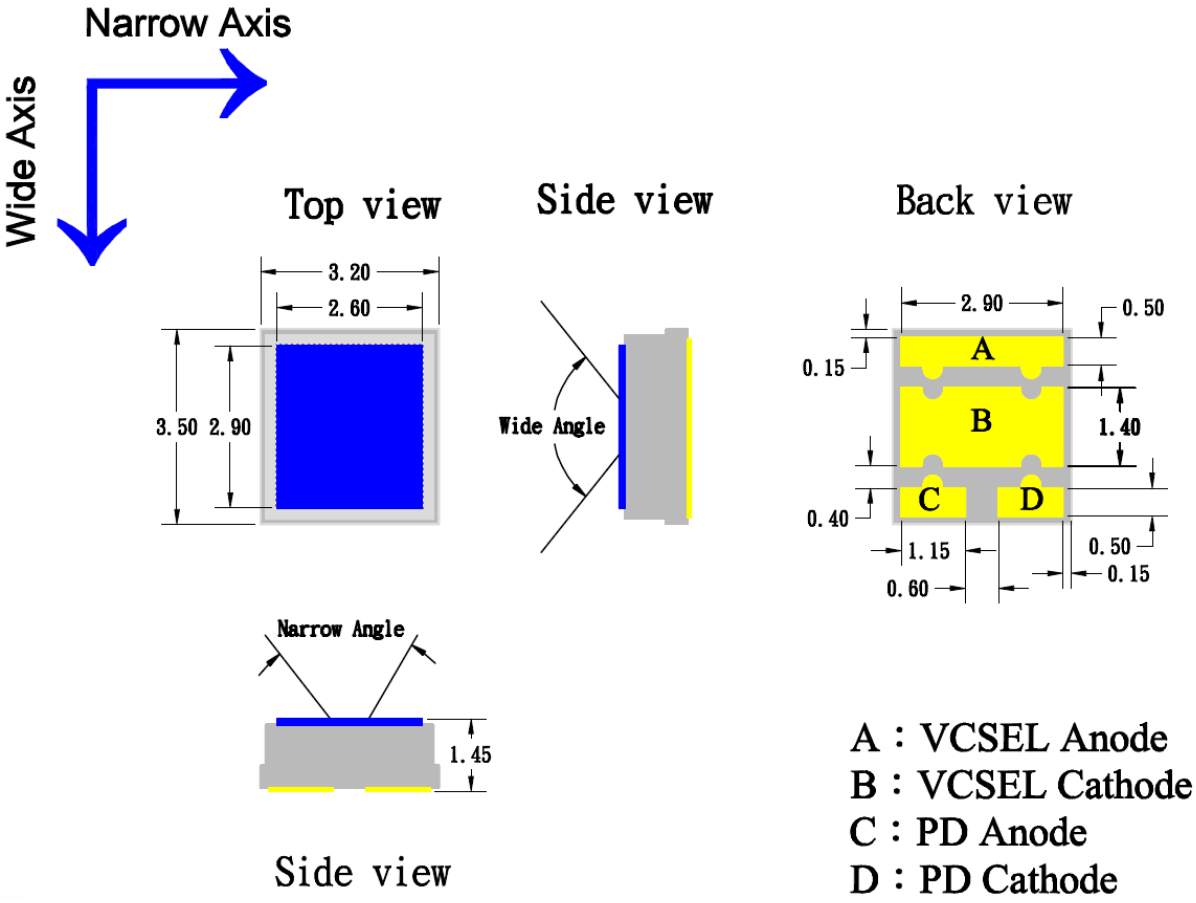
Temperature-dependent Characteristics

Parameter	Symbol	Operating Condition	Value			Units
			Min.	Typ.	Max.	
Wavelength SShift	$\Delta\lambda/\Delta T$	25~100°C	-	0.073	-	nm/°C
Output Power Decay	$\Delta P_o/\Delta T$	25~100°C	-	-0.52	-	mW/°C
Forward Voltage Decay	$\Delta V_F/\Delta T$	25~100°C	-	-0.002	-	V/°C

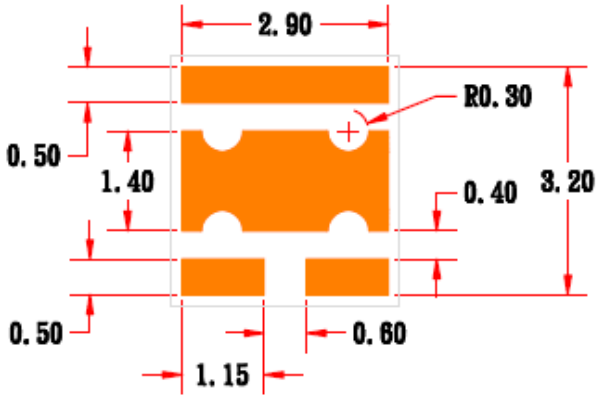
Emitting Angle (Field of View) Categories

Emitting Angle (Rectangle)	Lens Type (Material)	Order Code	Note
60° × 45°	MLA (Glass)	RVIC2012S4604506	H=1.45
72° × 58°	MLA (Glass)	RVIC2012S4725806	H=1.45
78° × 65°	MLA (Glass)	RVIC2012S4786506	H=1.45
87° × 67°	MLA (Glass)	RVIC2012S4876706	H=1.45
110° × 90°	MLA (Glass)	RVIC2012S4B09006	H=1.45

Mechanical Dimensions



Recommended Soldering Pad:



Unit: mm
Tolerance: ±0.15mm

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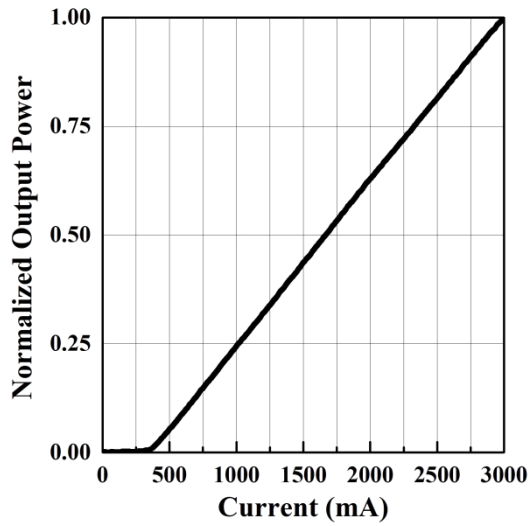
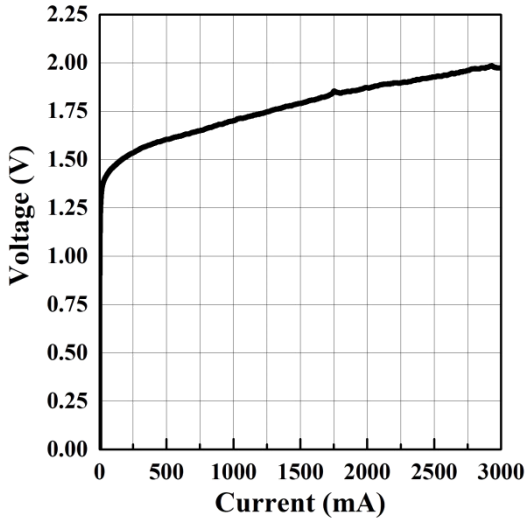
Typical Electrical/Optical/Characteristics

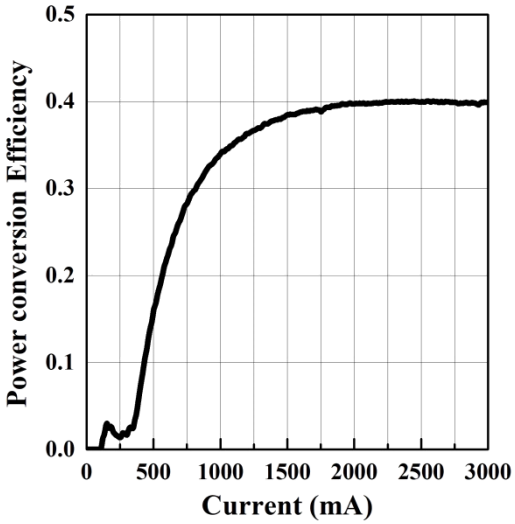
- **Radiant Power vs. Current**



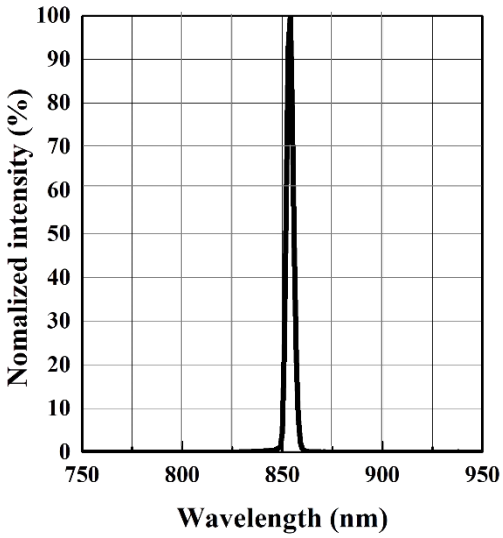
- **Voltage vs. Current**



- **Power Conversion Efficiency (PCE)**



- **Emission Spectrum**



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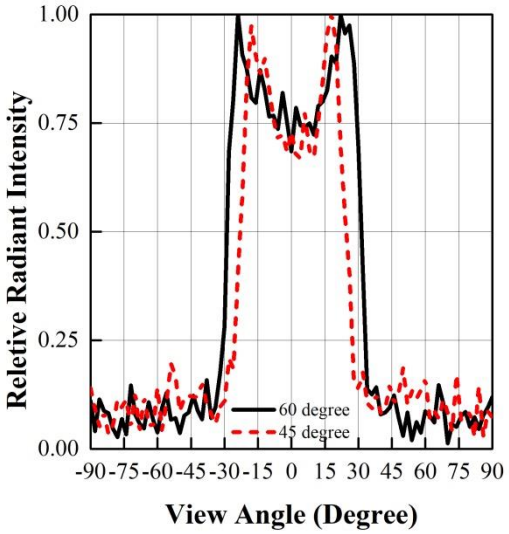
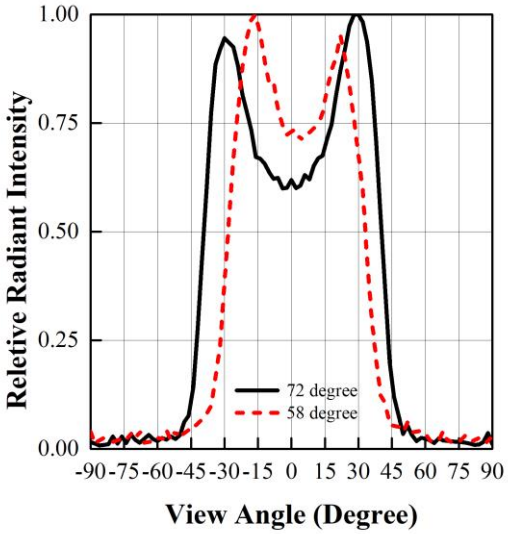
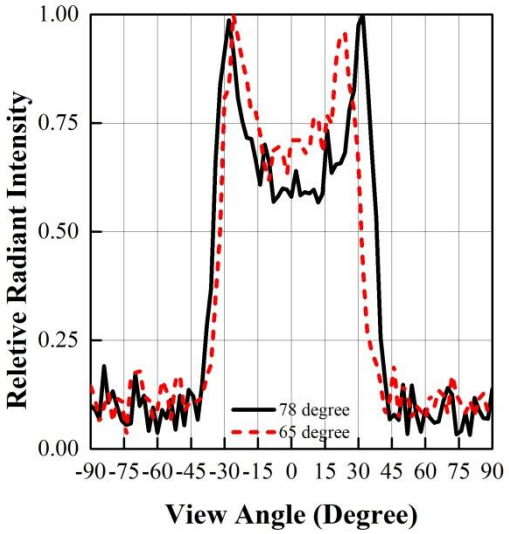
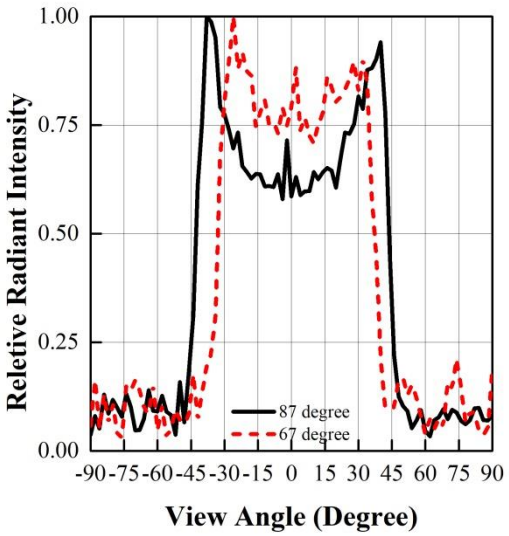
Emitting Angle









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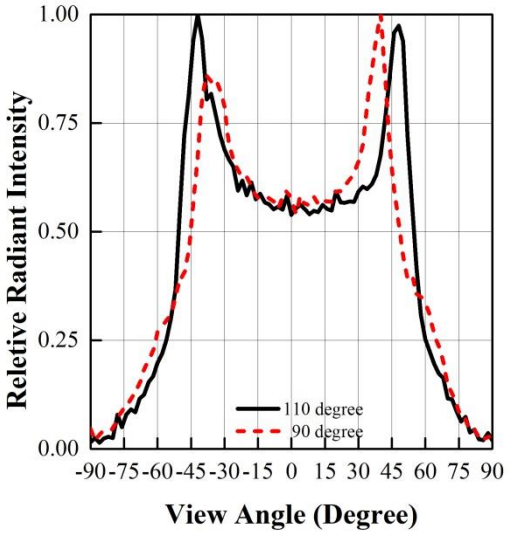

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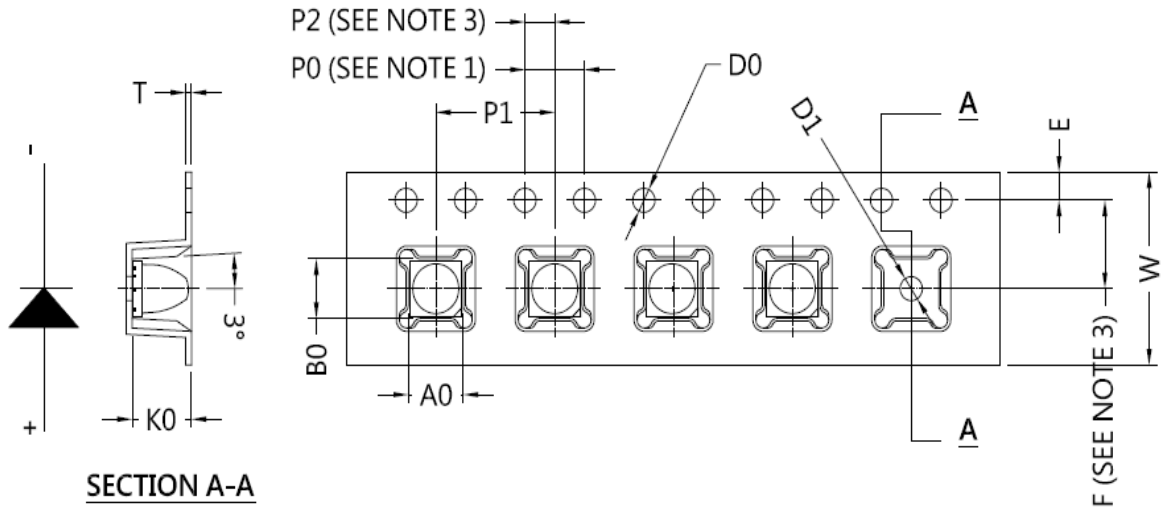
Product Packaging Information

Unit: mm



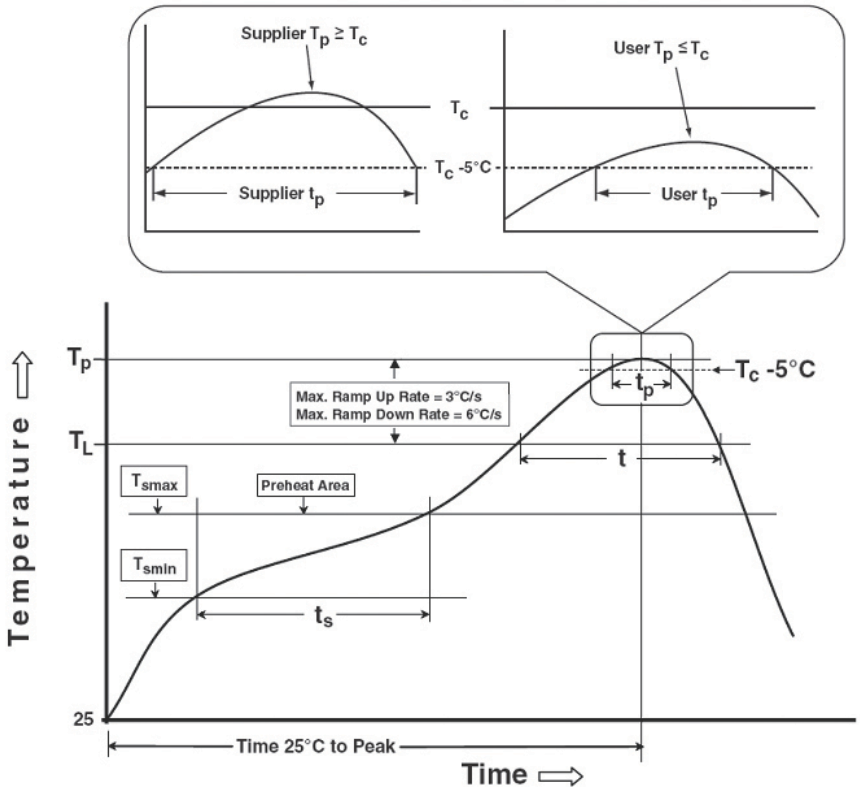
Symbol	Ao	Bo	Ko	P0	P1	P2
Spec	3.80±0.10	3.80±0.10	2.70±0.10	4.00±0.10	8.00±0.10	2.00±0.10
Symbol	**E**	**F**	**D0**	**D1**	**W**	**T**
Spec	1.75±0.10	5.50±0.10	Ø1.50±0.10	Ø1.50±0.10	12.0±0.30	0.30±0.05

Note:
1. 10 sprocket hole pitch cumulative tolerance ±0.2
2. Camber in compliance with EIA 481
3. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Item	Quantity	Total	Dimensions(mm)
Reel	600pcs	600pcs	D-178
Starting with 100pcs empty, and 200pcs empty at the last			

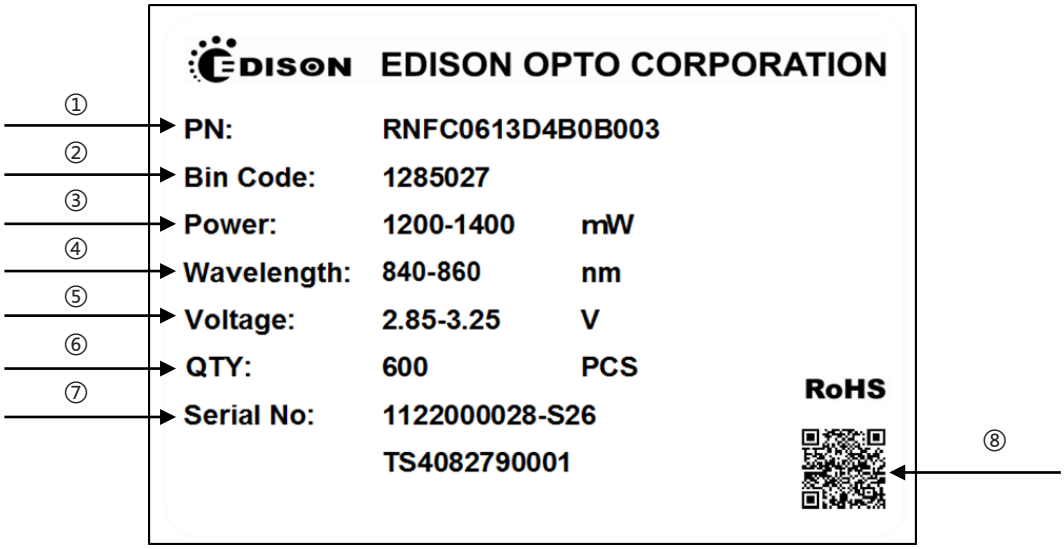
Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Profile Feature	Pb-Free Assembly
Preheat & Soak	
Temperature min (Tsmin)	150 °C
Temperature max (Tsmax)	200 °C
Time (Tsmin to Tsmax) (ts)	90-120 seconds
Average ramp-up rate (Tsmax to Tp)	3 °C/second max.
Liquidous temperature (TL)	220 °C
Time at liquidous (tL)	35-70 seconds
Peak package body temperature (Tp)	240 °C ~245 °C
Classification temperature (Tc)	240 °C
Average ramp-down rate (Tp to Tsmax)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Label Information



Number	Item	Remark
①	PN	Part Number (Refer to Page 2)
②	Bin code	Batch Information
③	Power	Radiant Power
④	Wavelength	Product Specifications
⑤	Voltage	Product Specifications
⑥	QTY	Quantity
⑦	Serial No	Manufacturing Order
⑧	QR Code	① ~ ⑦.

Precaution for Use

1. Specifications and technical data may be modified without notice. Performance graphs are illustrative; actual results require validation.
2. EDISON disclaims liability for all damages (direct, indirect, incidental, consequential) arising from product use, including personal injury, profit loss, or business disruption.
3. Not authorized for safety-critical systems (e.g., military, medical, aviation) without EDISON’ s explicit validation. Users bear full responsibility for suitability assessments.
4. Reproduction, adaptation, or distribution prohibited without written consent.

Environmental Compliance

The entire product line complies with the substance restrictions outlined in the RoHS and REACH regulations, and all contained metals adhere to conflict-free compliance standards.

Datasheet History

Versions	Description	Release Date
1	Update format	2025 / 06 / 01

About EDISON OPTO

Edison Opto provides comprehensive LED and solid-state lighting products from LED Component, Light Module, UV / IR LED, LED sensing, Horticulture and Automotive Lighting. With a view to improve R&D process, Edison Opto develops the vertical platform on TEMOTM (Thermal．Electrical．Mechanical．Optical) to ensure the quality of products and services; Furthermore, Edison Opto creates LDMSTM (LED Design Manufacturing Service) from light source to luminaire manufacturing, to serve our customers a quality experience of customized solutions.

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