NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

VCSEL Array Module

(Product Specification)

Preliminary

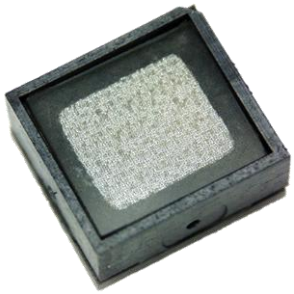
NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Approval Sheet

PV85QD4 V5 VCSEL Array Module
Product Specification

RoHS

Product	VCSEL Array Module
Part Number	PV85QD4 V5
Customer	
Issue Date	2021/01/29



Features

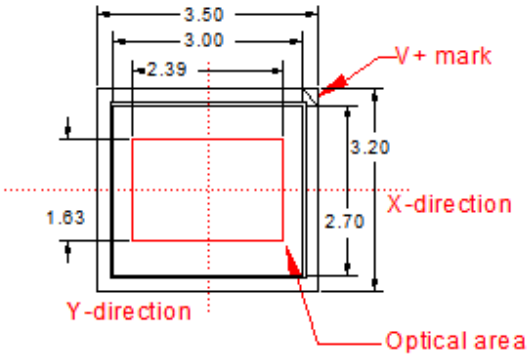
- ✓ Compact dimensions: 3.5 mm × 3.2 mm × 1.6 mm
- ✓ Peak wavelength:λ_p = 940 nm
- ✓ Rectangular emission pattern with a 127° x 104° diffuser
- ✓ Environmental friendly ; RoHS compliance

Applications

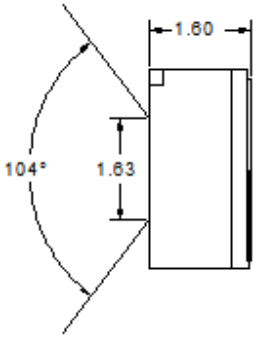
- ✓ Scene understanding with multi-object detection
- ✓ 3D depth assistance
- ✓ Presence detection

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

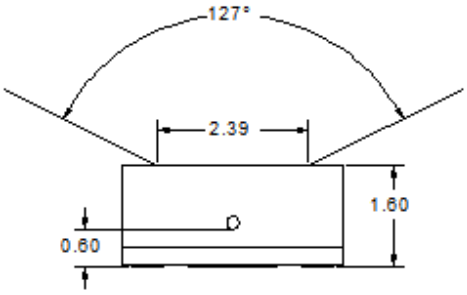
Package Dimension



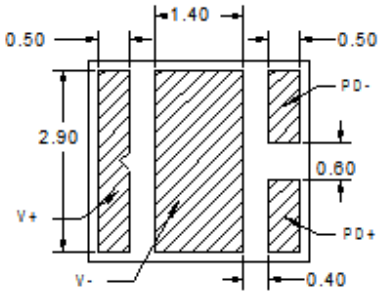
Top view



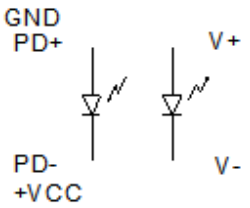
Side-Y view



Side-X view



Bottom view



Circuit Diagram

Unit: mm
Tolerance: ±0.1mm

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Electro-optical Characteristics (T_a=25˚C)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Forward Voltage	V_F	I_F = 4.5 A	1.8	2.2	2.4	V
Forward voltage temperature variation	$\Delta V_F/\Delta T$	I_F = 4.5 A		-2		mV/°C
Wavelength	λ_p	I_F = 4.5 A	930	940	950	nm
Wavelength temperature variation	$\Delta\lambda_p/\Delta T$	I_F = 4.5 A		0.07		nm/°C
Radiant Power	Φ_e	I_F = 4.5 A	2900	3400	--	mW
Slope Efficiency	SE		0.6	0.8	1.1	W/A
Spectral Width(FWHM)	$\Delta\lambda$	I_F = 4.5 A	1	1.8	2.2	nm
Threshold Current	I_{th}			0.7		A
Power Conversion Efficiency	PCE	I_F = 4.5 A	30	34		%
x-direction Divergence Angle(FWHM)	θ_x	I_F = 4.5 A		86		deg
y-direction Divergence Angle(FWHM)	θ_y	I_F = 4.5 A		78		deg
FOV-x	FOV_x	I_F = 4.5 A		127		deg
FOV-y	FOV_y	I_F = 4.5 A		104		deg
Series resistance	R_s	I_F = 4.5 A		0.18		Ohm

Note:

(1) Lextar maintains a tolerance of ±10% on radiant power, ±0.1V on forward voltage and ±1nm on peak wavelength measurements.

(2) All test item are measured with 0.5ms pulse current, single pulse

(3) For divergence angle, emitted light from the package was projected on a flat screen. Divergence angle was calculated from full-width-half-maximum (FWHM) intensity distribution of the projected emission pattern.

(4) Field of view (FOV) is distribution of radiation intensity which is measured with a goniometer system. Emitted light from package is measured by a photo-detector directly without a screen.

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Photo-diode Electro-Optical Characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F =10mA, H=0	0.5		1.3	V
Reverse Breakdown Voltage	V_{BR}	I_R = 100uA, H=0	35			V
Reverse Dark Current	I_D	V_R=10V		2	10	nA
Light Current	I_L	V_R=5V IF(VCSEL)=4.5A		2.0		mA
Peak Sensing Wavelength	λ_p			940		nm
Junction Capacitance	C_J	V_R=3V, H=0 F=1 MHz		2	10	pF

Absolute Maximum Ratings

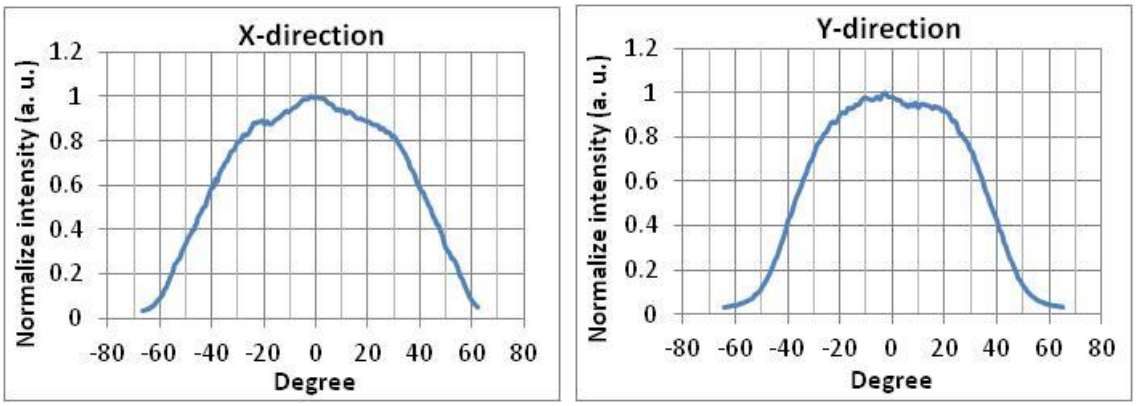
Parameter	Symbol	VALUE	Unit
Operation Temperature-extended(1)	T_{op}	-40~105	˚C
Storage Temperature	T_{stg}	-40~125	˚C

Note:

(1) Extended operation temperature for <1% of operation time

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

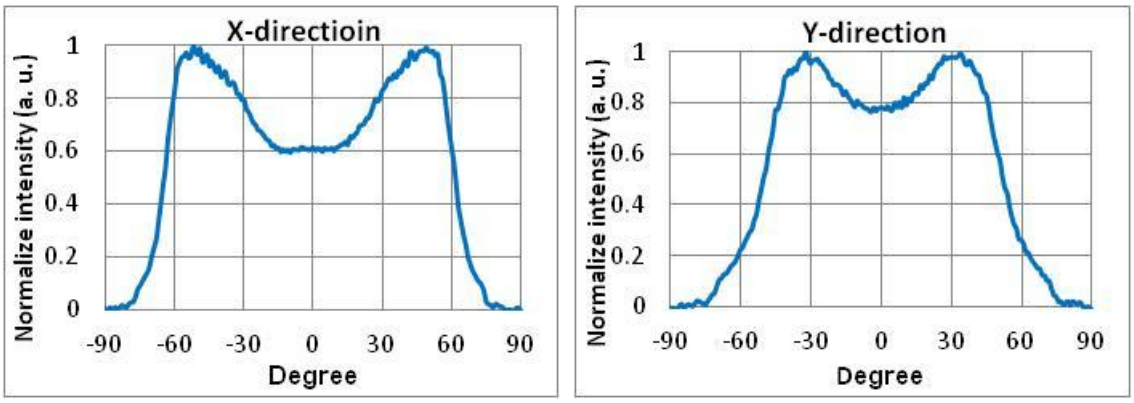
Intensity Distribution of Projected Pattern



Note:

Emitted light from the package was projected on a flat screen. The projected emission pattern was captured by a CCD for obtaining intensity distribution.

Field of View

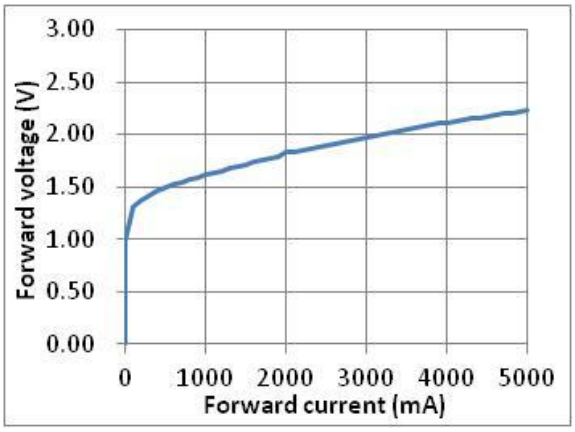


Note:

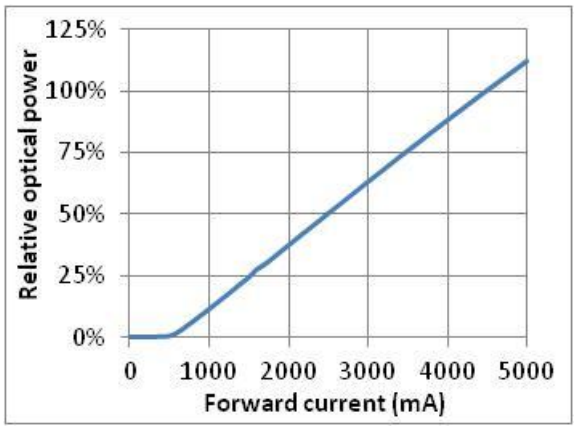
Field of view (FOV) is distribution of radiation intensity which is measured with a goniometer system. Emitted light from package is measured by a photo-detector directly without a screen.

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

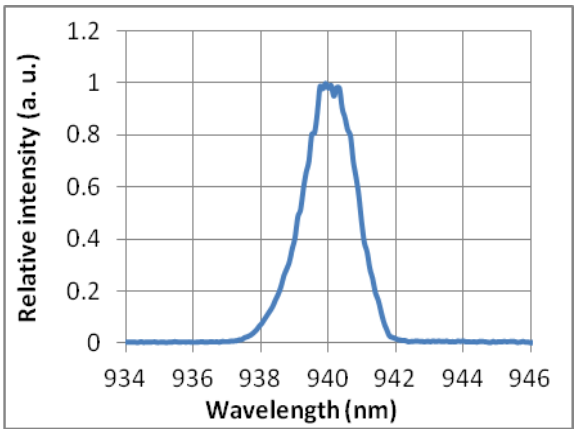
Forward Voltage vs. Current



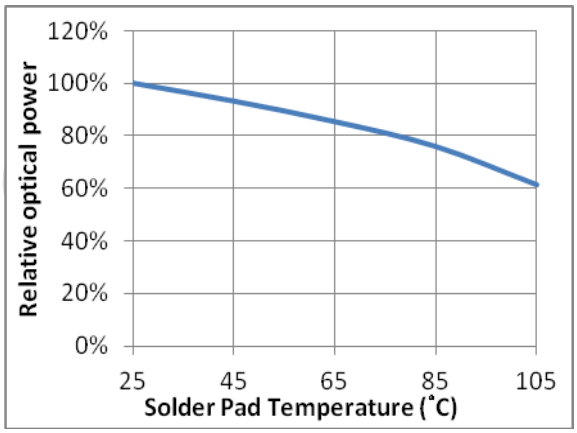
Radiant Power vs. Current



Spectrum

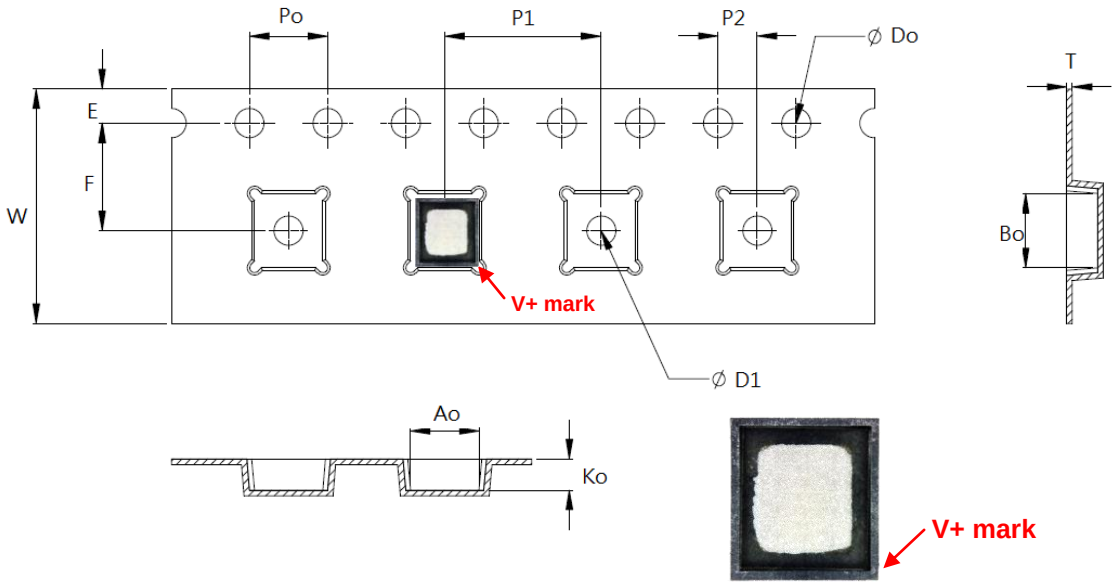


Radiant Power vs. Temperature



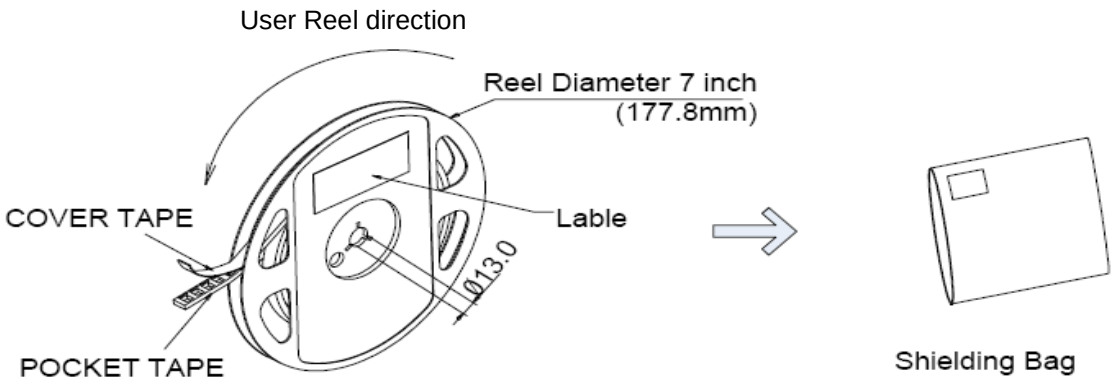
NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Emitter Reel Packing



UNIT:mm

symbol	Ao	Bo	Ko	Po	P1	P2	T
spec	3.70±0.10	3.70±0.10	2.4±0.10	4.00±0.10	8.00±0.10	2.00±0.05	0.3±0.10
symbol	E	F	Do	D1	W	10Po	--
spec	1.75±0.10	5.50±0.05	1.55+0.05	1.5 min	12.0±0.30	40.0±0.20	--



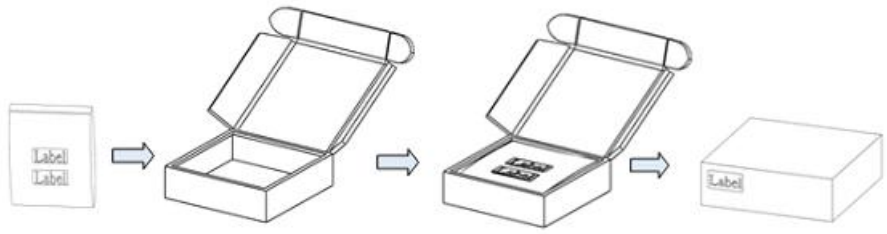
7 inch Anti-Static Reel

Max 500pcs/reel

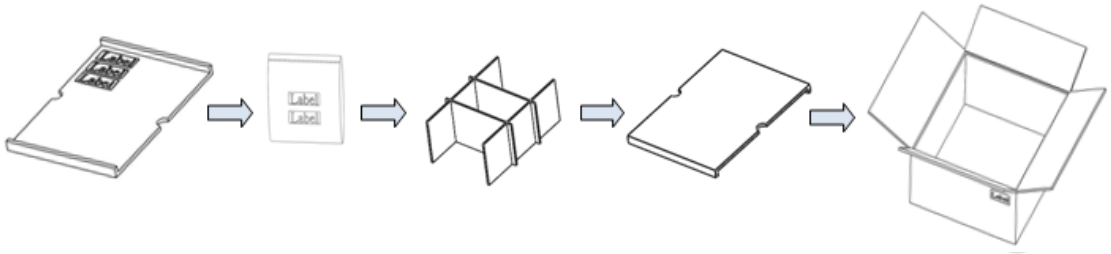
Min 200pcs/reel

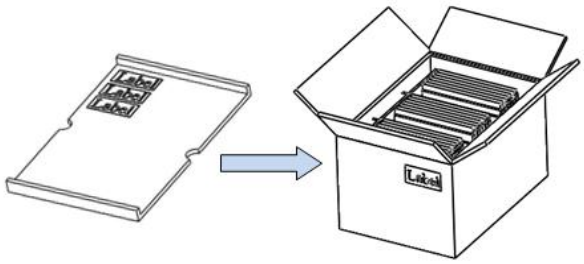
NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

■ Small Box

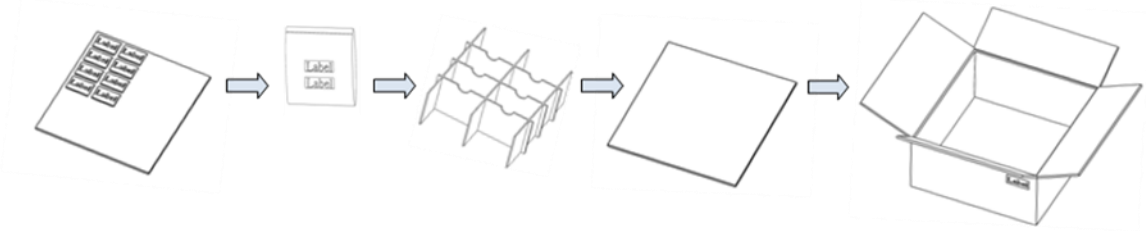


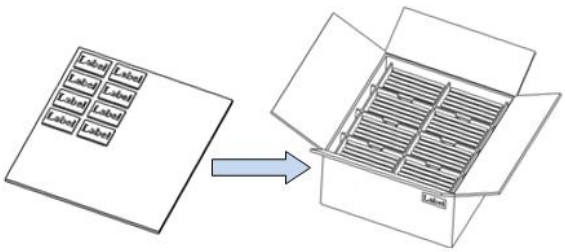
■ Medium Box





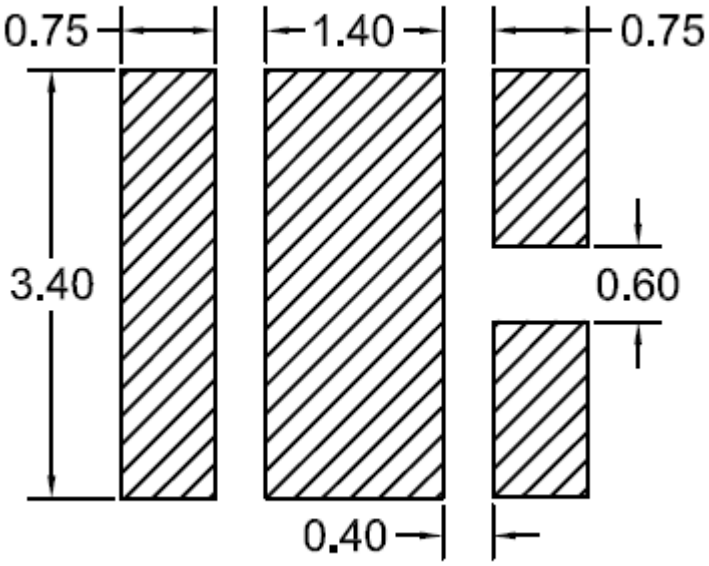
■ Large Box





NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Recommended PCB solder pads layout

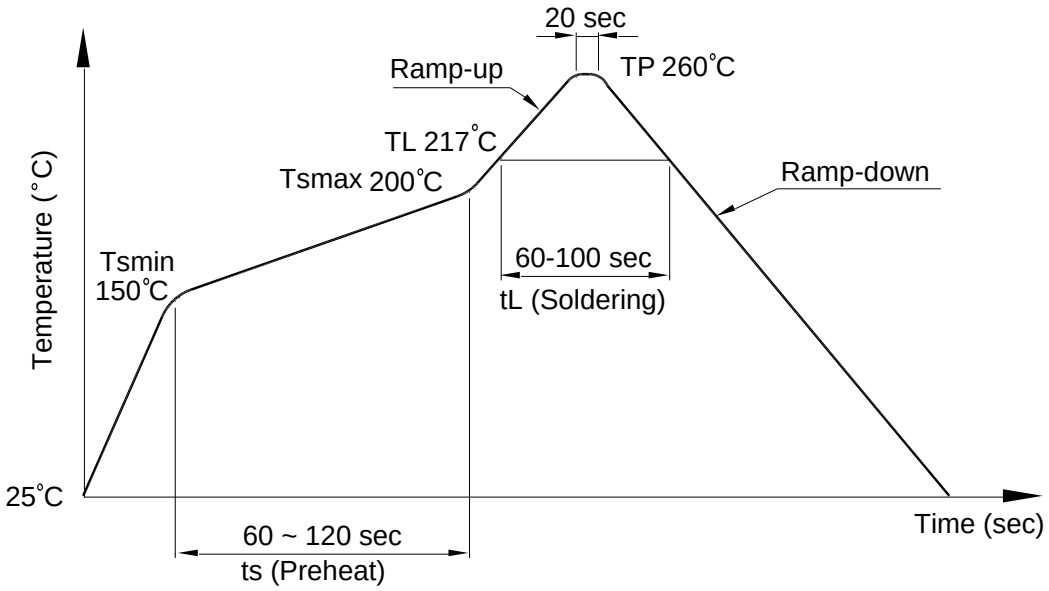


Unit: mm

Tolerance: ±0.1mm

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Recommended Reflow Soldering Profile (JEDEC-STD-020 latest version compliant)



Profile Items	Conditions
Preheat	
-Temperature Min.(T_{Smin})	150˚C
-Temperature Max.(T_{Smax})	200˚C
-Time(Min. to Max.)(t_S)	90±30 sec
Soldering Zone	
-Temperature(T_L)	217˚C
-Time	60~100 sec
Peak Temperature(T_P)	260˚C
Ramp-up rate	3˚C / sec max.
Ramp-down rate	3~6˚C / sec

Note:

1. One time soldering is recommended; do not exceed 3 times reflow process.
2. The recommended peak temperature is 245˚C. The maximum soldering temperature should be controlled under 260˚C.

Handing manual

Do not touch the lens and housing with the tweezers or fingers. Do not push on the lens. Do not apply more than 1Kg of force directly onto the lens. Excessive force on the lens could damage the PKG. Please handle the component by clamping ceramic substrate.

Correct	Wrong
	

Storage

- Before opening the package, the Device should storage under 30℃, 70% RH. Recommend to use within one year.
- After opening the package bag, the Device should be keep under 30℃, 60% RH. Recommend to use within 7days. If unused Device remain, suggest to store into moisture proof bag or original package bag with moisture absorbent material such as silica gel. Reseal well is necessary.
- If the product exceeded the storage period or the moisture absorbent material faded away, baking treatment should be done by following conditions.
  Bake condition: 60℃, 12hours (One time only).

Static Electricity

- Device package is extremely sensitive to static electricity. It's recommended that anti-electrostatic glove and wrist ban d is necessary when handling the Device. All devices are also be grounded properly as well.
- Protection devices design should be considered in the Device driving circuit

Cleaning

- Do not clean the device by dipping into any liquid or flushing with any liquid.
- Recommend to clean the device by air blowing, if necessary.

NO.1, Keyi St., Kuan Yuan Science Park, Chunan Township, Miaoli County 35059, Taiwan
TEL：886-3-565-8800

Revision History

Revision	Date	Description
A_00	29/1/2021	- Preliminary Document

单击下面可查看定价，库存，交付和生命周期等信息

>>Lextar(隆达)