

ProLight PJ2E-1Fx
1W Power LED
Technical Datasheet
Version: 1.4

ProLight Opto PJ2E Series

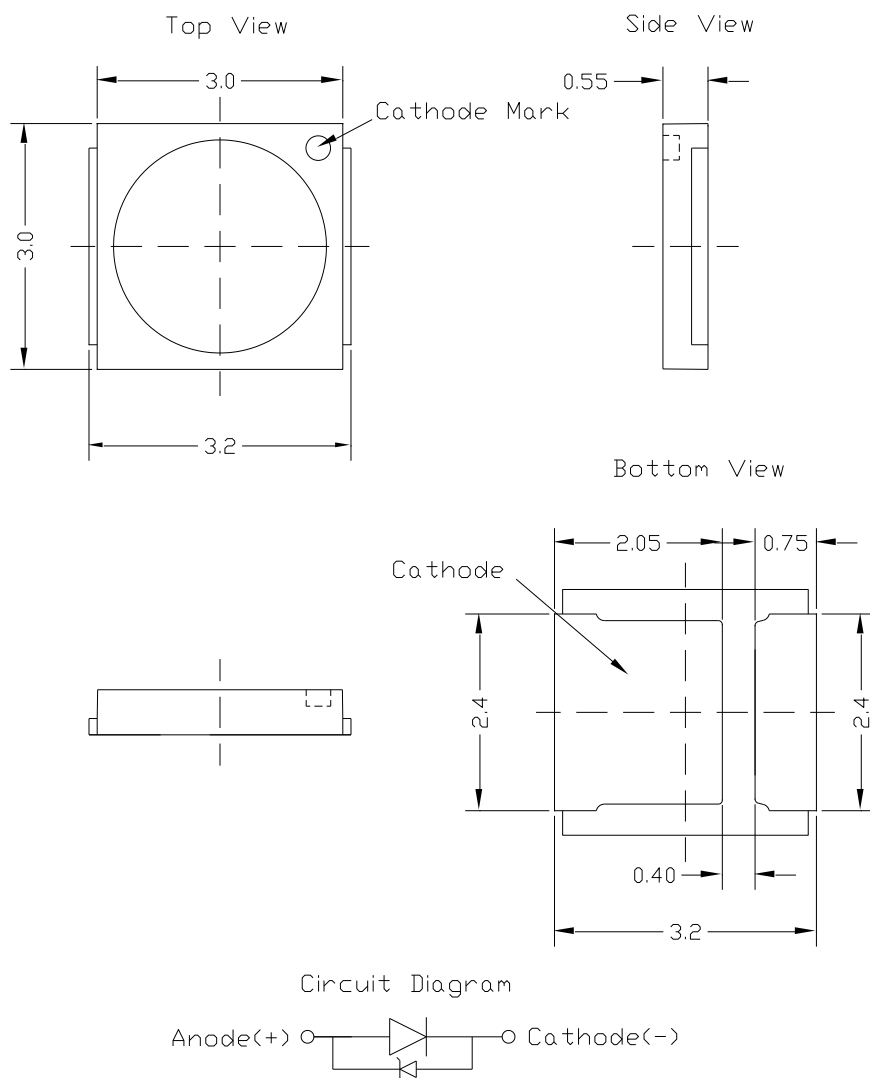
Features

- Good color uniformity
- Lead free reflow soldering
- RoHS compliant
- Instant light (less than 100ns)
- No UV

Main Applications

- Backlighting
- Signaling
- Exterior Automotive Lighting
- Automotive Interior Lighting

Emitter Mechanical Dimensions



Notes:

1. The cathode side of the device is denoted by the chamfer on the part body.
2. Drawing not to scale.
3. All dimensions are in millimeters.
4. Unless otherwise indicated, tolerances are ± 0

Flux Characteristics at 350mA, $T_j = 25^\circ\text{C}$

Radiation Pattern	Color	Part Number Emitter	Luminous Flux Φ_v (lm)	
			Minimum	Typical
Lambertian	Red	PJ2E-1FRE	30	42
	Green	PJ2E-1FGE	50	65
	Blue	PJ2E-1FBE	10.7	15.5

- ProLight maintains a tolerance of $\pm 7\%$ on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics at 350mA, $T_j = 25^\circ\text{C}$

Color	Forward Voltage $V_F</$
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Absolute Maximum Ratings

Parameter	Red/Green/Blue
DC Forward Current (mA)	350
Peak Pulsed Forward Current (mA)	500 (less than 1/10 duty cycle@1KHz)
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	±4000V (Class III)
LED Junction Temperature	120°C
Operating Board Temperature at Maximum DC Forward Current	-40°C - 90°C
Storage Temperature	-40°C - 120°C
Soldering Temperature	JEDEC 020c 260°C
Allowable Reflow Cycles	3
Reverse Voltage	Not designed to be driven in reverse bias

Photometric Luminous Flux Bin Structure

Color	Bin Code	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)	Available Color Bins
Red	Q	30	40	All
	R	40	50	[1]

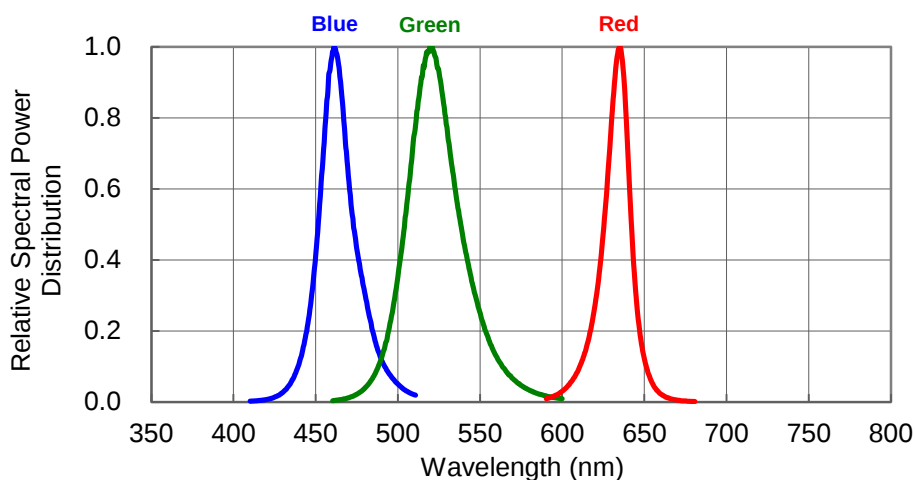
Dominant Wavelength Bin Structure

Color	Bin Code	Minimum Dominant Wavelength (nm)	Maximum Dominant Wavelength (nm)
Red	4	620	630
Green	A	515	520
	1	520	525
	2	525	530
	3	530	535
Blue	A	455	460
	1	460	465
	2	465	470
	3	470	475

- ProLight maintains a tolerance of $\pm 1\text{nm}$ for dominant wavelength measurements.

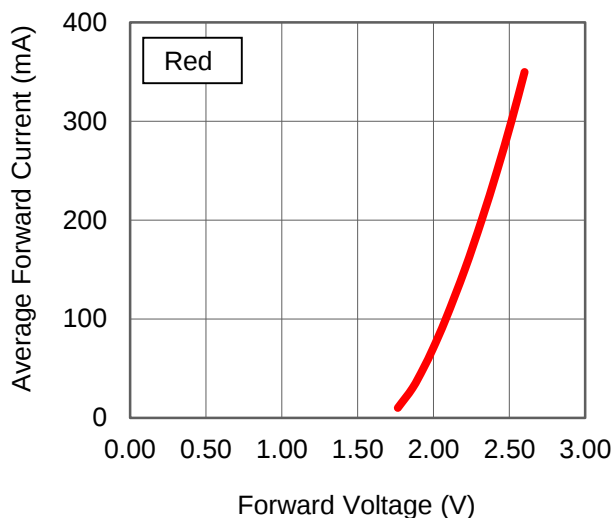
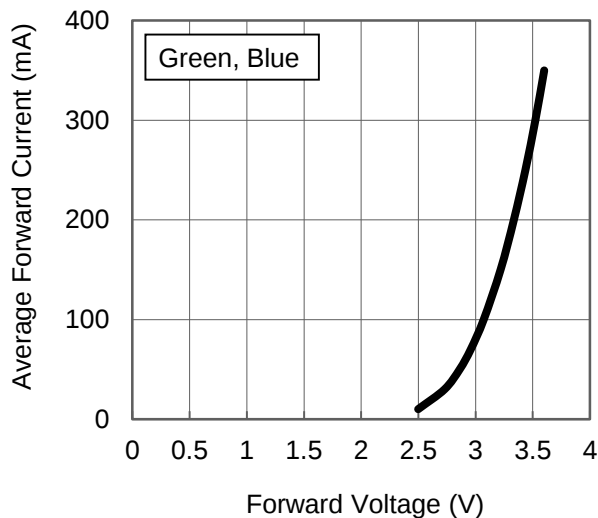
Color Spectrum, $T_J = 25^\circ\text{C}$

1. Blue 、 Green 、 Red



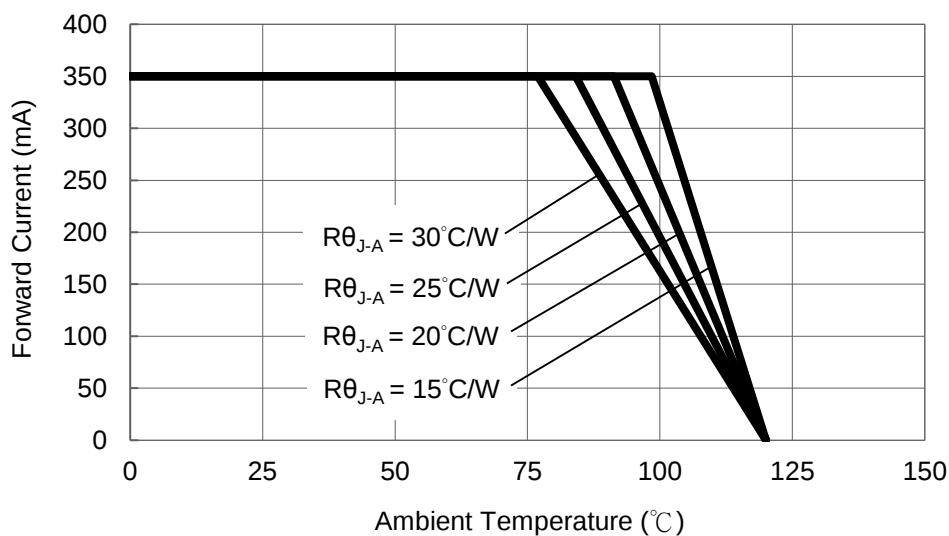
Forward Current Characteristics, $T_j = 25^\circ\text{C}$

1. Forward Voltage vs. Forward Current

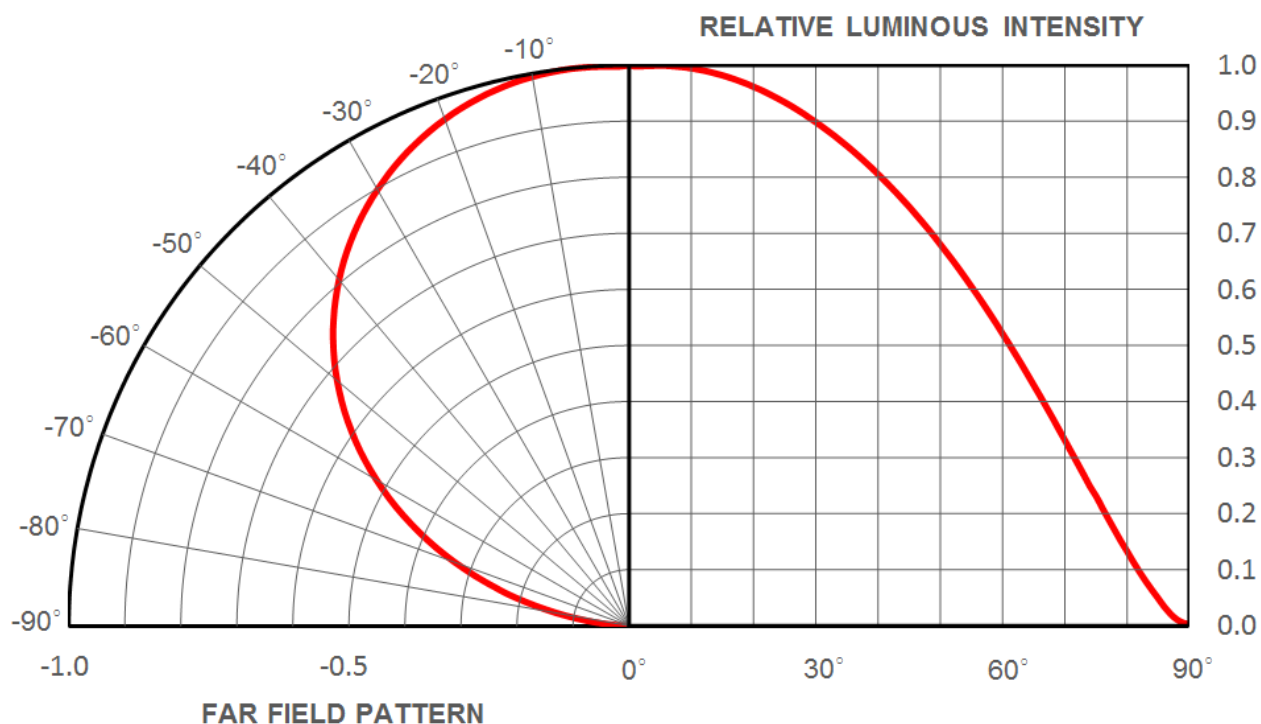


Ambient Temperature vs. Maximum Forward Current

1. Green, Blue ($T_{JMAX} = 120^{\circ}\text{C}$)



Typical Representative Spatial Radiation Pattern



Moisture Sensitivity Level - JEDEC Level 1

Level	Floor Life		Soak Requirements			
			Standard		Accelerated Environment	
	Time	Conditions	Time (hours)	Conditions	Time (hours)	Conditions
1	Unlimited	$\leq 30^{\circ}\text{C}$ / 85% RH	168 +5/-0	85°C / 85% RH	NA	NA

- The standard soak time includes a default value of 2

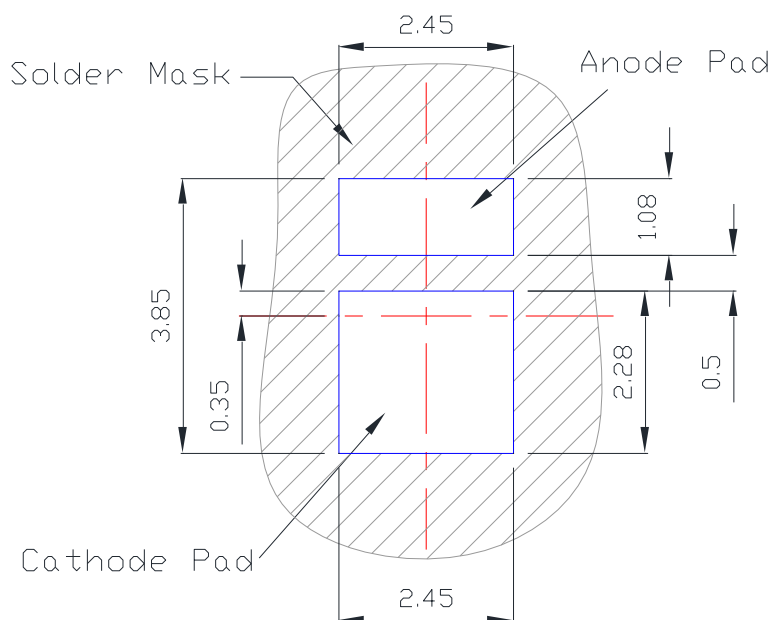
Qualification Reliability Testing

Stress Test	Stress Conditions	Stress Duration	Failure Criteria
Room Temperature Operating Life (RTOL)	25°C, $I_F = \text{max DC}$ (Note 1)	1000 hours	Note 2
Wet High Temperature Operating Life (WHTOL)	85°C/60%RH, $I_F = \text{max DC}$ (Note 1)	1000 hours	Note 2
Wet High Temperature Storage Life (WHTSL)	85°C/85%RH, non-operating	1000 hours	Note 2
High Temperature Storage Life (HTSL)	110°C, non-operating	1000 hours	Note 2
Low Temperature Storage Life (LTSL)	-40°C, non-operating	1000 hours	Note 2

Recommended Solder Pad Design

Standard Emitter

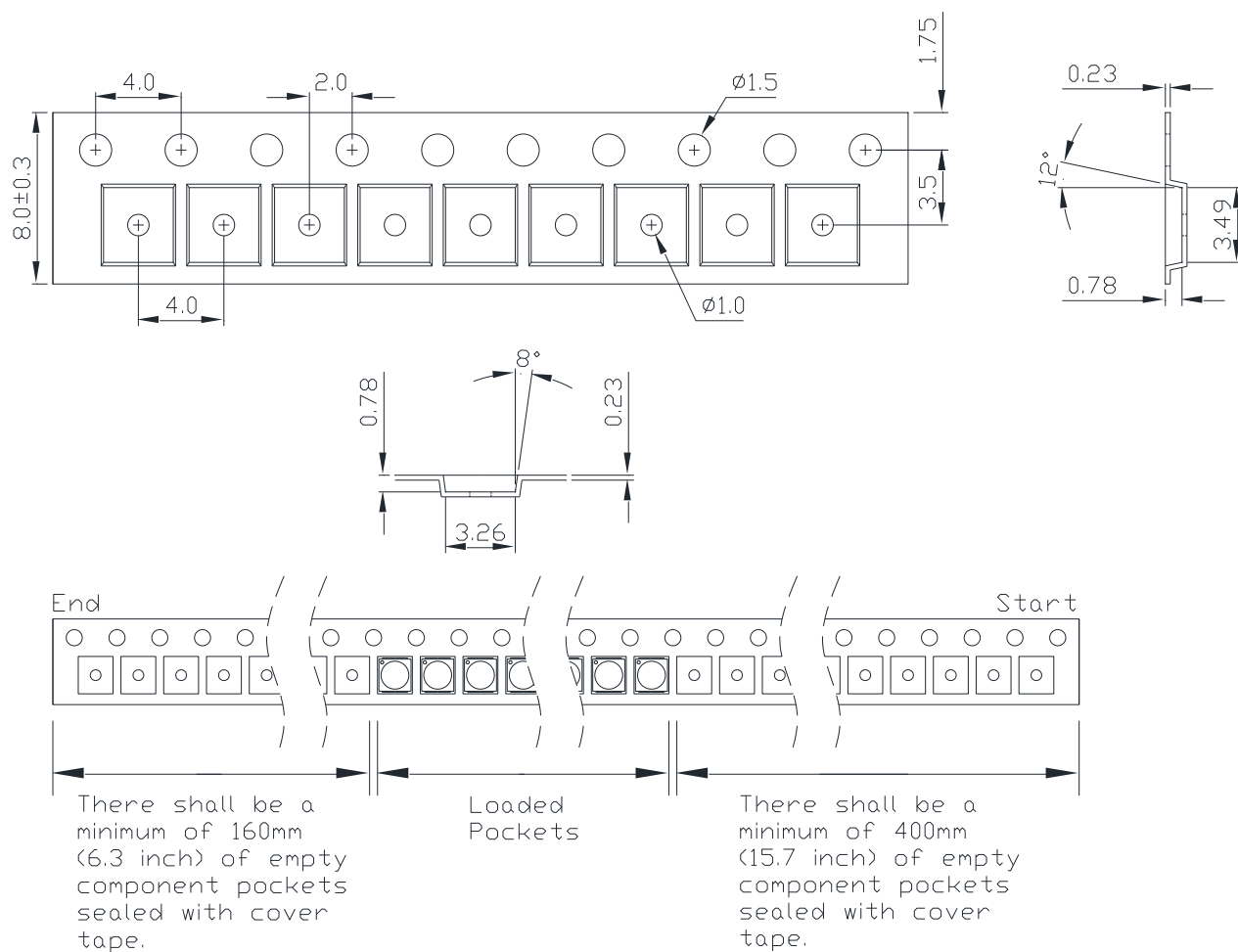
TYPE A.



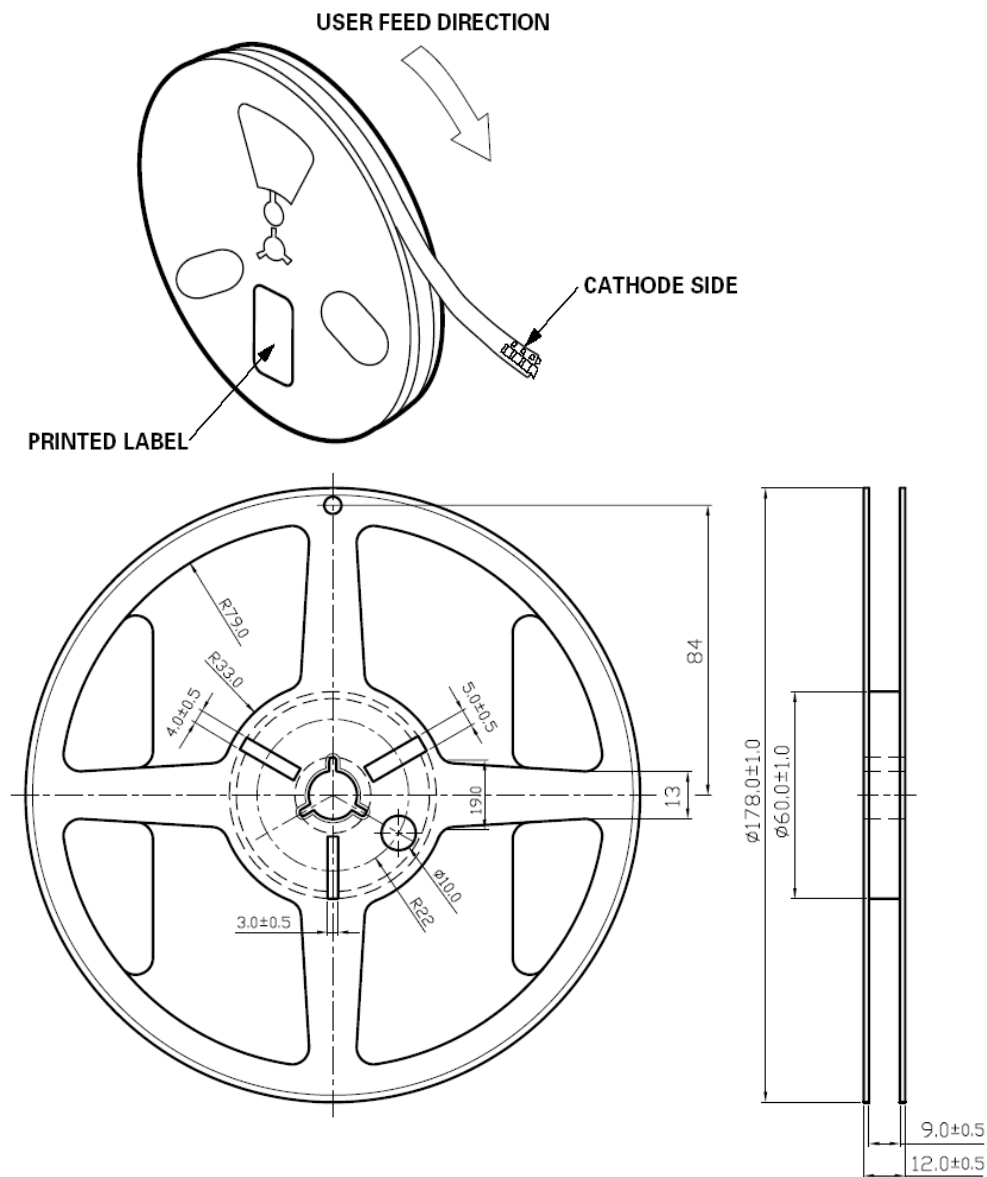
Reflow Soldering Condition

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T_{Smax} to T_P)	3°C / second max.	3°C / second max.
Preheat – Temperature Min (T_{Smin}) – Temperature Max (T_{Smax}) – Time (t_{Smin} to t_{Smax})	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: – Temperature (T_L) – Time (t_L)		

Emitter Reel Packaging



Emitter Reel Packaging



Precaution for Use

- Storage
Please do not open the moisture barrier bag (MBB) more than one week. This may cause the leads of LED discoloration. We recommend storing ProLight's LEDs in a dry box after opening the MBB. The recommended storage conditions are temperature 5 to 30 °C and humidity less than 40% RH. It is also recommended to return the LEDs to the MBB and to reseal the MBB.
- The slug is is not electrically neutral. Therefore, we recommend to isolate the heat sink.
- **We recommend using the M705-S101-S4 solder paste from SMIC (Senju Metal Industry Co., Ltd.) for lead-free soldering.**
- **Do not use solder pastes with post reflow flux residue>47%. (58Bi-42Sn eutectic alloy, etc) This kind of solder pastes may cause a reliability problem to LED.**
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