SD3838F94CQ01 Datasheet

Infrared Emitter

3838 Series (940nm) - 90°

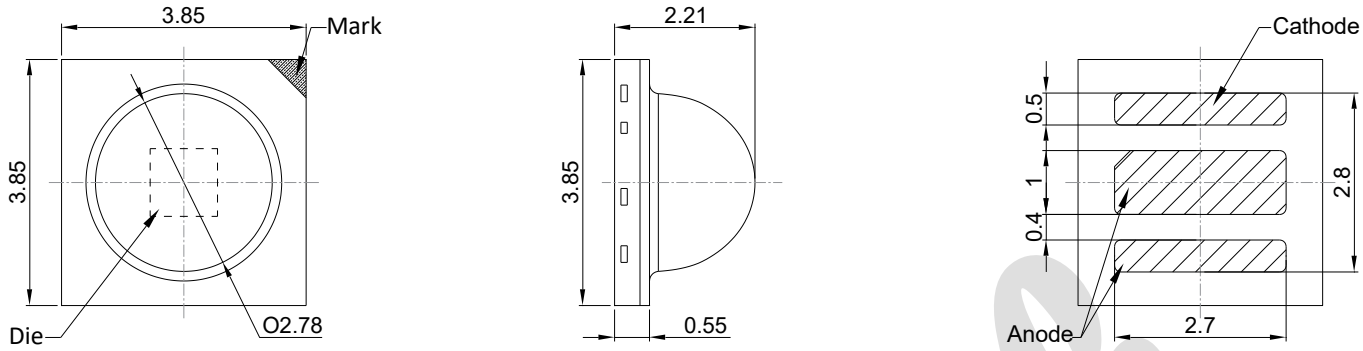
Applications

- Security System
- Facial Recognition
- Automotive
- Gesture Recognition

Features

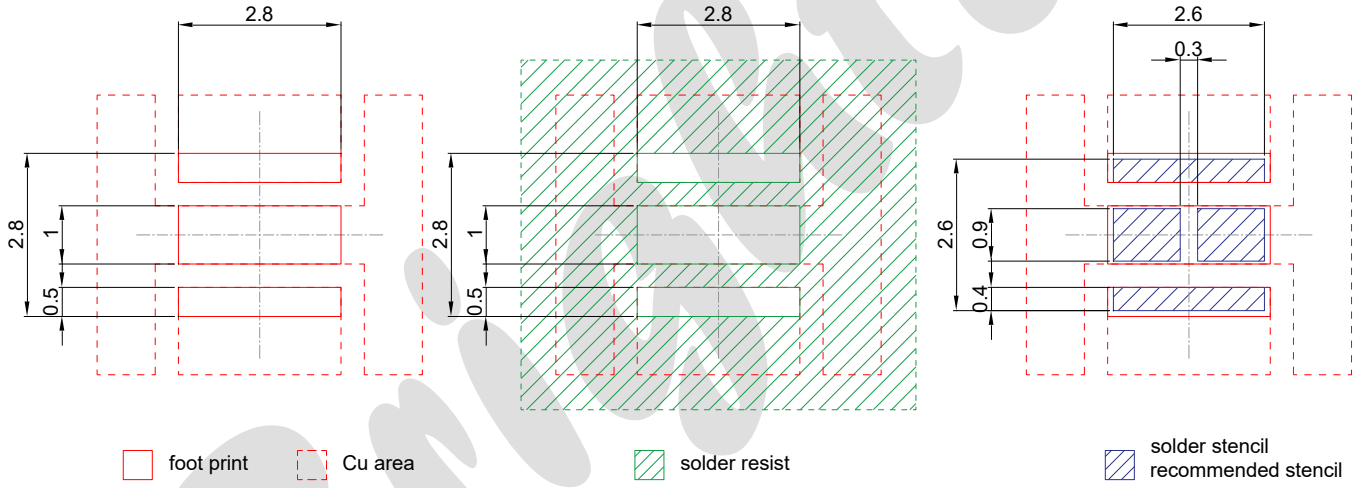
- Package: clear silicone
- Corrosion robustness class: 3B
- ESD: 2KV (HBM : MIL STD 883 Class 2)
- IR light source with high efficiency
- Single junction emitter
- Qualifications: AEC-Q102 Qualified
- Low thermal resistance (Max. 9 K/W)
- Peak wavelength 940 nm
- Optimized for high current pulse operation
- RoHS 2.0 and REACH compliant
- MSL 2 qualified according to J-STD 020

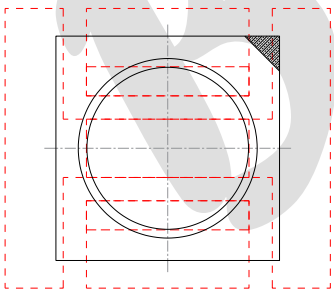
Dimensional Drawing



1. Dimensions are in millimeters.
2. General tolerance is ± 0.05mm.

Recommended Solder Pad





Component Location on Pad

Maximum Ratings

T_A : 25 °C

Parameter	Symbol		Rating	
Forward current	I_F	max.	1000	mA
Power consumption	P_{tot}	max.	2	W
Pulse forward current	I_{PF}	max.	3	A
Reverse voltage	V_R	max.	5	V
Junction temperature	T_j	max.	125	°C
Operating temperature	T_{op}	min.	-40	°C
		max.	105	°C
Storage temperature	T_{stg}	min.	-40	°C
		max.	105	°C
Soldering temperature	T_{sol}	max.	260	°C
Thermal resistance junction	R_{th}	typ.	4.5	K/W
		max.	9	K/W
ESD withstand voltage (HBM : MIL STD 883 Class 2)	V_{ESD}	max.	2	kV

1. For other ambient, limited setting of current will depend on de-rating curves.
2. When drive on maximum current, Junction temperature must be kept below 125°C.

Characteristics

I_F : 1A | t_p : 10 ms | T_A : 25°C

Parameter	Symbol		Values	
Peak wavelength	λ_p	typ.	940	nm
Spectral bandwidth	$\Delta\lambda$	typ.	40	nm
View angle	$2\theta_{1/2}$	typ.	90	°
Total radiant power	Φ_e	min.	700	mW
		typ.	800	mW
		max.	1000	mW
Radiant intensity	I_E	min.	330	mW/sr
		typ.	430	mW/sr
		max.	530	mW/sr
Forward voltage	V_F	min.	1.4	V
		typ.	1.6	V
		max.	2.0	V
Reverse current (V_R=5V)	I_R	max.	10	µA

Brightness Groups

Total radiant power I_F : 1A | tp : 10 ms

Group	min. Φe	max. Φe
PA7	700 mW	800 mW
PA8	800 mW	900 mW
PA9	900 mW	1000 mW

Forward voltage I_F : 1A | tp : 10 ms

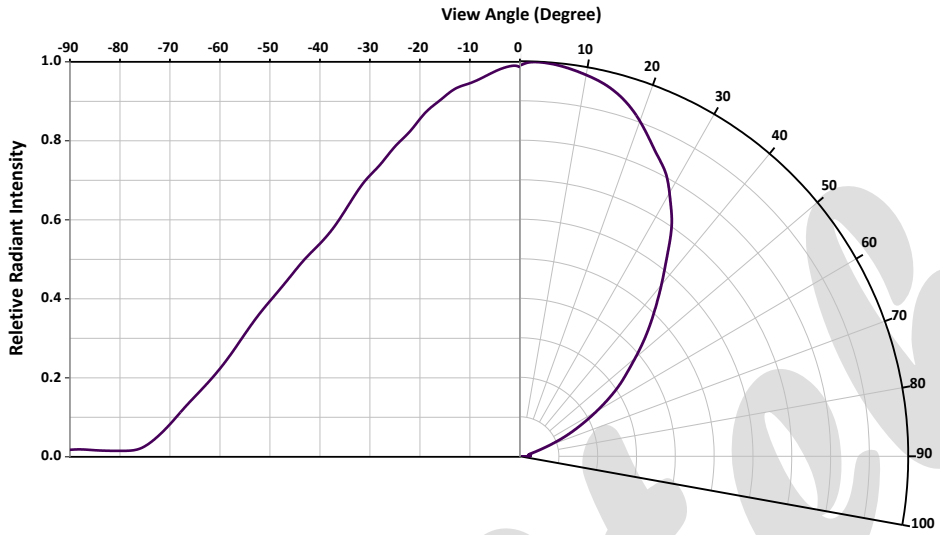
Group	min. V_F	max. V_F
DF	1.4V	2.0 V

Peak wavelength I_F : 1A | tp : 10 ms

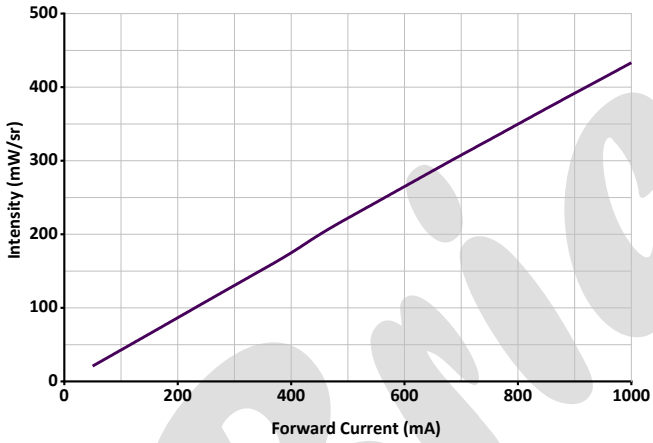
Group	min. λ_p	max. λ_p
F1	930 nm	950 nm

Typical Electrical Optical Characteristics Curves

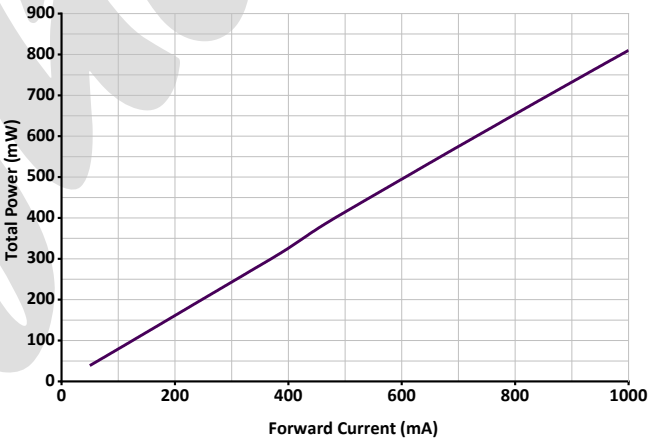
Radiation Characteristics(L=0)



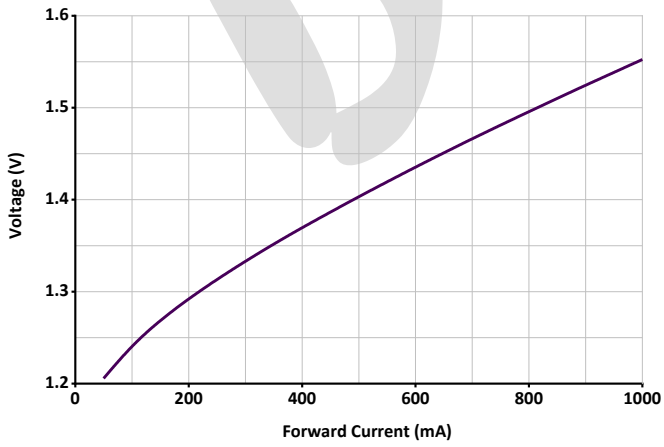
Radiant Intensity



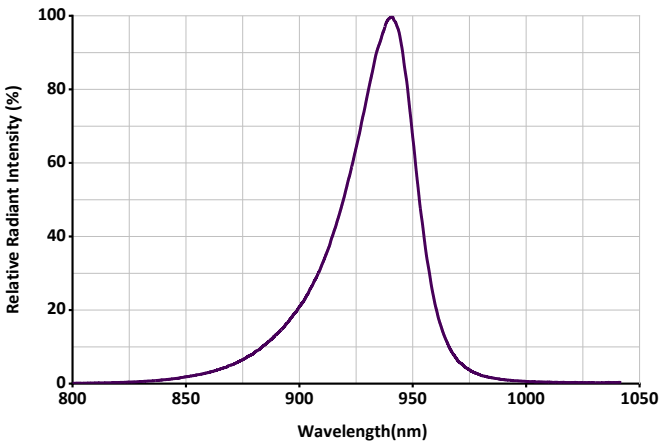
Total Radiant Power



Forward Voltage

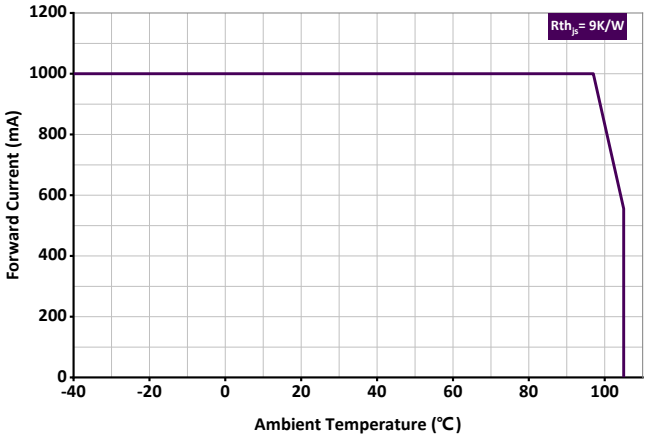


Relative Spectral Emission



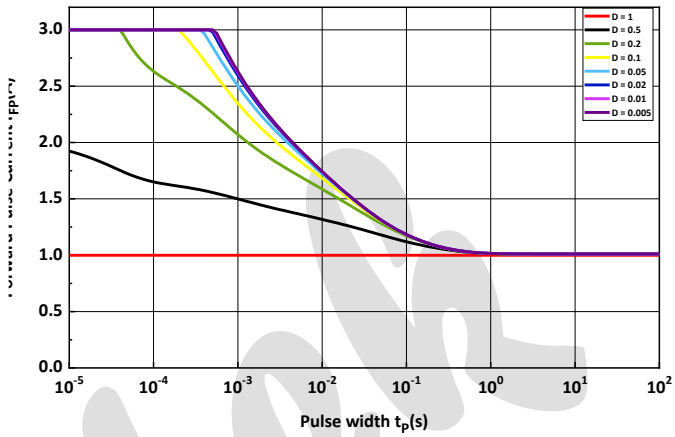
Permissible Forward Current

I_F,max = f (T_S); Rth_{js} = 9K / W



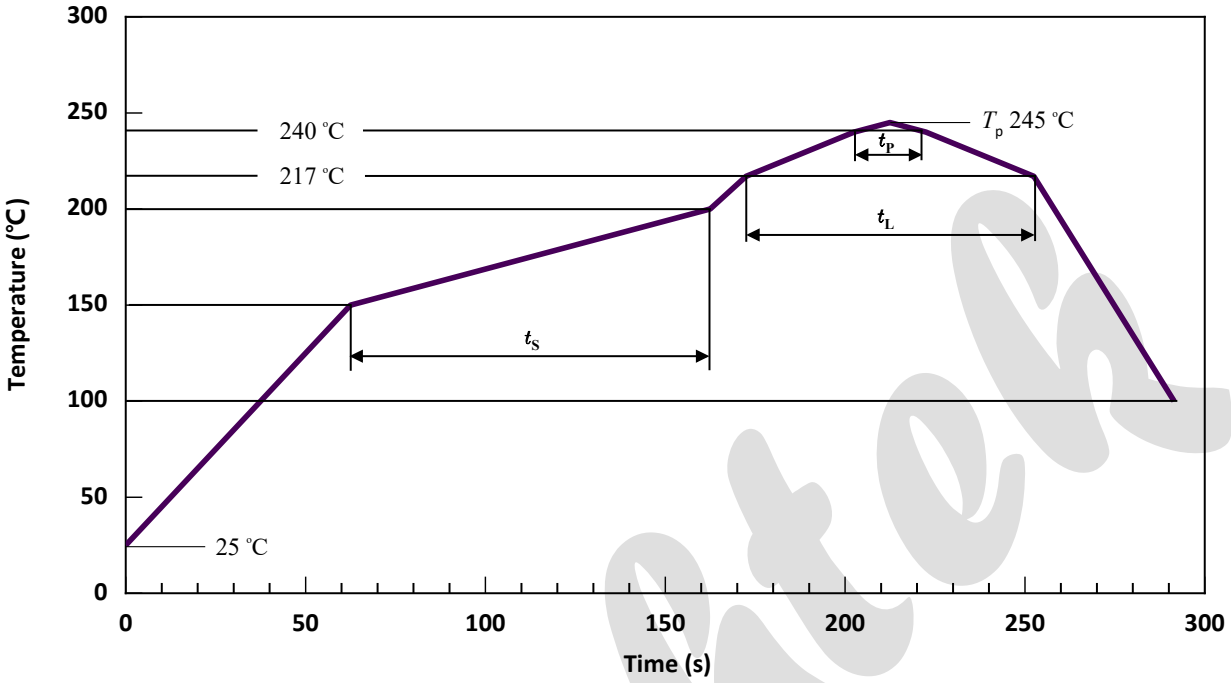
Permissible Pulse Handling Capability

I_F = f (t_p); D = Duty cycle; T_S = 85°C



Reflow Soldering Profile

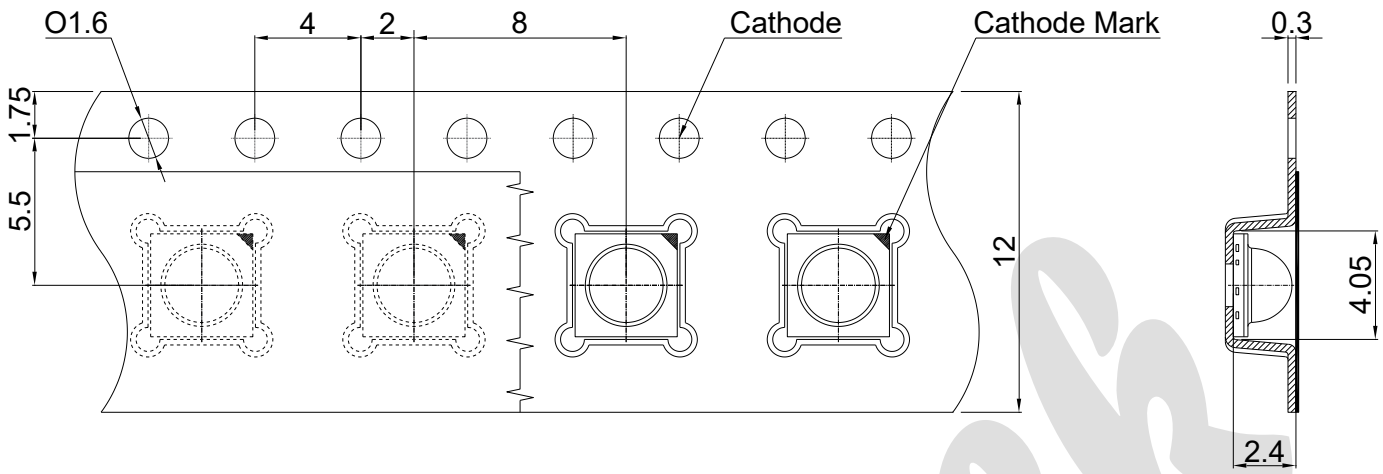
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature TP - 5 K	T_P	10	20	30	s
Ramp-down Rate T_P to 100 °C			3	4	K/s
Time 25 °C to T_P				480	s

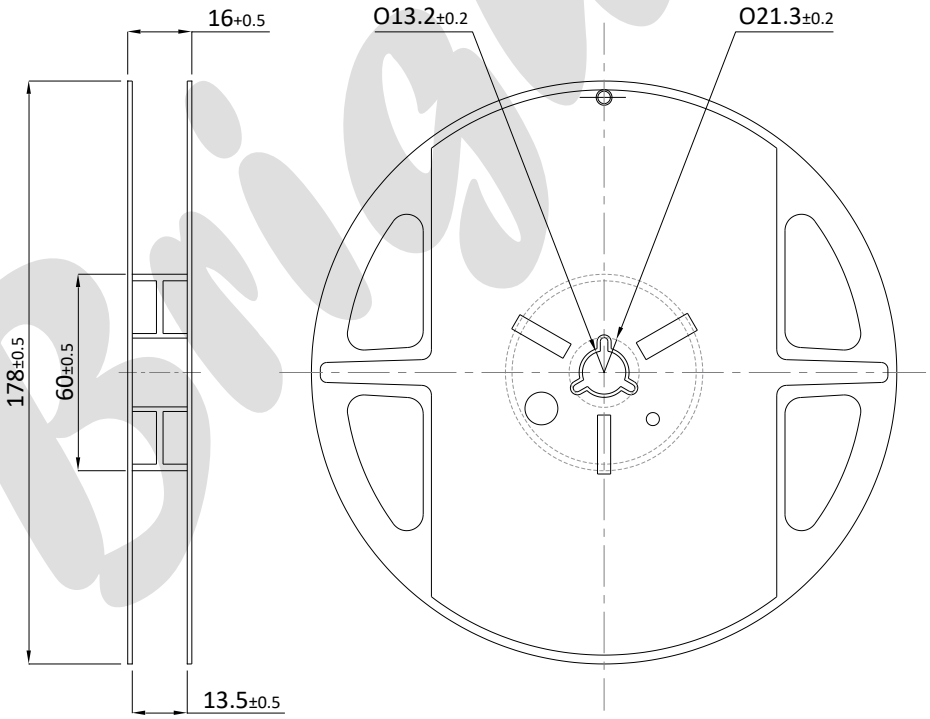
1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

Dimensions of Tape



1. Dimensions are in millimeters.
2. General tolerance is ± 0.1mm.

Dimensions of Reel



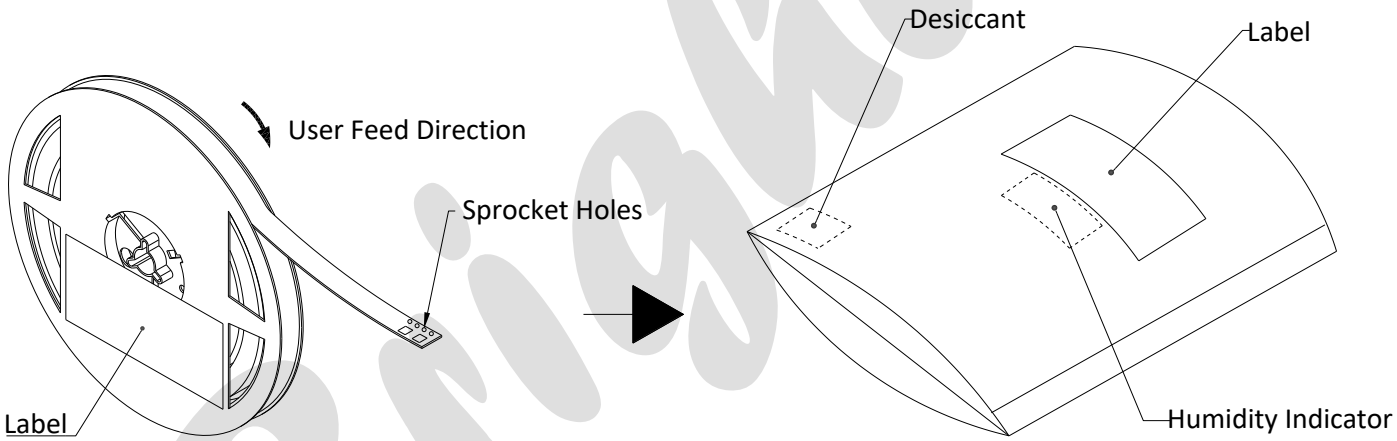
1. Dimensions are in millimeters.
2. 800 pieces per reel.
3. Dimensions acc. to EIA 481-E

Barcode-Product-Label (BPL)

	MSL
Part No:	
O Item:	
N Item:	
Q'TY:	
VF:	(mA)
IV:	(mA)
WL:	(mA)
Lot No:	
XXXX-XXXX XXXX / PLSTXXXX	RoHS PASS

- Part No : Product Number
- O Item : Customer's Product Number
- N Item : Product Name
- Q'TY : Packing Quantity
- VF : Voltage Rank
- IV : Luminous Intensity Rank
- WL : Wavelength Rank
- Lot No : Lot Number
- MSL : MSL Level
- XXXX-XXXX XXXX / PLSTXXXX : Identify Label Number

Dry Packing Process and Materials



1. Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Disclaimer

1. Brightek reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets Brightek published specification for a period of one year from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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