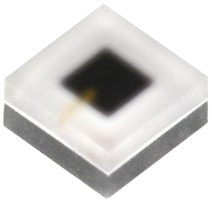
HL1616F94CQ00 Datasheet



Infrared Emitter

1616 Series (940nm) - 130°

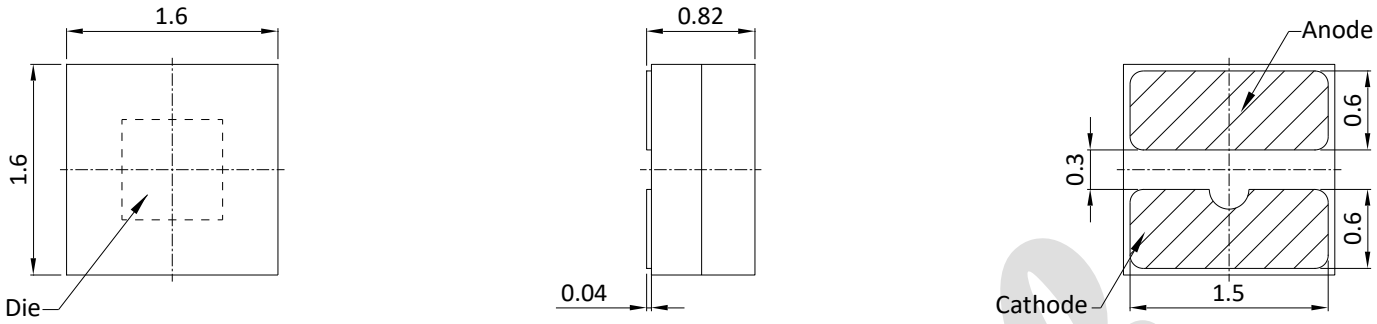
Applications

- Security System
- Facial Recognition
- Automotive
- Gesture Recognition

Features

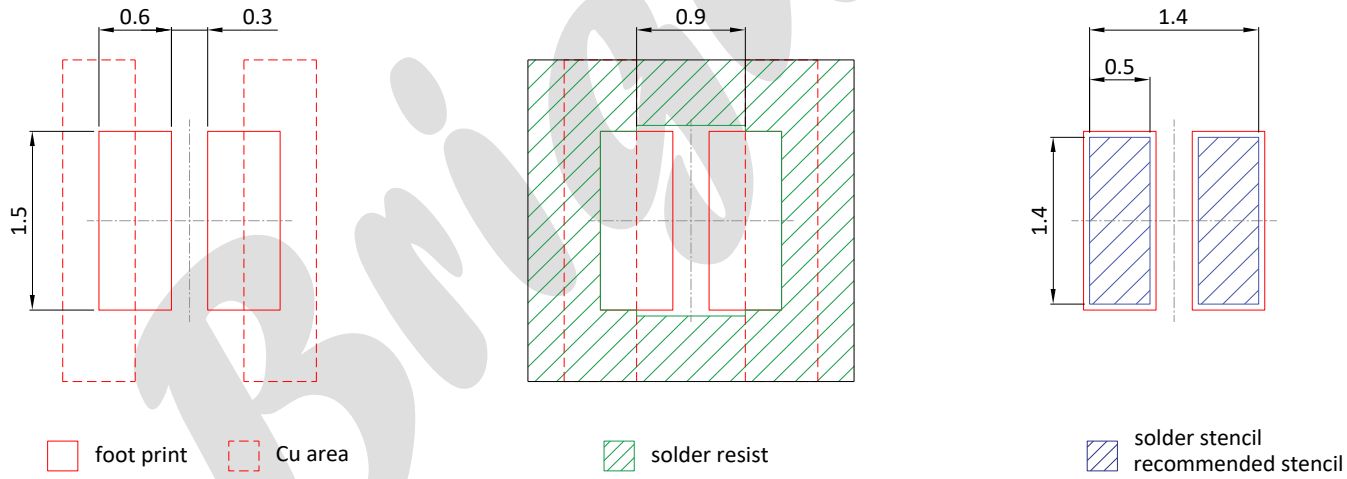
- Package: Clear silicone
- Corrosion robustness class : A
- ESD: 2KV (HBM)
- IR light source with high efficiency
- Single junction emitter
- Qualifications: AEC-Q102 Qualified
- Low thermal resistance (Max. 12 K/W)
- Peak wavelength 940 nm
- Optimized for high current pulse operation
- RoHS 2.0 and REACH compliant
- MSL 1 qualified according to J-STD 020

Dimensional Drawing



1. Dimensions are in millimeters.
2. General tolerance is ± 0.05mm.
3. Lead finish Au.

Recommended Solder 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.	2	A
Reverse voltage	V_R	max.	5	V
Junction temperature	T_j	max.	115	°C
Operating temperature	T_{op}	min.	-40	°C
		max.	85	°C
Storage temperature	T_{stg}	min.	-40	°C
		max.	85	°C
Soldering temperature	T_{sol}	max.	260	°C
Thermal resistance junction	R_{th}	typ.	9	K/W
		max.	12	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 115°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.	55	nm
View angle	$2\theta_{1/2}$	typ.	130	°
Total radiant power	Φ_e	min.	500	mW
		typ.	600	mW
		max.	700	mW
Radiant intensity	I_E	min.	150	mW/sr
		typ.	200	mW/sr
		max.	250	mW/sr
Forward voltage	V_F	min.	1.4	V
		typ.	1.75	V
		max.	2.0	V
Reverse current (V_R=5V)	I_R	max.	10	µA

Brightness Groups

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

Group	min. Φe	max. Φe
PA5	500 mW	600 mW
PA6	600 mW	700 mW

Forward voltage I_F : 1A | tp : 10 ms

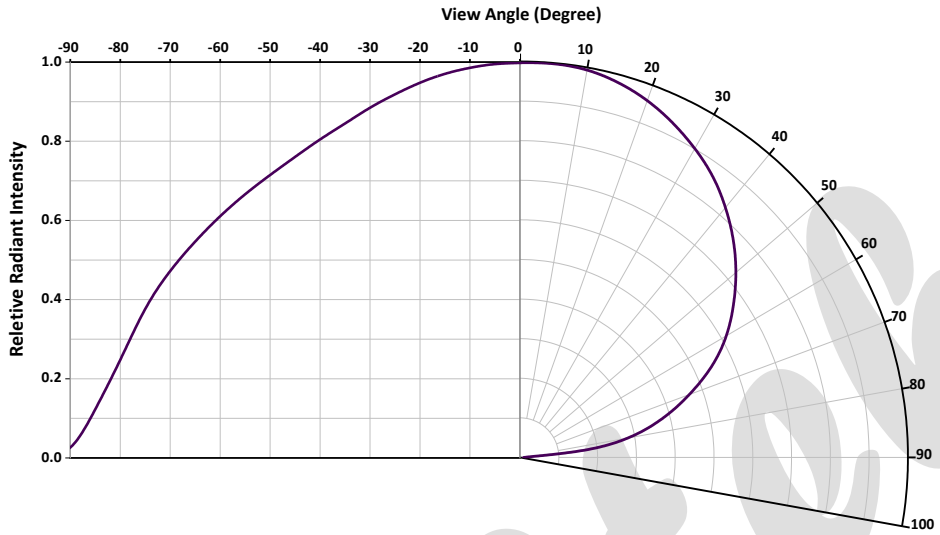
Group	min. V_F	max. V_F
CE	1.4 V	2.0 V

Peak wavelength I_F : 1A | tp : 10 ms

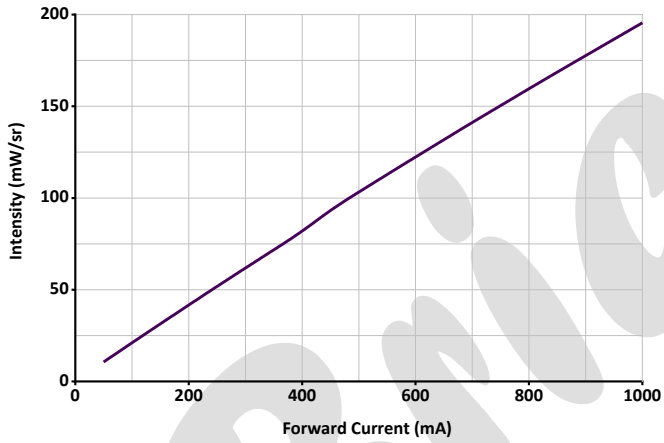
Group	min. λ_p	max. λ_p
F1	930 nm	950 nm

Typical Electrical Optical Characteristics Curves

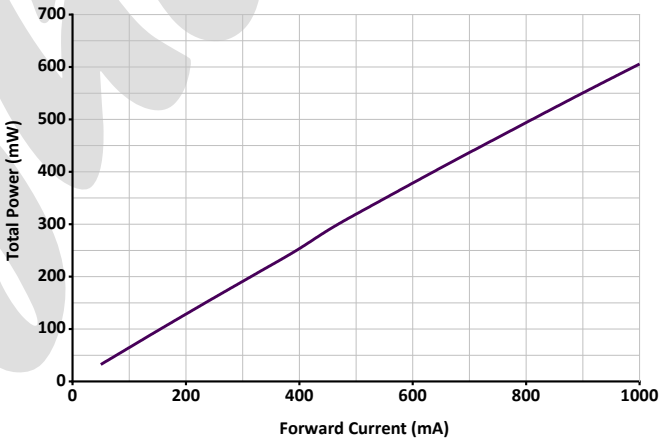
Radiation Characteristics



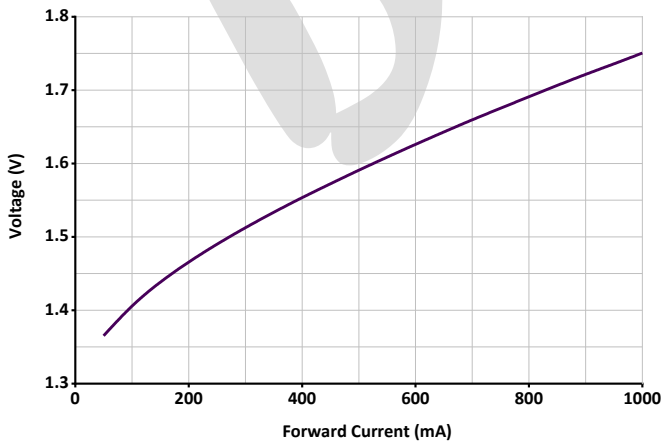
Radiant Intensity



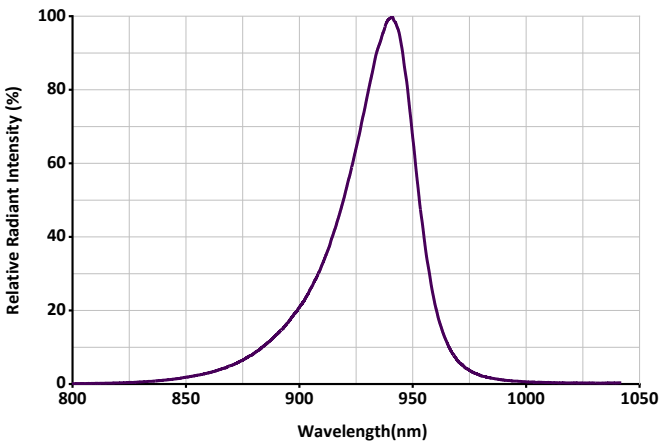
Total radiant power



Forward Voltage

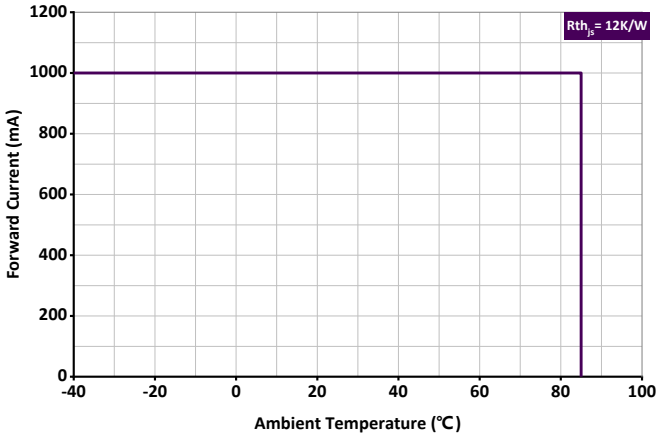


Relative Spectral Emission



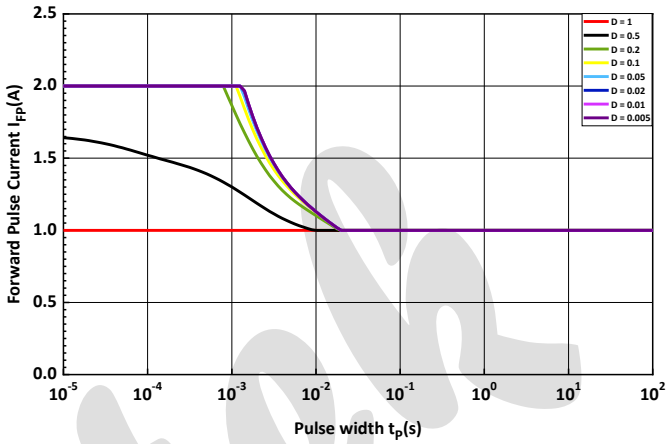
Permissible Forward Current

I_F,max = f (T_S); Rth_{js} = 12 K / W



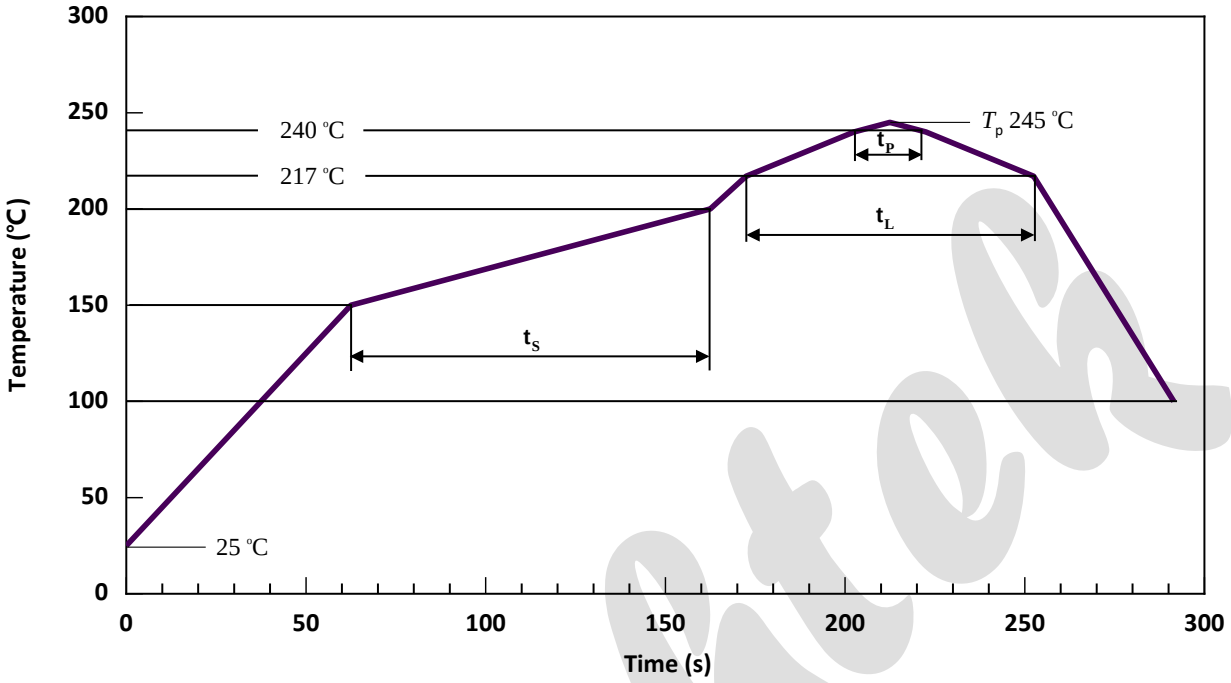
Permissible Pulse Handling Capability

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



Reflow Soldering Profile

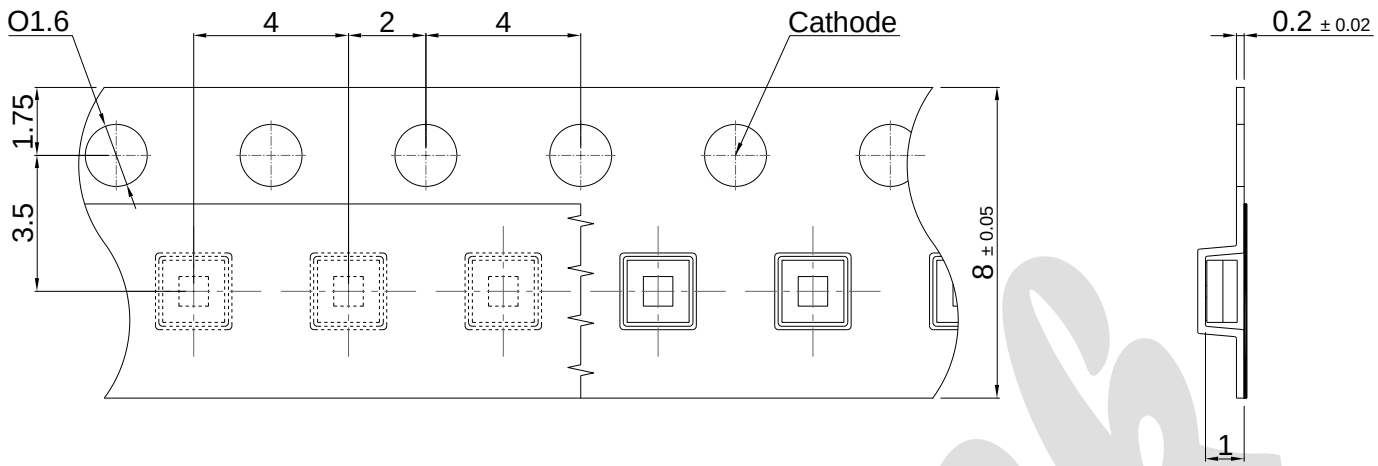
Product complies to MSL Level 1 acc. to JEDEC J-STD-020E



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

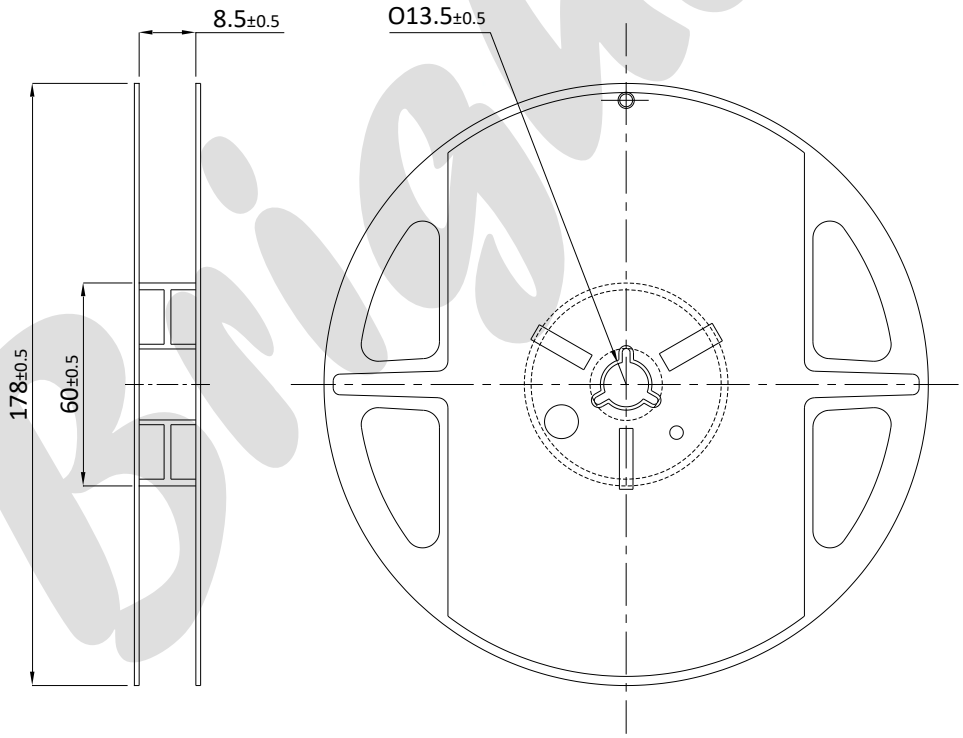
1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

Dimensions of Tape



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

Dimensions of Reel



1. Dimensions are in millimeters.
2. 2000 pieces per reel.
3. Dimensions acc. to EIA 481-E

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.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. Brightek assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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