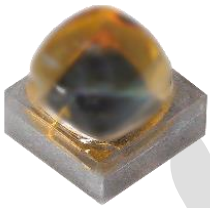
HE1616F85CQ00 Datasheet



Infrared Emitter

1616 Series (850nm) - 80°

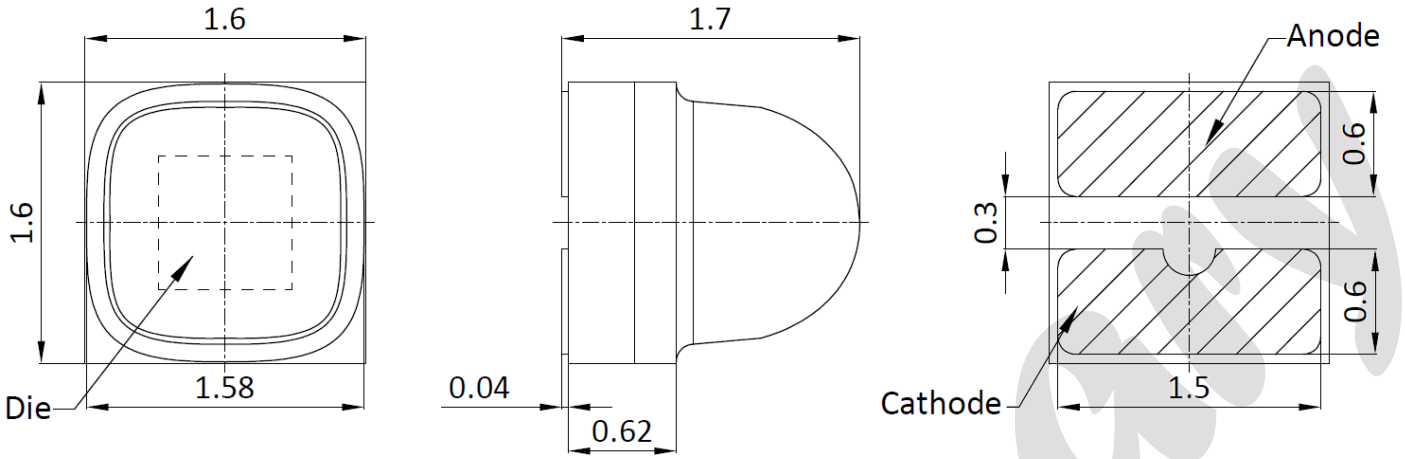
Applications

- Security System
- Facial Recognition
- Automotive
- Gesture Recognition

Features

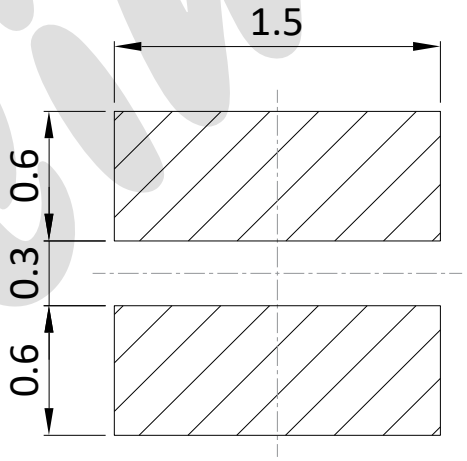
- Package: clear silicone
- Corrosion robustness class : A
- ESD: 2KV (HBM)
- IR light source with high efficiency
- Single junction emitter
- Qualifications: AEC-Q102 Qualified
- Low thermal resistance (Max. 12 K/W)
- Peak wavelength 850 nm
- Optimized for high current pulse operation
- RoHS 2.0 and REACH compliant
- MSL 1 qualified according to J-STD 020

Dimensional Drawing



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

Recommended Solder Pad



Maximum Ratings

T_A : 25 °C

Parameter	Symbol		Rating	
Forward current	I_F	max.	1	A
Power consumption	P_{tot}	max.	2.0	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.	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.	8.5	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.	850	nm
Spectral bandwidth	$\Delta\lambda$	typ.	45	nm
View angle	$2\theta_{1/2}$	typ.	80	°
Total radiant power	Φ_e	min.	400	mW
		typ.	600	mW
		max.	700	mW
Radiant intensity	I_E	min.	250	mW/sr
		typ.	310	mW/sr
		max.	360	mW/sr
Forward voltage	V_F	min.	1.4	V
		typ.	1.7	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
PA4	400 mW	500 mW
PA5	500 mW	600 mW
PA6	600 mW	700 mW

Forward voltage I_F : 1A | tp : 10 ms

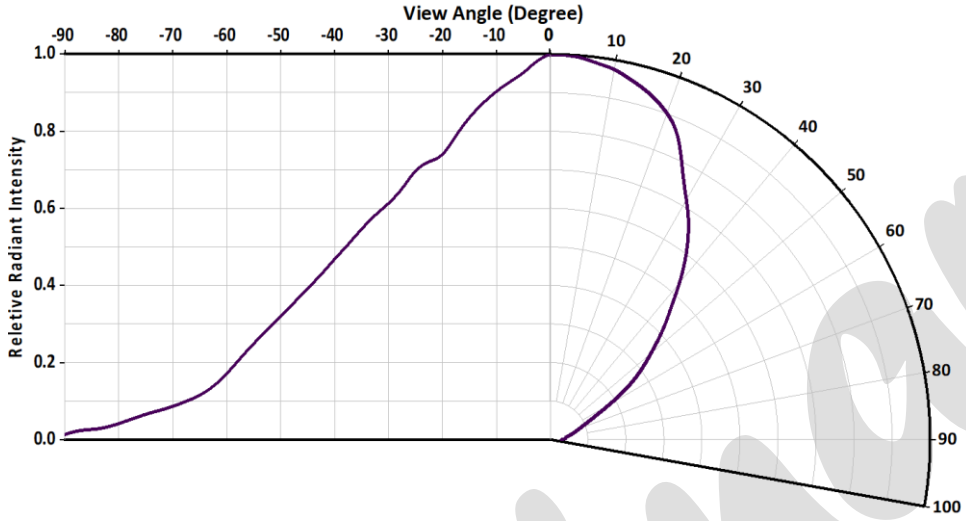
Group	min. V_F	max. V_F
CE	1.4 V	2.0 V

Peak wavelength I_F : 1A | tp : 10 ms

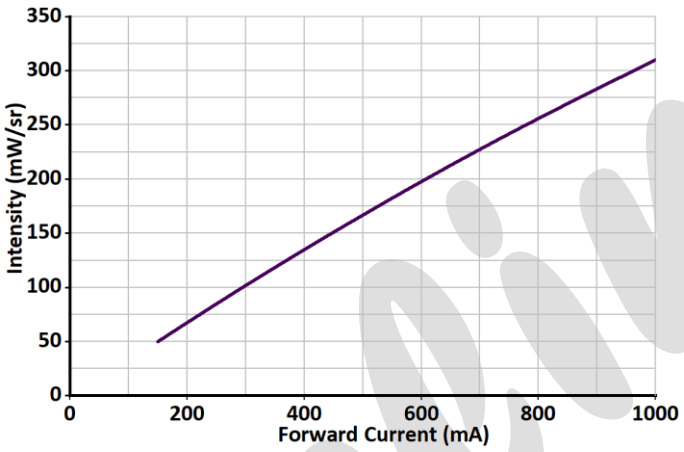
Group	min. λ_p	max. λ_p
F3	840 nm	870 nm

Typical Electrical Optical Characteristics Curves

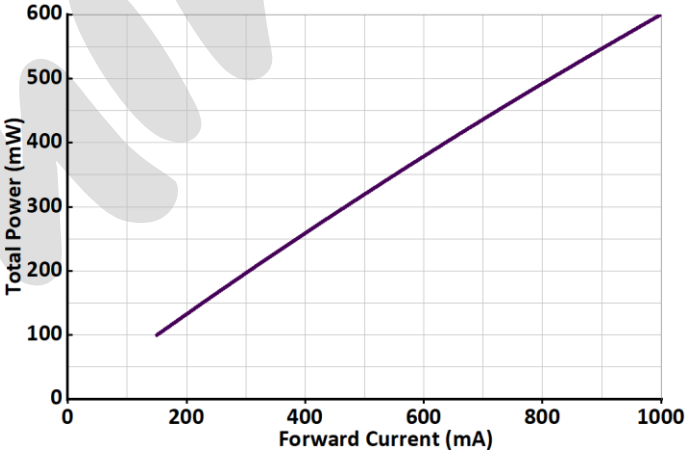
Radiation Characteristics



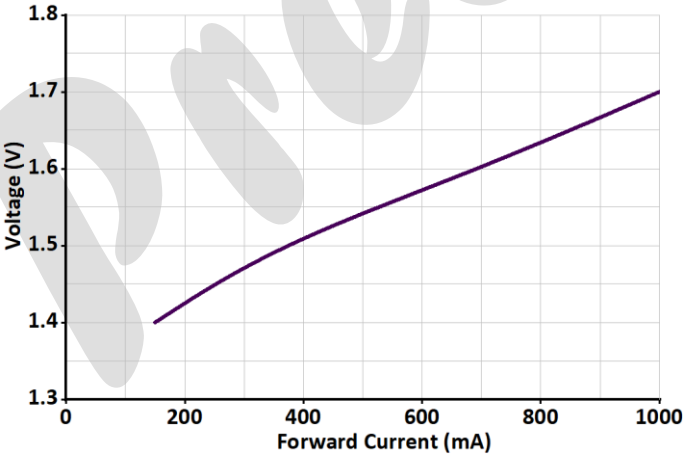
Radiant Intensity



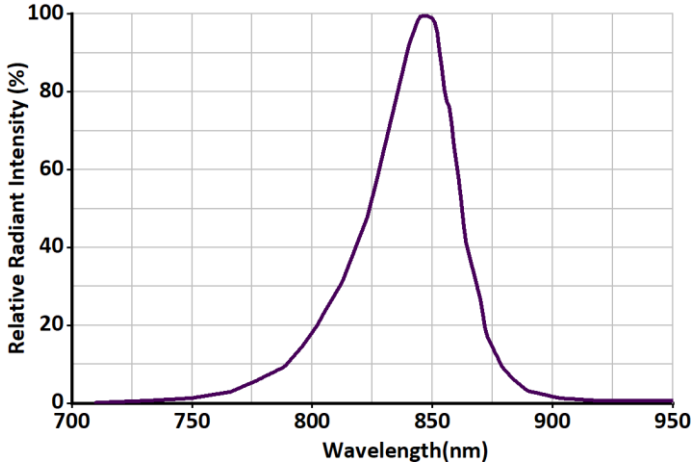
Total radiant power



Forward Voltage

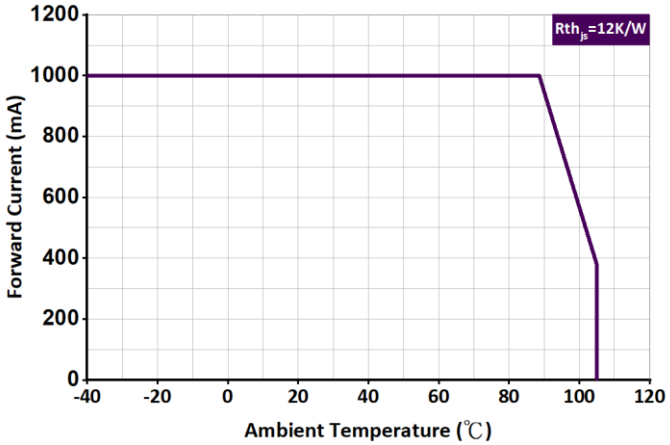


Relative Spectral Emission



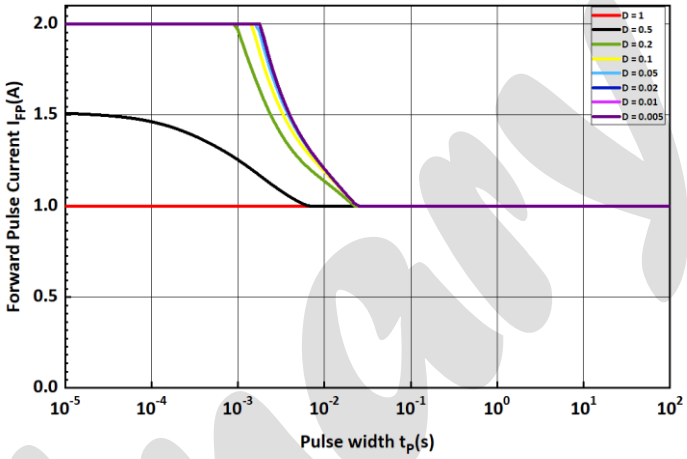
Permissible Forward Current

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



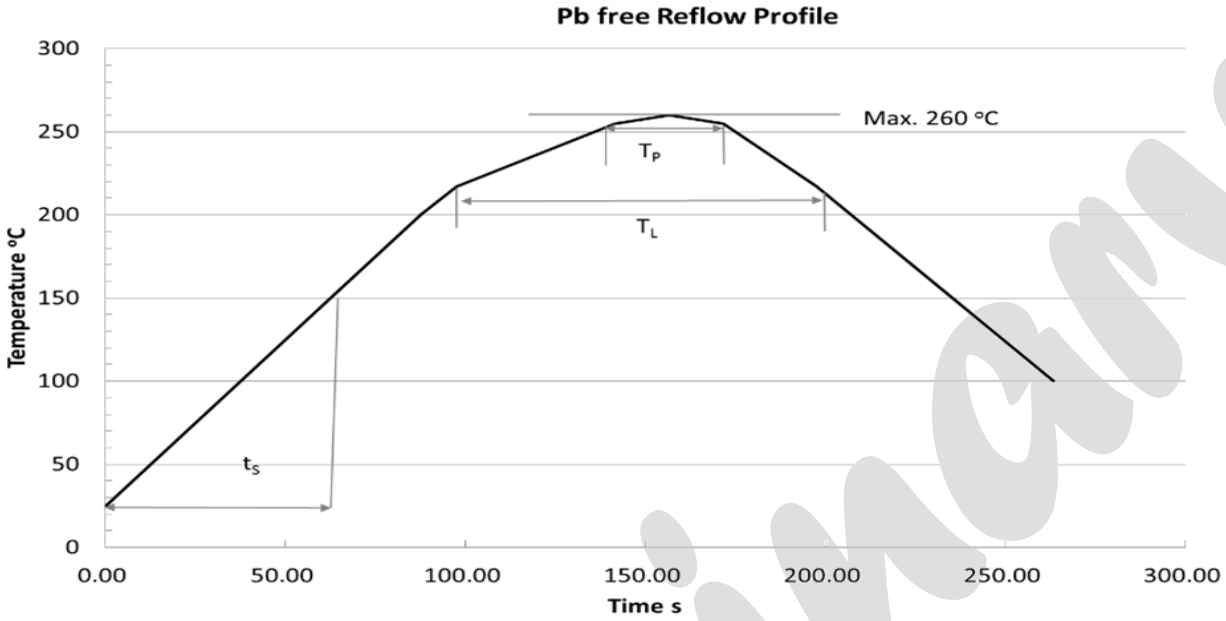
Permissible Pulse Handling Capability

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



Reflow Soldering Profile

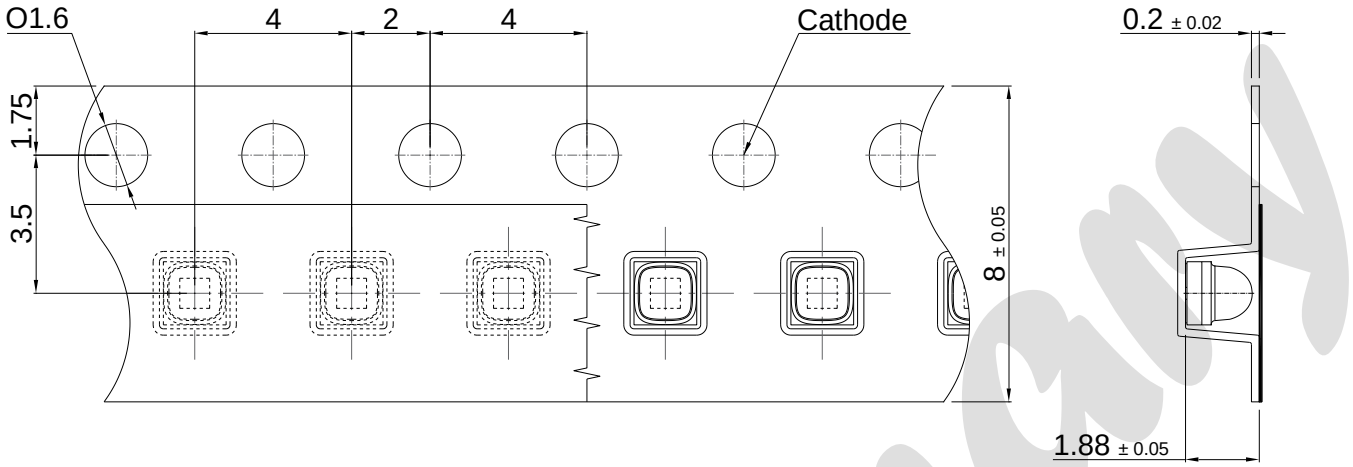
Product complies to MSL Level 1 acc. to JEDEC J-STD-020E



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

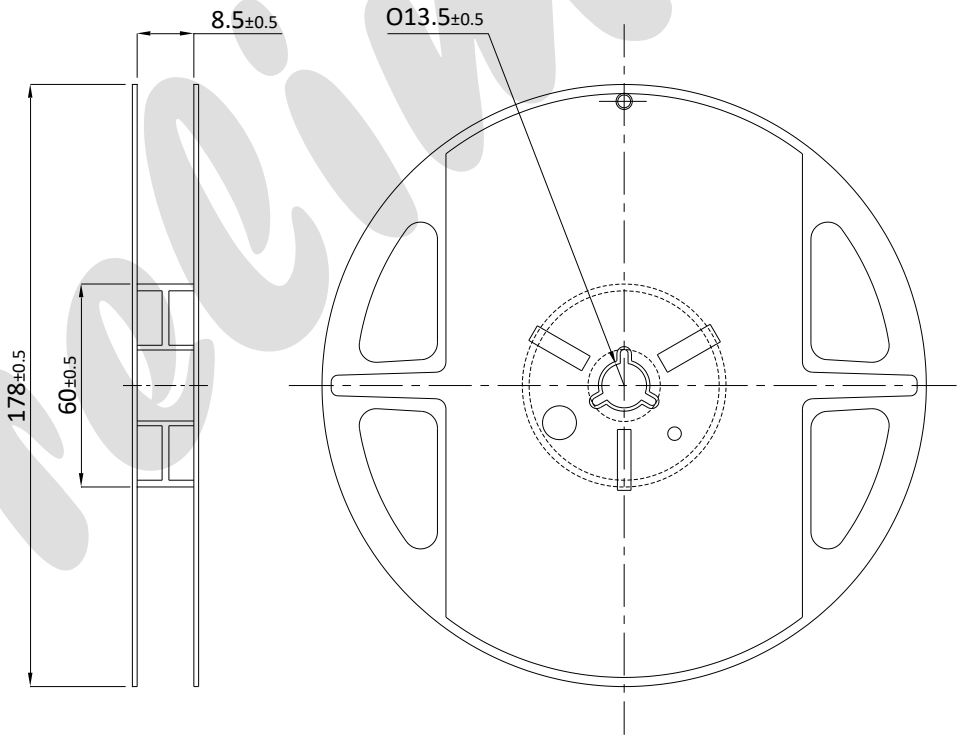
1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

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.
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