



SF3838F85CQ01 Datasheet

Infrared Emitter

3838 Series (850nm) - 50°



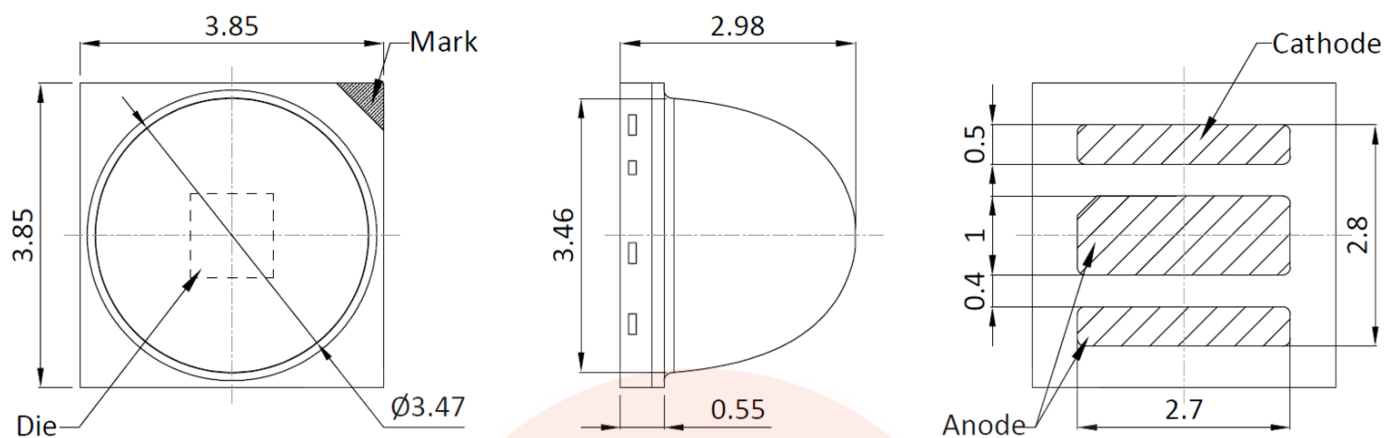
Applications

- Security System
- Automotive

Features

- Package: clear silicone
- Corrosion robustness class: 3B
- ESD: 2KV (HBM : MIL STD 883 Class 2)
- IR light source with high efficiency
- Dual junction emitter
- Qualifications: AEC-Q102 Qualified
- Low thermal resistance (Max. 9 K/W)
- Peak wavelength 850 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 $\pm 0.1\text{mm}$.



Maximum Ratings

T_A : 25 °C

Parameter	Symbol		Rating
Forward current	I _F	max.	1.5 A
Pulse forward current	I _{PF}	max.	5 A
Power consumption	P _{tot}	max.	5.7 W
Reverse voltage	V _R	max.	5 V
Junction temperature	T _j	max.	145 °C
Operating temperature	T _{op}	min.	-40 °C
		max.	125 °C
Storage temperature	T _{stg}	min.	-40 °C
		max.	125 °C
Soldering temperature	T _{sol}	max.	260 °C
Thermal resistance junction	R _{th}	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 145°C.

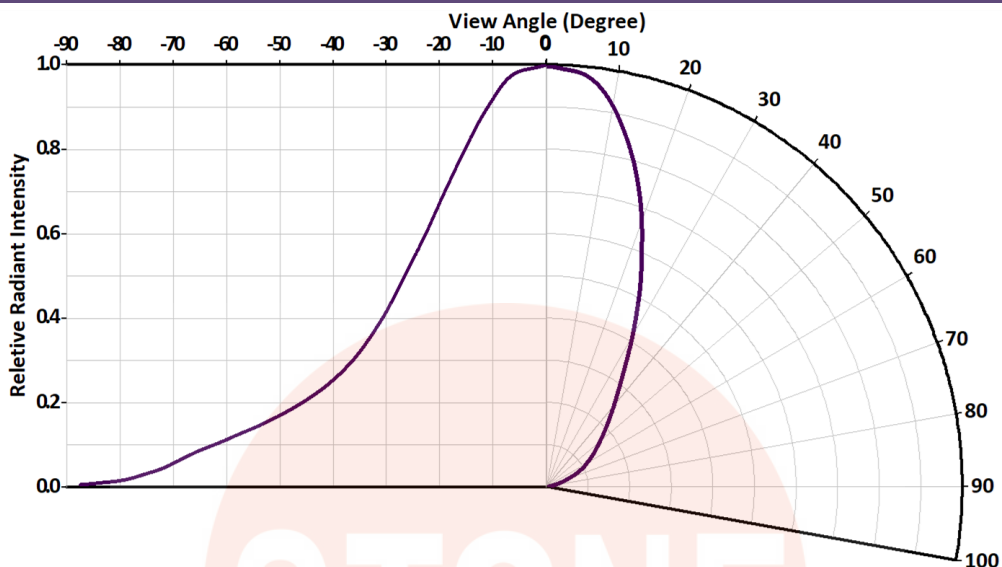
Characteristics

$I_F: 1A \mid t_p: 10\text{ ms} \mid T_A: 25^\circ\text{C}$

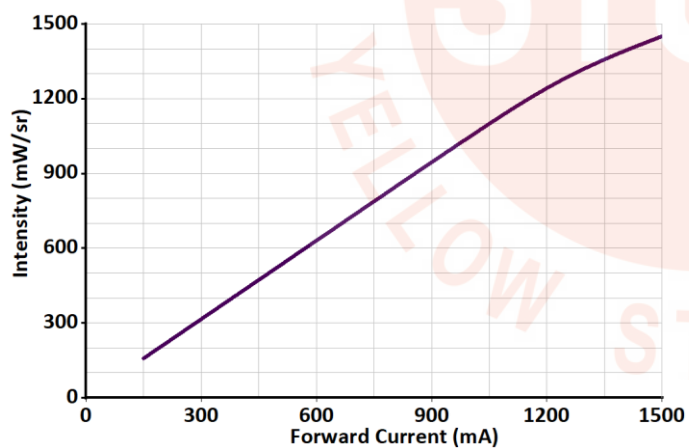
Parameter	Symbol		Values
Peak wavelength	λ_p	typ.	850 nm
Spectral bandwidth	$\Delta\lambda$	typ.	35 nm
View angle	$2\theta_{1/2}$	typ.	50 °
Total radiant power	Φ_e	typ.	1300 mW
		max.	1500 mW
Total radiant power $I_F = 1.5\text{ A}; t_p = 10\text{ms}$	Φ_e	typ.	1800 mW
		max.	2100 mW
Radiant intensity	I_E	typ.	1050 mW/sr
		max.	1250 mW/sr
Radiant intensity $I_F = 1.5\text{ A}; t_p = 10\text{ms}$	I_E	typ.	1450 mW/sr
		max.	1650 mW/sr
Forward voltage	V_F	typ.	3.2 V
		max.	3.6 V
Forward voltage $I_F = 1.5\text{ A}; t_p = 10\text{ms}$	V_F	typ.	3.4 V
		max.	3.8 V
Forward voltage $I_F = 5\text{ A}; t_p = 100\text{ }\mu\text{s}$	V_F	typ.	4.4 V
		max.	5.0 V
Reverse current ($V_R=5V$)	I_R	max.	10 μA

Typical Electrical Optical Characteristics Curves

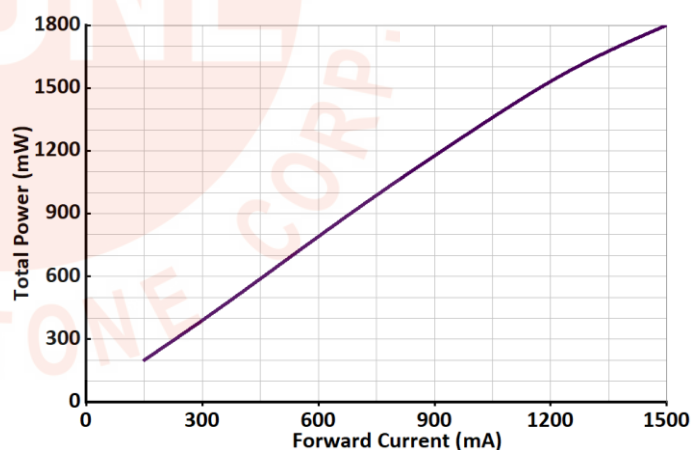
Radiation Characteristics(L=0)



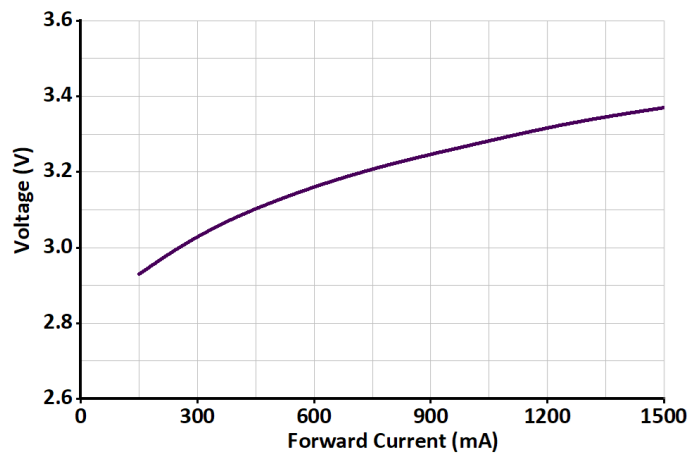
Relative radiant Intensity



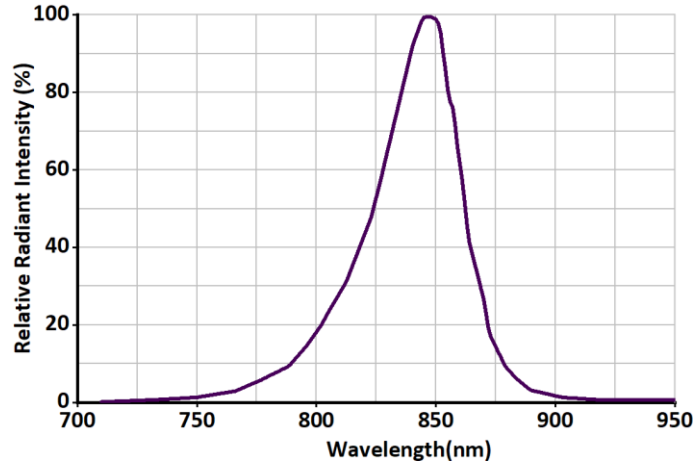
Relative total radiant power



Forward current

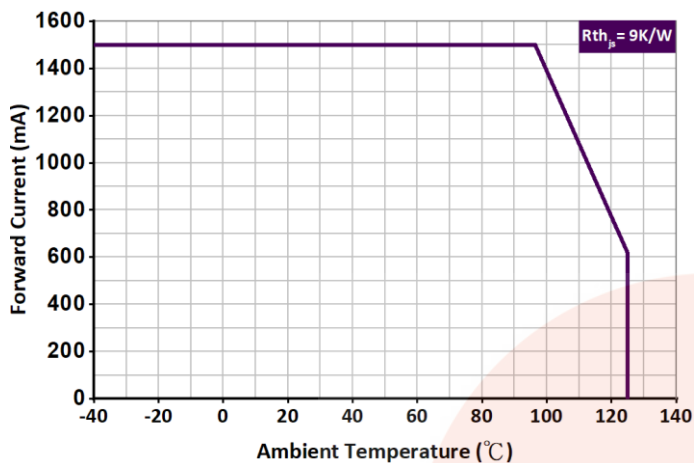


Relative Spectral Emission



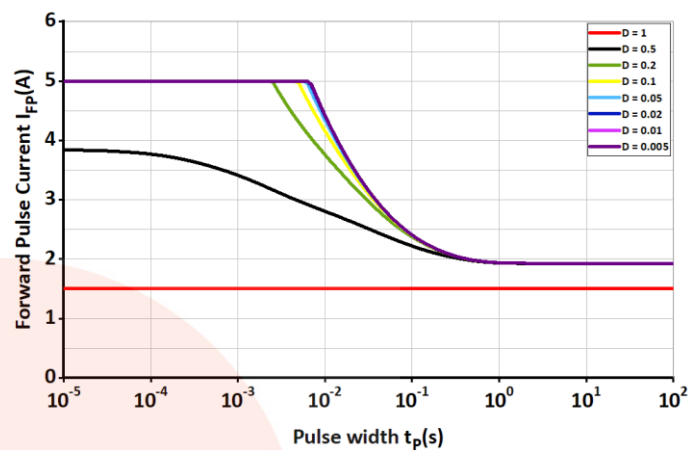
Permissible Forward Current

$$I_{F,max} = f(T_S); R_{th_{jS}} = 9K/W$$



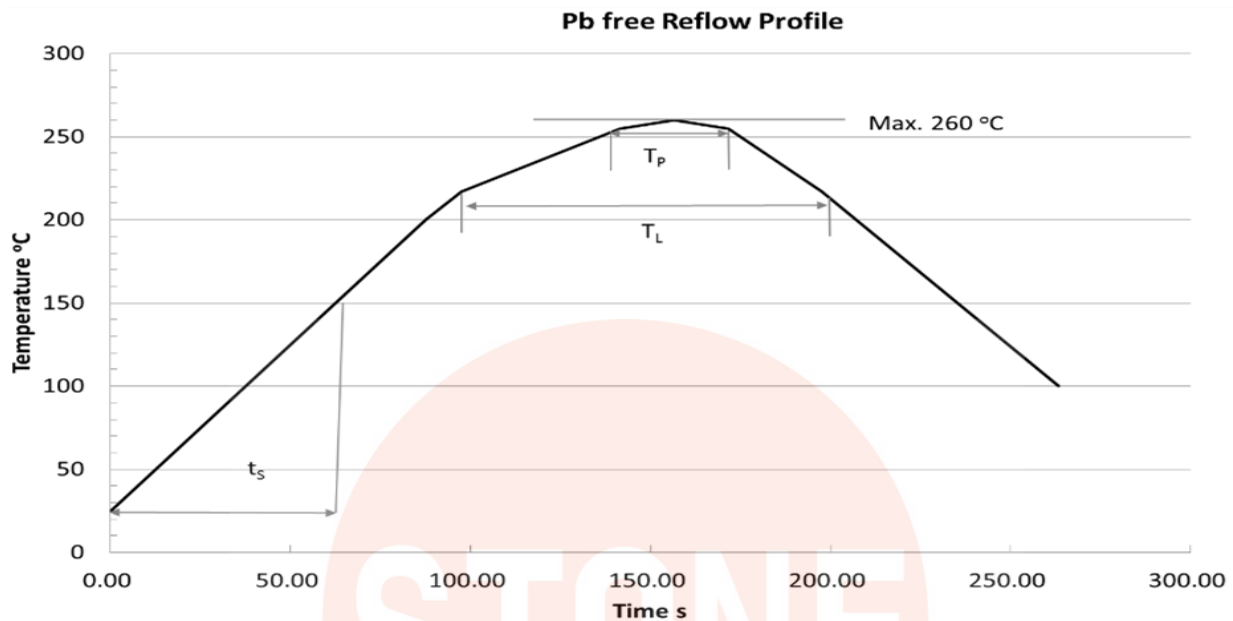
Permissible Pulse Handling Capability

$$I_F = f(t_p); D = \text{Duty cycle}; T_S = 85^\circ C$$



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 T_P - 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.