



## VC850S-SMD

- Infrared VCSEL
- 850 nm, 0.5 mW
- Single Transverse and Longitudinal Mode
- SMD 0603
- Viewing angle 8°



### Description

**VC850M-SMD** is a single mode infrared VCSEL emitting at typically 850 nm with rated output power of 0.5 mW cw, mounted into a SMD 0603 package and sealed with epoxy resin. The VCSEL works under low forward current and voltage.

### Maximum Ratings

Parameter	Symbol	Values		Unit
		Min.	Max.	
Forward Current	$I_F$		8	mA
Reverse Voltage (@ 10 $\mu$ A)	$V_F$		5	V
Operating Temperature	$T_{CASE}$	- 10	+ 50	°C
Storage Temperature	$T_{STG}$	- 40	+ 85	°C
Lead Solder Temperature *	$T_{SLD}$		+ 260	°C

\* must be completed within 10 seconds

### Electro-Optical Characteristics (T<sub>CASE</sub>=25°C)

Parameter	Symbol	Min.	Values		Unit
			Typ.	Max.	
Emission Wavelength	$\lambda_{Peak}$	830	850	860	nm
Optical Output Power	$P_O$	0.3	0.5	0.7	mW
Beam Divergence	$\Theta$		8		°
Threshold Current	$I_{TH}$		2	3	mA
Operating Current	$I_F$		3.5		mA
Operating Voltage	$V_F$		1.8	2.1	V
Breakdown Voltage	$V_B$		-10		V
Slope Efficiency	$H$	0.2	0.35		mW/mA
Dynamic Resistance	$R_D$		70	100	$\Omega$
Side Mode Suppression Ratio	$SMSR$	15			dB
Max. Single Mode Power	$P_{SM}$		1.0	1.3	mW

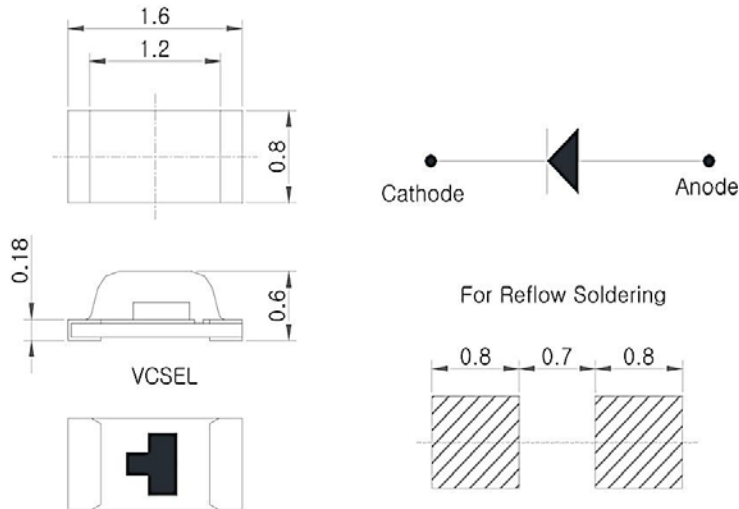
### Thermal Characteristics

Parameter	Symbol	Min.	Values		Test Conditions	Unit
			Typ.	Max.		
I <sub>TH</sub> Temperature Variation	$\Delta I_{TH}$		1.5		T <sub>C</sub> =-10 to 50°C	mA
$\eta$ Temperature Variation	$\Delta \eta / \Delta T$		-0.5		T <sub>C</sub> =-10 to 50°C, 3.5mA	%/°C
$\lambda$ Temperature Variation	$\Delta \lambda / \Delta T$		0.06		T <sub>C</sub> =-10 to 50°C, 3.5mA	nm/°C



## Outline Dimensions

SMD



All Dimensions in mm

## Precautions

### Static Electricity:

VCSELs are **sensitive to electrostatic discharge (ESD)**. Precautions against ESD must be taken when handling or operating these VCSELs. Surge voltage or electrostatic discharge can result in complete failure of the device.

### Safety Advice:

This VCSEL emits concentrated infrared light which can be **hazardous to the human eye and skin**. This diode is classified as CLASS 3B laser product according to **IEC 60825-1** and **21 CFR Part 1040.10** Safety Standards.



### Operation:

**Do only operate VCSELs with a current source.**

Running these LEDs from a voltage source will result in complete failure of the device.

Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.