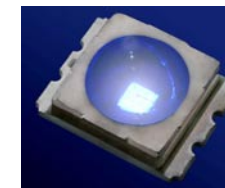


Features

- Industry's brightest 1-watt package
- SMD Package
- Integrated Lens
- Suitable for IR Reflow
- No lead, mercury or UV
- White + range of colours
- Maximum operating life
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear epoxy Lambertian pattern lens
- Available on tape & reel for high-volume assembly



Electro / Optical Characteristics White Lamp $I_F = 350 \text{ mA}$ $T_a = 25^\circ\text{C}$

Part Number	Emitting Colour	Die Material	Colour Temperature		Forward Voltage V_F max	Thermal Resistance	Luminous flux		Viewing \angle 20½
			min	max			min	max	
FEL- SM1WWWC	White	InGaN/SiC	4500	8000	4.0	17	-	42	100
Units			°K		VDC	°C / W	lm		deg

Electro / Optical Characteristics Coloured Lamps $I_F = 350 \text{ mA}$ $T_a = 25^\circ\text{C}$

Part Number	Emitting Colour	Die Material	Wavelength Dominant λ_d		Forward Voltage V_F max	Thermal Resistance	Luminous flux		Viewing \angle 20½
			min	max			min	max	
FEL- SM1WRWC	Red	AlGaInP	620	635	3.0	17	-	34	100
FEL- SM1WYWC	Yellow	AlGaInP	590	600	3.0	17	-	27	100
FEL- SM1WGWC	Green	InGaN/SiC	520	535	4.0	17	-	45	100
FEL- SM1WCWC	Cyan	InGaN/SiC	500	510	4.0	17	-	30	100
FEL- SM1WBWC	Blue	InGaN/SiC	465	475	4.0	17	-	19	100
Units			nm		VDC	°C / W	lm		deg

Maximum Ratings $T_a = 25^\circ\text{C}$

Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	350	mA
Reverse Voltage	$I_R = 10 \mu\text{A}$	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

Notes:

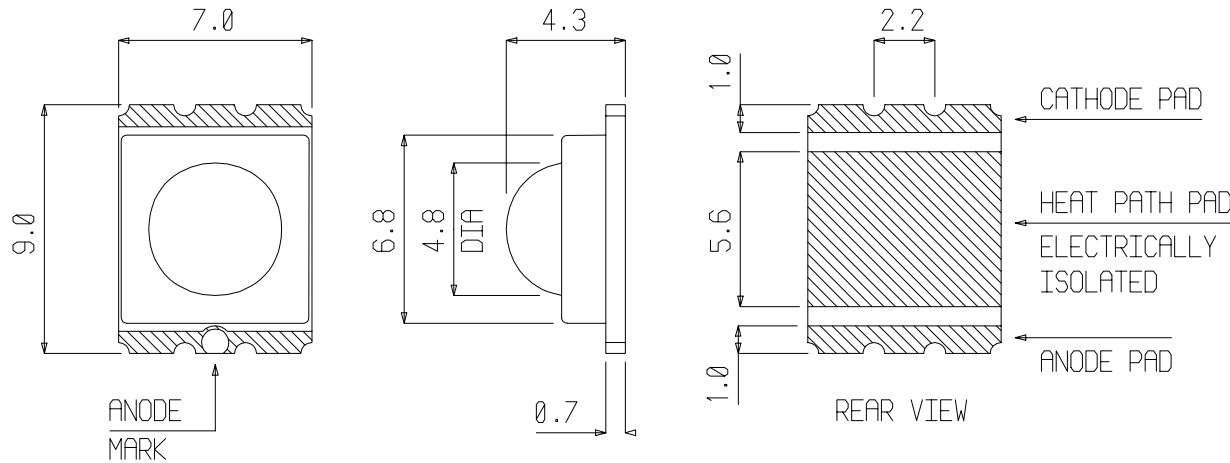
Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

Thermal Resistance is specified junction to solder point.

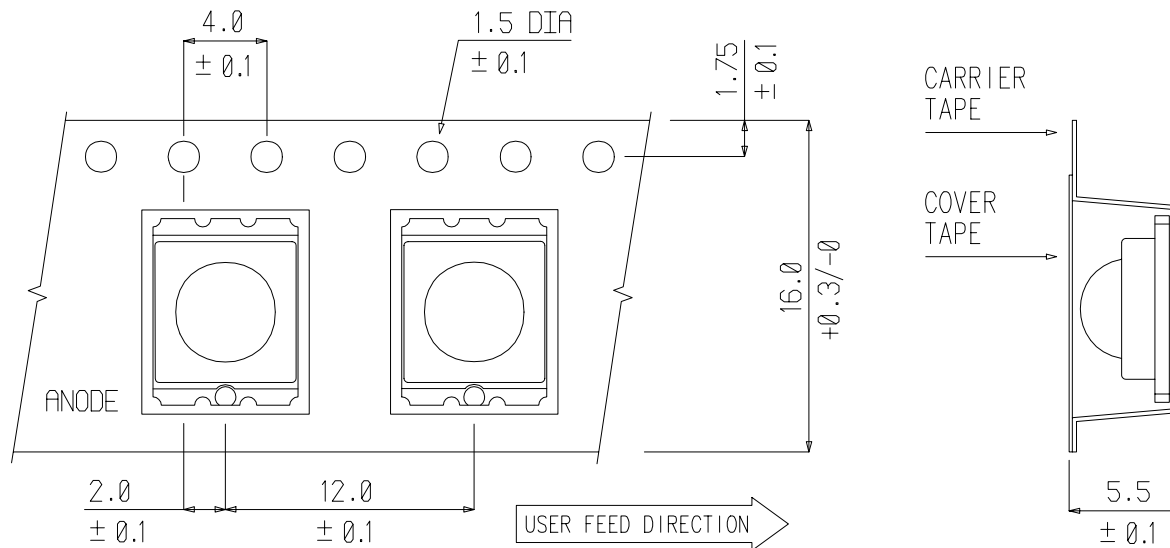
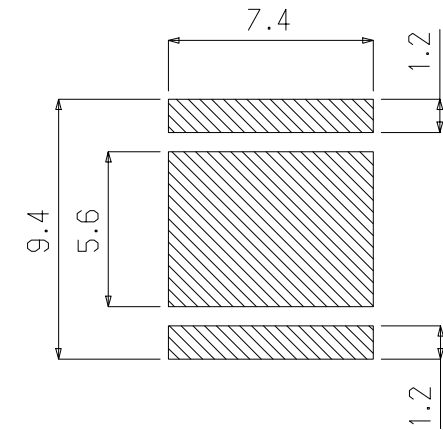
Temperature coefficient of Voltage: -2.8 to -3.0mV/°C.

It is the responsibility of the customer to verify the suitability of the product for the application.

Package Outline



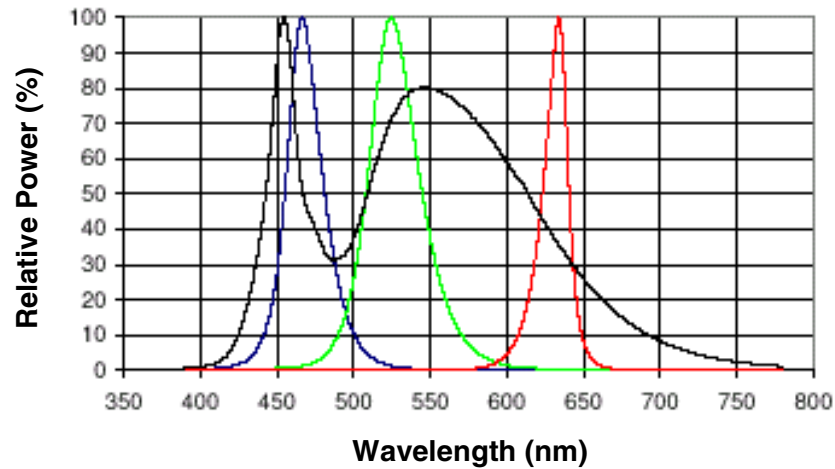
Solder Pad Pattern



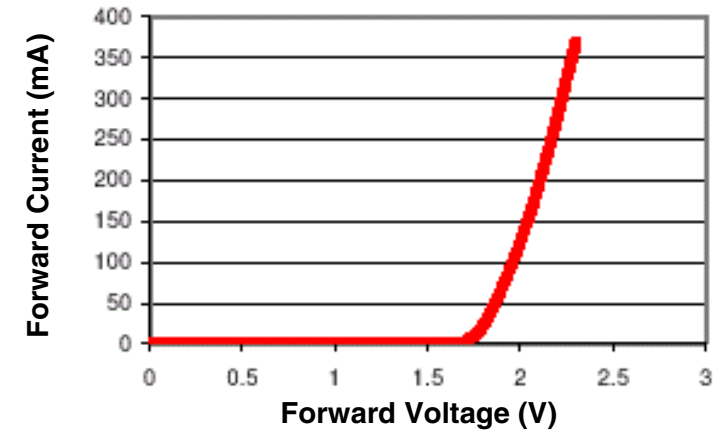
Tol ± 0.25 mm unless stated,
Dimensions in mm

Tape Dimensions

Relative Spectral Power Distribution

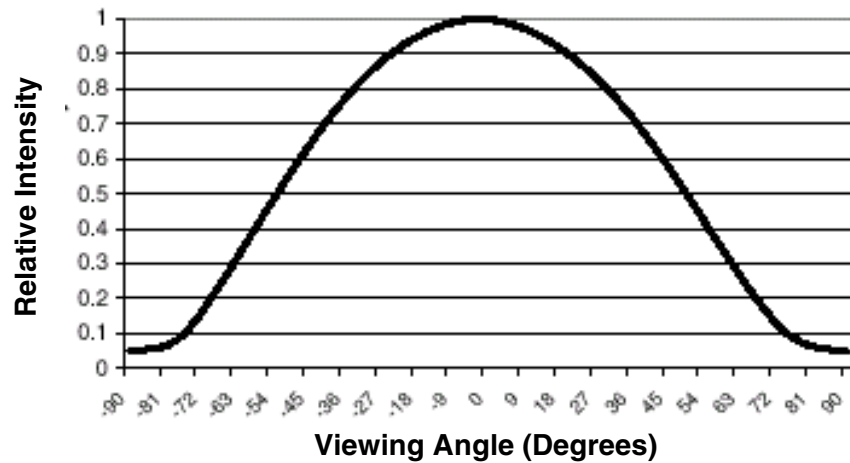


Forward Current vs. Forward Voltage

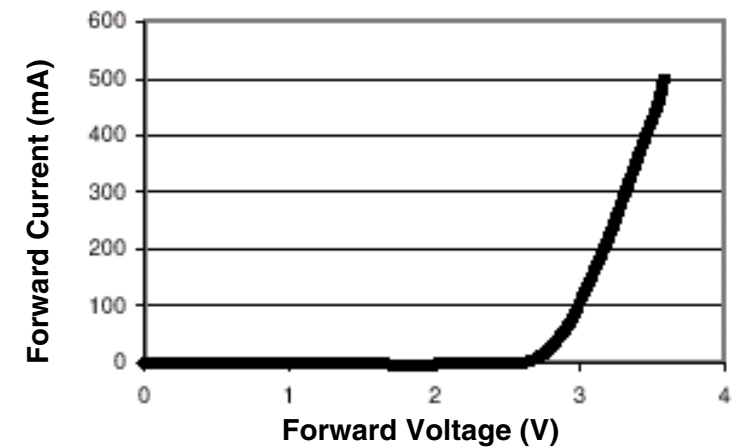


Red / Yellow

Angular Intensity



White



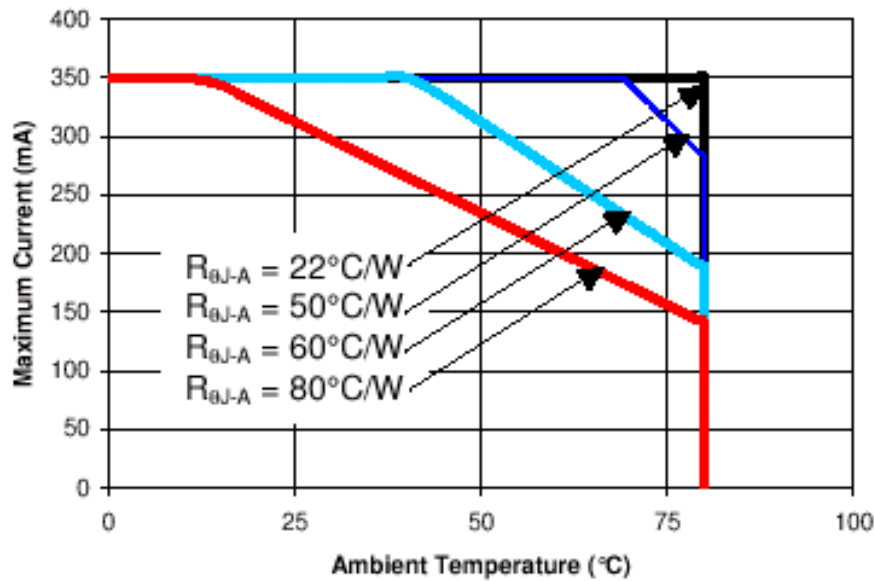
Blue / Cyan / Green / White

T_a = 25°C

Thermal Design

The maximum forward current is determined by the thermal resistance between the LED junction and ambient.

Given an existing thermal resistance of 17 °C/W between the junction and solder point, it is crucial for the application design to minimize the thermal resistance from solder point to ambient in order to optimize lamp life and optical characteristics.

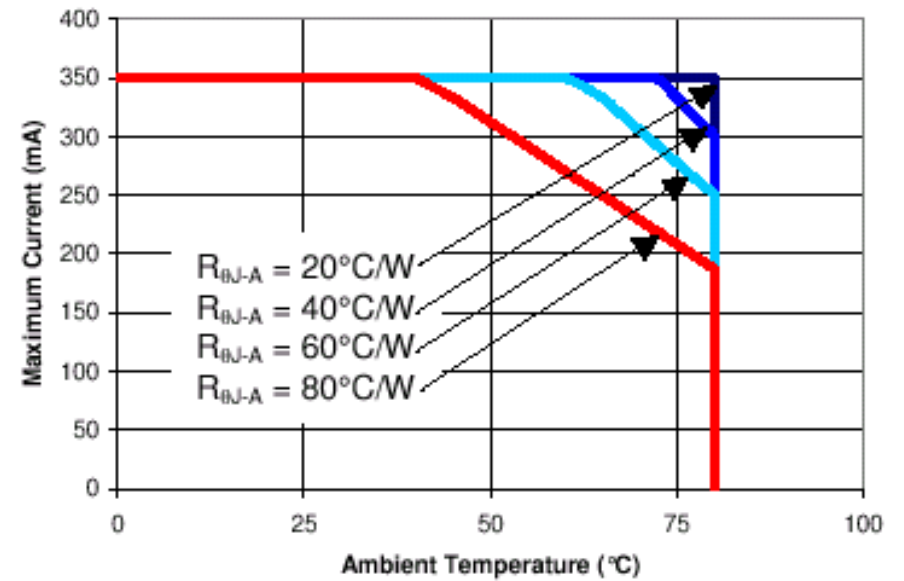


Current derating: Blue / Cyan / Green / White

Heat management

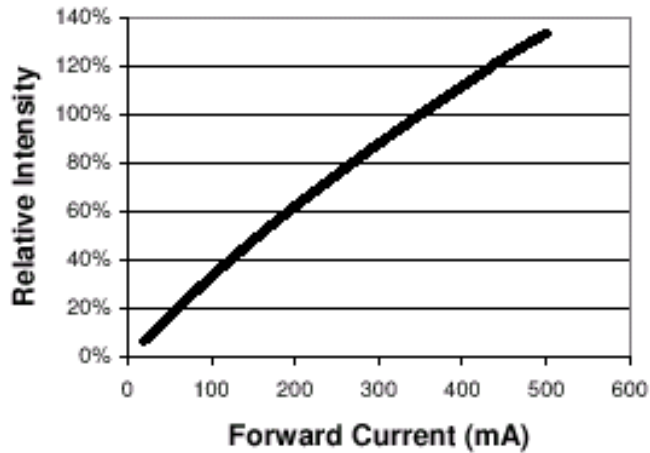
Heat management is critical when designing LED-based applications. The coefficient of temperature increase per input of electric power at room temperature is about .05°C/mW at the LED's active layer or higher when LEDs are densely mounted.

Operating current should be decided after considering the ambient maximum temperature when the LEDs are illuminating.

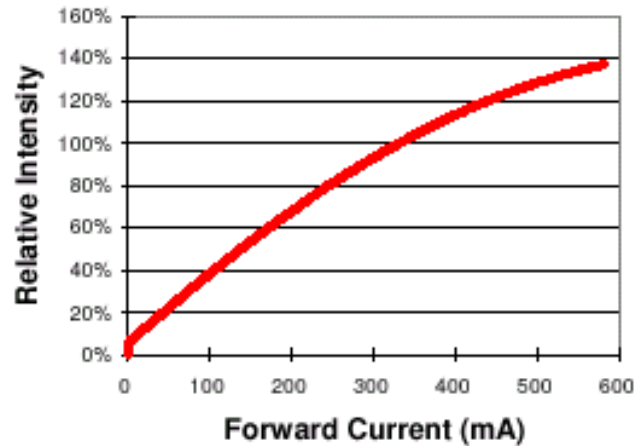


Current derating: Red / Yellow

Relative Intensity vs. Current



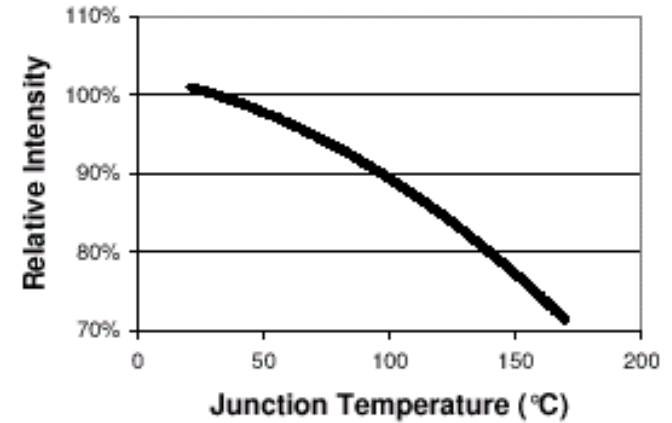
Blue / Cyan / Green / White



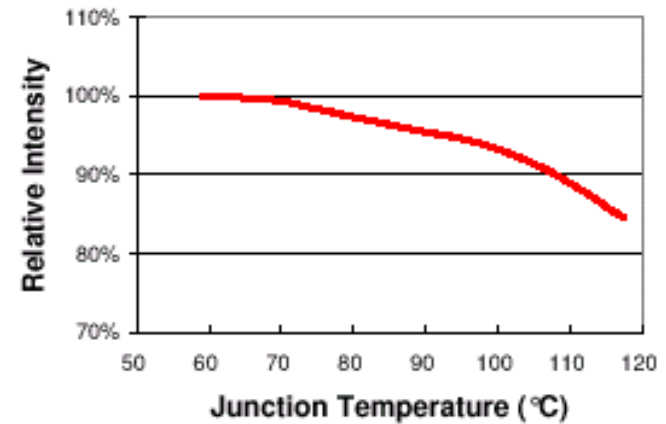
Red / Yellow

T_a = 25°C

Relative Intensity vs. Temperature at I_F = 350 mA



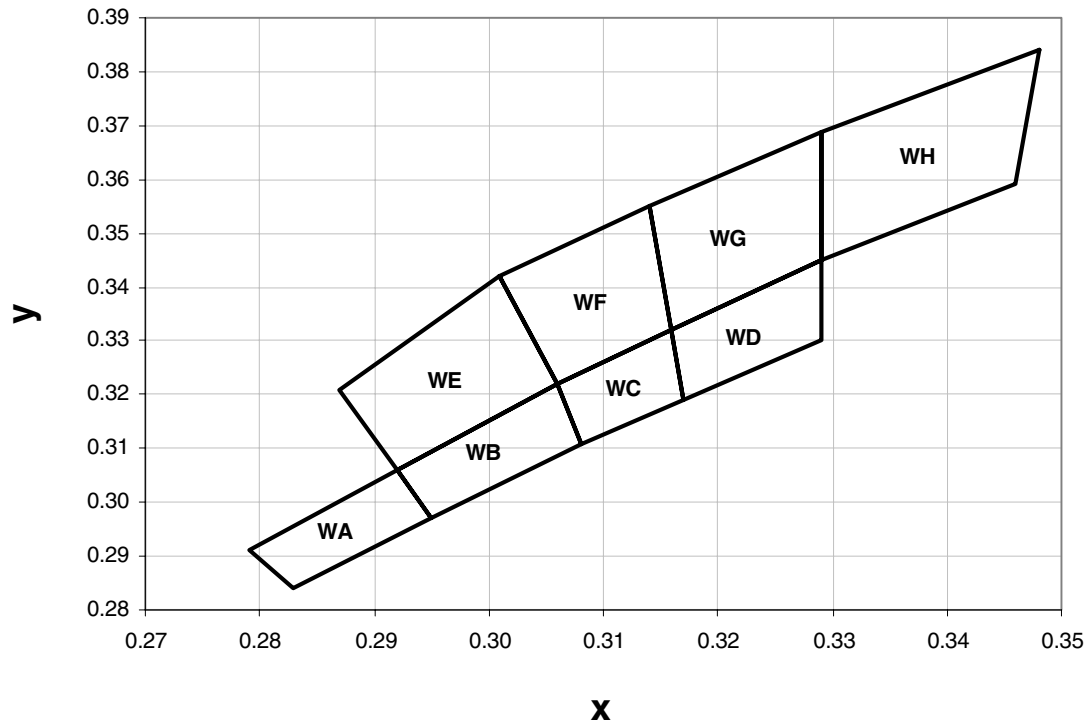
Blue / Cyan / Green / White



Red / Yellow

Chromaticity Ranking

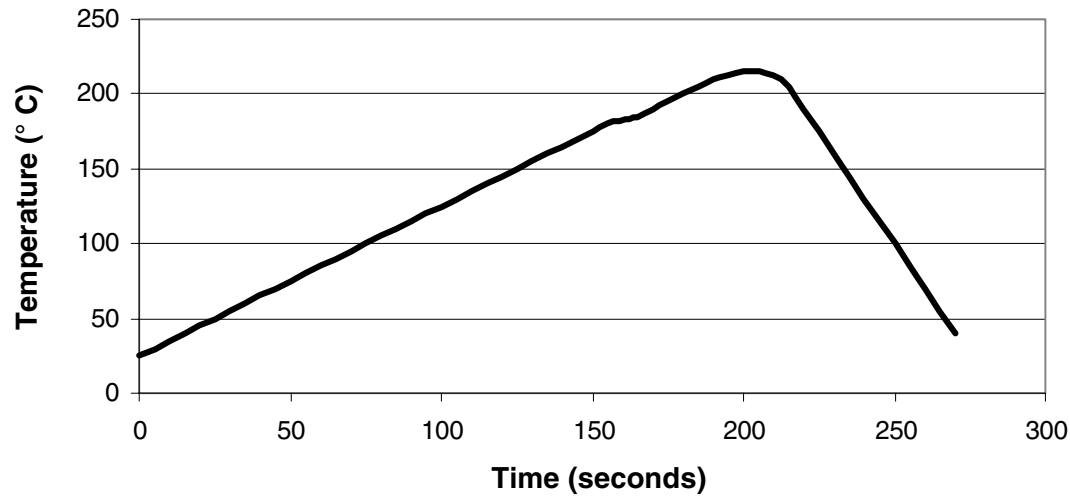
White Lamps are binned according to CIE 1931 chromaticity coordinates and brightness into groups as shown below:



Group Code	x	y
WA	0.292	0.306
	0.295	0.297
	0.283	0.284
	0.279	0.291
WB	0.306	0.322
	0.308	0.311
	0.295	0.297
	0.292	0.306
WC	0.316	0.332
	0.317	0.319
	0.308	0.311
	0.306	0.322
WD	0.329	0.345
	0.329	0.33
	0.317	0.319
	0.316	0.332
WE	0.301	0.342
	0.306	0.322
	0.292	0.306
	0.287	0.321
WF	0.314	0.355
	0.316	0.332
	0.306	0.322
	0.301	0.342
WG	0.329	0.369
	0.329	0.345
	0.316	0.332
	0.314	0.355
WH	0.348	0.384
	0.346	0.359
	0.329	0.345
	0.329	0.369

Soldering

IR reflow soldering profile
(peak at 215°C)



Pb-free IR reflow
soldering profile

