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# QT-Brightek SMD Display Series

## 0.39" Single Digit Display

**Part No.: QBSS39ZCX**

**C= Special Color**

**X= Color**

**Z= 1: Common Cathode**

**Z = 0: Common Anode**

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**Electrical / Optical Characteristic: (Ta=25 °C)**

Product		Material	Color	V <sub>F</sub> (V)@ I <sub>F</sub> =10mA		Chromaticity Coordinates @ I <sub>F</sub> =10mA			I <sub>V</sub> (mcd) @ I <sub>F</sub> =5mA
CC	CA			Typ.	Max.	Min.	Typ.	Max.	Typ.
QBSS391CR	QBSS390CR	InGaN	Pink	3.2	3.8	--	X=0.39 Y=0.25	--	30
QBSS391CG	QBSS390CG	InGaN	Apple Green	3.2	3.8	--	X=0.23 Y=0.31	--	50
QBSS391CB	QBSS390CB	InGaN	Sky Blue	3.2	3.8	--	X=0.17 Y=0.14	--	40

**Absolute Maximum Rating**

Material	P <sub>d</sub> (mW)	Derating linear from 25°C per dice (mA/°C)	I <sub>F</sub> (mA)	I <sub>PF</sub> (mA)*	V <sub>R</sub> (V)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)	T <sub>SOL</sub> (°C)**
InGaN	120	0.4	30	100	5	-40 to +105	-40 to +105	260

\*Duty 1/10 @ 1KHz

\*\*IR Reflow for no more than 5 sec @ 260 °C

**Luminous Intensity I<sub>V</sub> For CR @ I<sub>F</sub>=5mA**

Bin	Min.	Max.	Unit
L	17	27.5	mcd
M	27.5	44	
N	44	70.5	

**Luminous Intensity I<sub>V</sub> For CG @ I<sub>F</sub>=5mA**

Bin	Min.	Max.	Unit
M	27.5	44	mcd
N	44	70.5	
P	70.5	112.9	

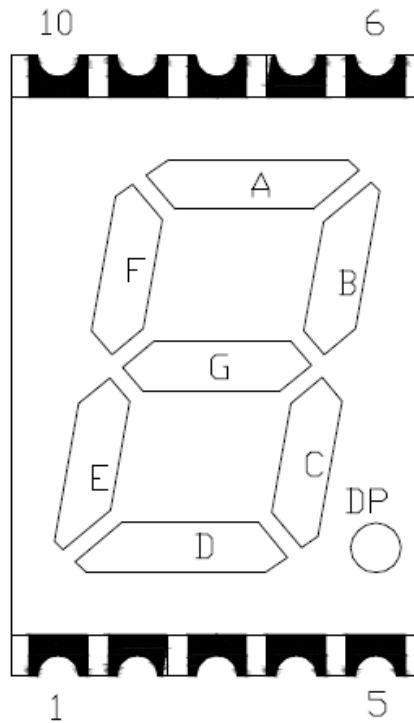
**Luminous Intensity I<sub>V</sub> For CB @ I<sub>F</sub>=5mA**

Bin	Min.	Max.	Unit
M	27.5	44	mcd
N	44	70.5	
P	70.5	112.9	

Note:

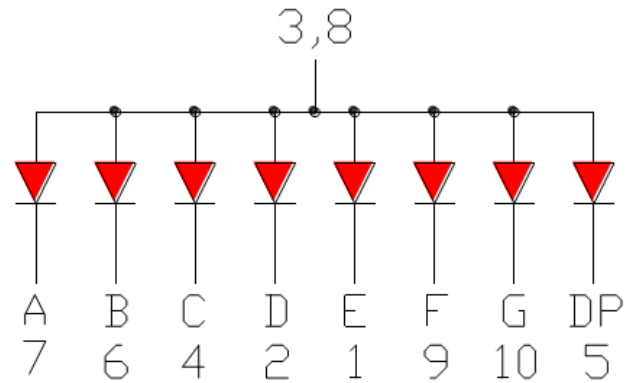
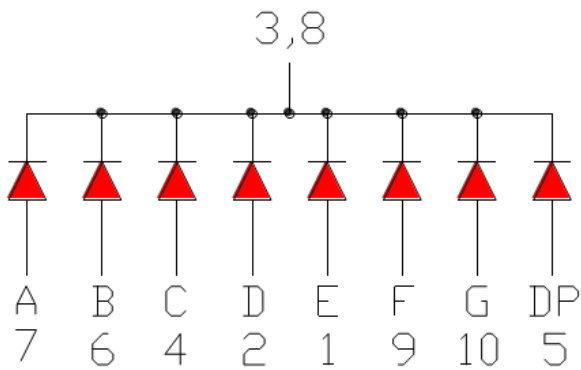
Tolerance of measurement of luminous intensity: ±15%

**Pin Configuration**



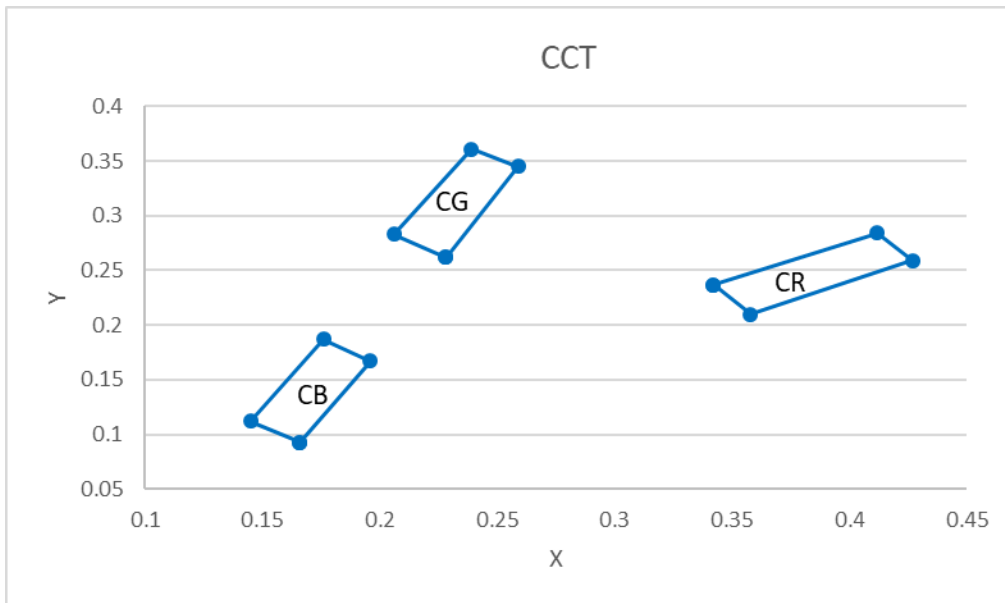
**CC**

**CA**



## Correlated Color Temperature Chart

@ I<sub>F</sub>=10mA



Sky Blue (CB)		Apple Green (CG)		Pink (CR)	
0.166	0.093	0.228	0.262	0.342	0.237
0.145	0.112	0.206	0.283	0.358	0.21
0.176	0.187	0.239	0.361	0.427	0.259
0.196	0.167	0.259	0.345	0.412	0.284
0.166	0.093	0.228	0.262	0.342	0.237

## Characteristic Curves

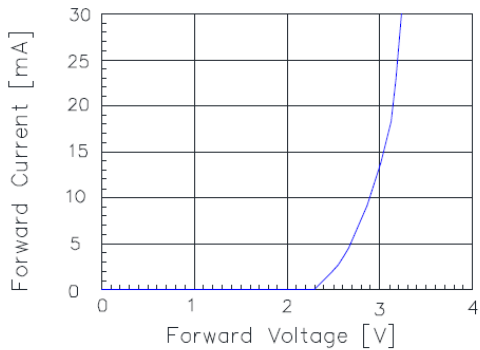


Fig 1. Forward Current vs. Forward Voltage

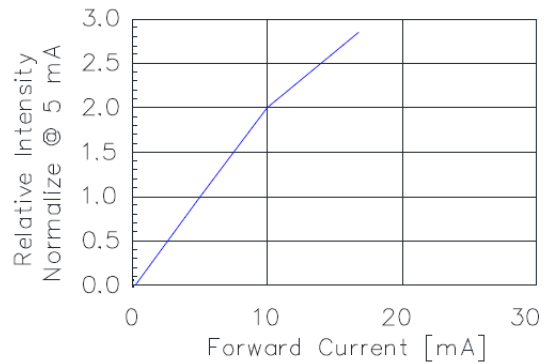


Fig 2. Relative Intensity vs. Forward Current

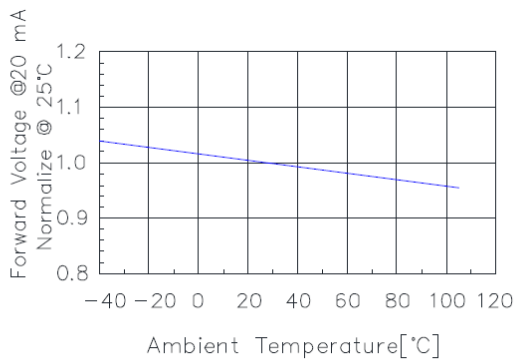


Fig 3. Forward Voltage vs. Temperature

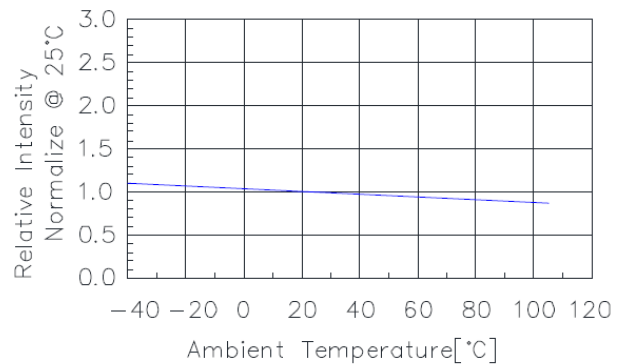


Fig 4. Relative Intensity vs. Temperature

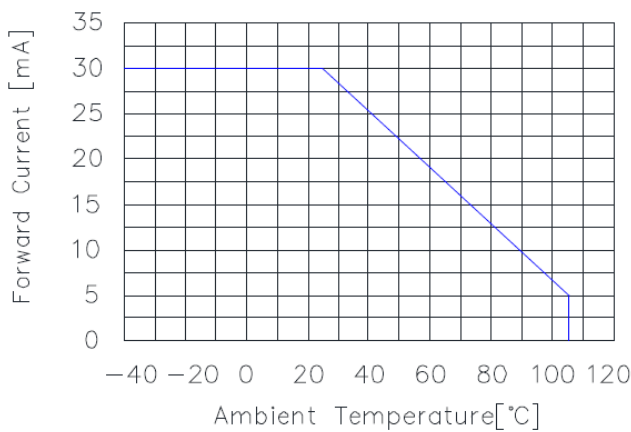


Fig 5. Forward current vs. Temperature

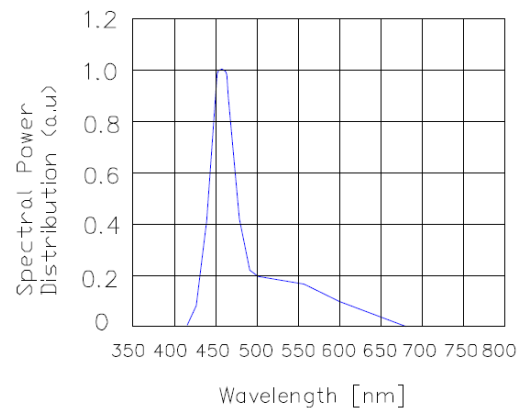


Fig 6. **CB** Spectral Power Distribution vs. Wavelength



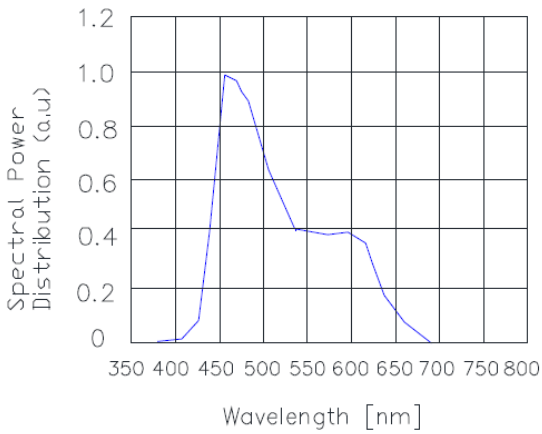


Fig 7. **CG** Spectral Power Distribution vs. Wavelength

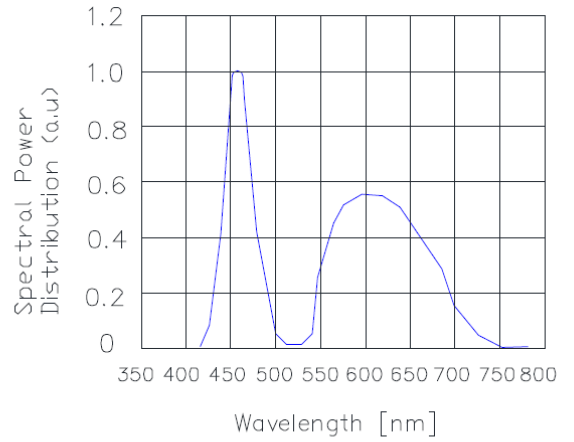
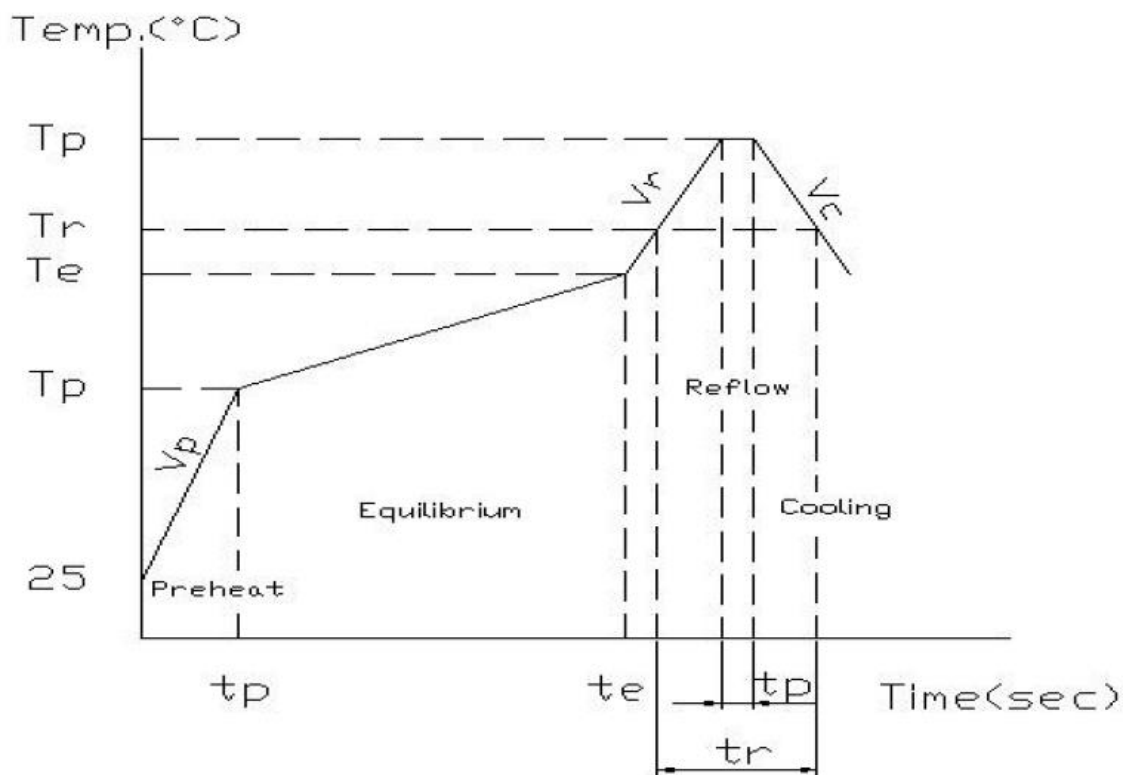


Fig 8. **CR** Spectral Power Distribution vs. Wavelength

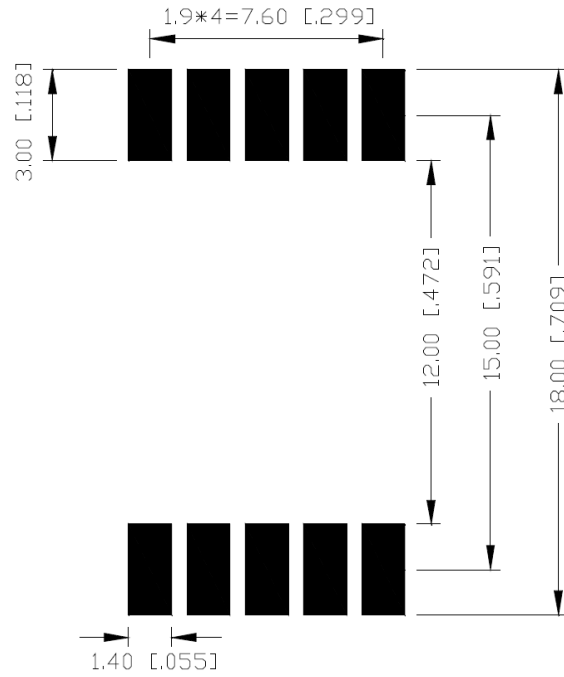
## Solder Profile & Footprint

### 1.IR-Reflow Soldering Profile(Pb Free)

Area	Title	Symbol	Min	Max	Unit
(1)Preheat	Ramp-up rate	Vp	1	5	°C/sec
	temperature	Tp	150	—	°C
	time	tp	—	—	sec
(2)Equilibrium	Ramp-up rate	Ve	—	—	°C/sec
	temperature	Te	150	200	°C
	Time	te	60	120	sec
(3)Reflow	Ramp-up rate	Vr	1	5	°C/sec
	temperature	Tr	220	—	°C
	Time	tr	—	60	sec
	Peak temperature	Trp	—	260	°C
	Peak time	trp	—	10	sec
(4)Cooling	Ramp-down rate	Vc	3	6	°C/sec



**Recommended Pad Layout**

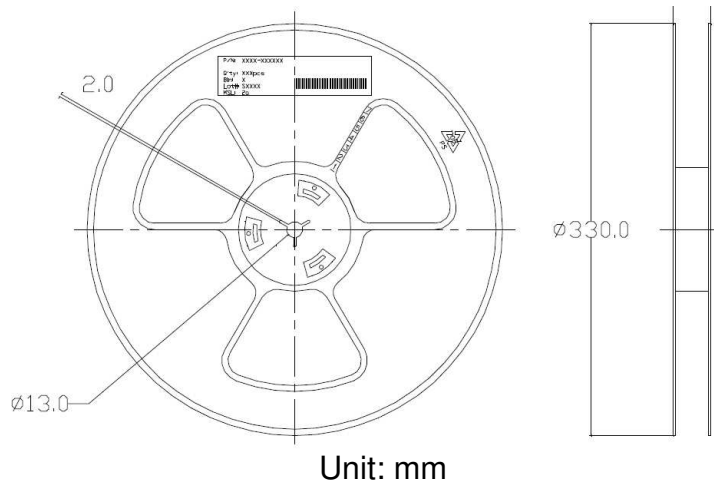


Units: mm

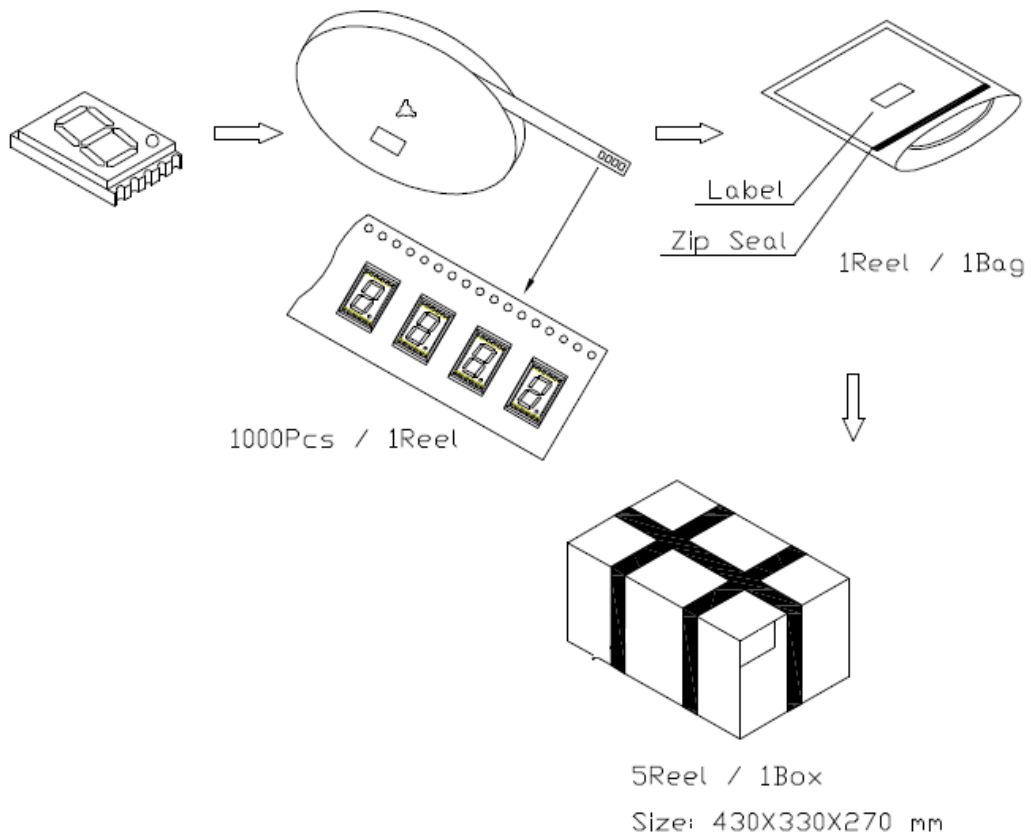
Tolerance: ±0.25mm

## Packing & Labeling

Reel Dimensions:



Packing Method:



**Ordering Information**

Product		Orderable Part #		Spec Range	Quantity per Reel
CC	CA	CC	CA		
QBSS391CR	QBSS390CR	QBSS391CR	QBSS390CR	$I_v=30\text{mcd typ. @ } I_F=5\text{mA} / (X,Y)=(0.39,0.25)$	1000
QBSS391CG	QBSS390CG	QBSS391CG	QBSS390CG	$I_v=50\text{mcd typ. @ } I_F=5\text{mA} / (X,Y)=(0.23,0.31)$	1000
QBSS391CB	QBSS390CB	QBSS391CB	QBSS390CB	$I_v=40\text{mcd typ. @ } I_F=5\text{mA} / (X,Y)=(0.17,0.14)$	1000

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## Revision History

Description:	Revision #	Revision Date
New Release of QBSS39ZCX	V1.0	04/03/2018

## Disclaimer

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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