

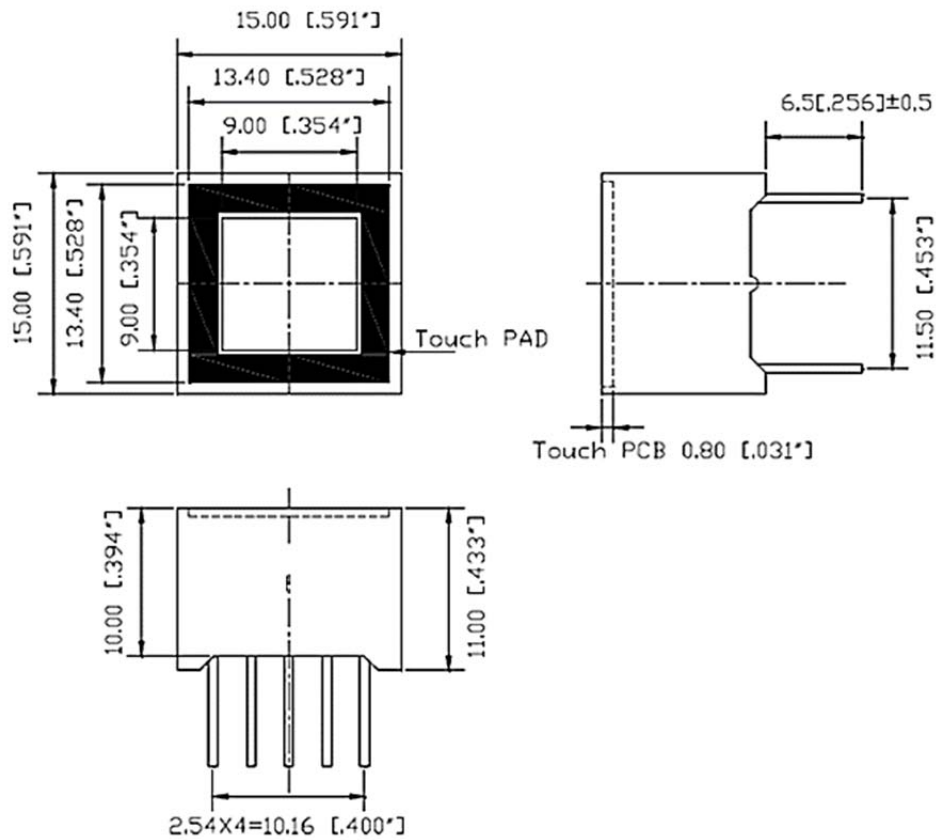


# American Opto Plus LED Corp.

## CTD-IC591QEPCBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### MECHANICAL DIMENSIONS



**Note:**

1. All pins are  $\Phi 0.6$  (.024)  $\pm 0.1$  (.004).
2. All dimensions are in millimeters (inches), tolerance is  $\pm 0.25$ mm (0.01inch), unless otherwise noted.

Chip Material	Color	
	Emitter	Face/Segment
AlGaInP	Red	White/ White
InGaN	Pure Green	
InGaN	Blue	

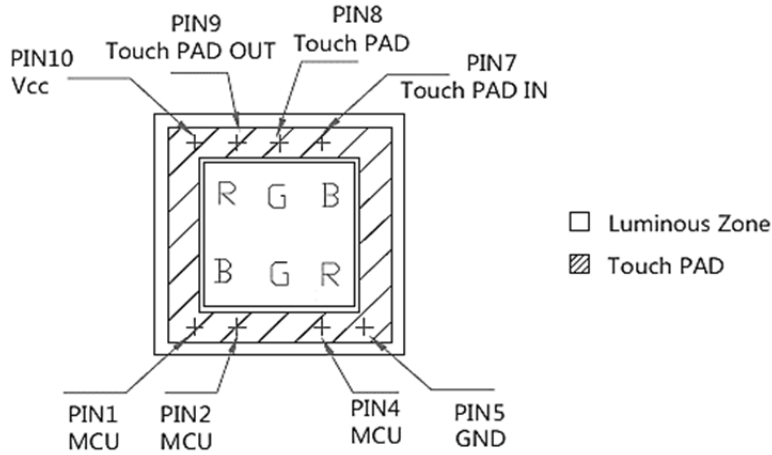


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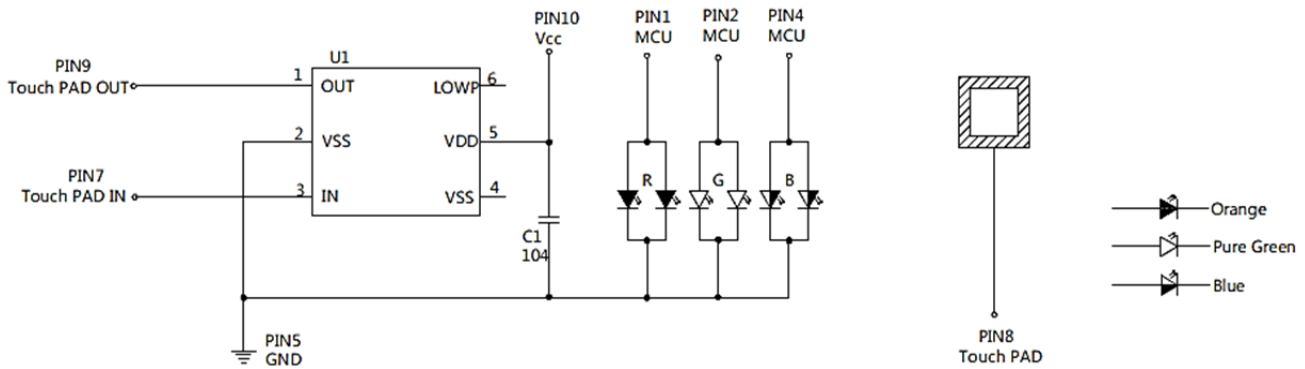
## CTD-IC591QEPCBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### ALL LIGHT ON SEGMENTS FEATURE



### INTERNAL CIRCUIT DIAGRAMS



No.3, No.6 no Pin

PIN 8 Layout connection to PIN 7

### TOUCH IC ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	$V_{DD}$	--	2.0	--	5.5	V
High Level Input Voltage	$V_{IH}$	$V_{DD}=5V$	3.5	--	5	V
Low Level Input Voltage	$V_{IL}$	$V_{DD}=5V$	0	--	1.5	V
Operating Current	$I_{DD1}$	$V_{DD}=5V$ , no load	--	16	--	uA
		$V_{DD}=3V$ , no load	--	3.5	--	
Operating Current (SLRT= $V_{DD}$ )	$I_{DD2}$	$V_{DD}=5V$ , no load	--	10.5	--	uA
		$V_{DD}=3V$ , no load	--	2.5	--	
Low Level Output Current	$I_{OL}$	$V_{DD}=3V$ , $V_{OL}=1V$	--	30	--	mA
High Level Output Current	$I_{OH}$	$V_{DD}=3V$ , $V_{OH}=2V$	--	8	--	mA



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### ABSOLUTE MAXIMUM RATING

(Ta=25°C)

Parameter	Symbol	Rating			Unit
		R	G	B	
Power Dissipation Per Dice	P <sub>d</sub>	70	114	114	mW
Continuous Forward Current Per Dice	I <sub>f</sub>	25	30	30	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I <sub>fp</sub>	90	100	100	mA
Derating Liner from 25°C Per Dice	ΔI <sub>f</sub> / ΔT	0.33	0.4	0.4	mA / °C
Reverse Voltage Per Dice	V <sub>r</sub>	5	5	5	V
Electrostatic Discharge	ESD	--	1000		V
Operating Temperature	T <sub>opr</sub>	-35 ~ +85			°C
Storage Temperature	T <sub>stg</sub>	-35 ~ +85			°C
Hand Soldering Temperature	T <sub>sol</sub>	350			°C

### ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Forward Voltage Per Dice	V <sub>f</sub>	R	--	2.0	2.8	V	I <sub>f</sub> =20mA
		G	--	3.2	3.8		
		B	--	3.2	3.8		
Luminous Intensity Per Icon	I <sub>v</sub>	R	--	75	--	mcd	
		G	--	500	--		
		B	--	65	--		
Peak Emission Wavelength	λ <sub>p</sub>	R	--	632	--	nm	
		G	--	--	--		
		B	--	--	--		
Dominant Wavelength	λ <sub>d</sub>	R	--	625	--	nm	
		G	--	525	--		
		B	--	470	--		
Spectrum Radiation Bandwidth	Δλ	R	--	20	--	nm	
		G	--	30	--		
		B	--	30	--		
Reverse Current	I <sub>r</sub>	R	--	--	100	μA	V <sub>r</sub> =5V
		G	--	--	50		
		B	--	--	50		
Luminous Intensity Matching Ratio	I <sub>v-m</sub>	--	--	2:1	--	I <sub>f</sub> =20mA	



# American Opto Plus LED Corp.

## CTD-IC591QEPCBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### LUMINOUS GENERAL $I_v$ BIN GRADE (RED)

( $I_f = 20\text{mA}$ )

A	B	C	D	E	F	G	H	J	K	L	M
0.155	0.249	0.399	0.640	1.025	1.641	2.627	4.204	6.727	10.764	17.224	27.559
0.248	0.398	0.639	1.024	1.640	2.626	4.203	6.726	10.763	17.223	27.558	44.095
N	P	Q	R	S	T	U	V	W	X	Y	1
44.096	70.555	112.889	180.622	288.997	462.397	739.836	1183.738	1893.982	3030.372	4848.597	7757.756
70.554	112.888	180.622	288.996	462.396	739.835	1183.737	1893.981	3030.371	4848.596	7757.755	12412.409
2	3	4	5	6	7	8	9				
4034.034	19859.858	31775.773	50841.238	81345.982	130153.573	208245.718	333193.149				
19859.857	31775.772	50841.237	81345.981	130153.572	208245.717	333193.148	533109.039				

### LUMINOUS GENERAL $I_v$ BIN GRADE (GREEN)

( $I_f = 20\text{mA}$ )

A	B	C	D	E	F	G	H	J	K	L	M
0.155	0.249	0.399	0.640	1.025	1.641	2.627	4.204	6.727	10.764	17.224	27.559
0.248	0.398	0.639	1.024	1.640	2.626	4.203	6.726	10.763	17.223	27.558	44.095
N	P	Q	R	S	T	U	V	W	X	Y	1
44.096	70.555	112.889	180.622	288.997	462.397	739.836	1183.738	1893.982	3030.372	4848.597	7757.756
70.554	112.888	180.622	288.996	462.396	739.835	1183.737	1893.981	3030.371	4848.596	7757.755	12412.409
2	3	4	5	6	7	8	9				
4034.034	19859.858	31775.773	50841.238	81345.982	130153.573	208245.718	333193.149				
19859.857	31775.772	50841.237	81345.981	130153.572	208245.717	333193.148	533109.039				

### LUMINOUS GENERAL $I_v$ BIN GRADE (BLUE)

( $I_f = 20\text{mA}$ )

A	B	C	D	E	F	G	H	J	K	L	M
0.155	0.249	0.399	0.640	1.025	1.641	2.627	4.204	6.727	10.764	17.224	27.559
0.248	0.398	0.639	1.024	1.640	2.626	4.203	6.726	10.763	17.223	27.558	44.095
N	P	Q	R	S	T	U	V	W	X	Y	1
44.096	70.555	112.889	180.622	288.997	462.397	739.836	1183.738	1893.982	3030.372	4848.597	7757.756
70.554	112.888	180.622	288.996	462.396	739.835	1183.737	1893.981	3030.371	4848.596	7757.755	12412.409
2	3	4	5	6	7	8	9				
4034.034	19859.858	31775.773	50841.238	81345.982	130153.573	208245.718	333193.149				
19859.857	31775.772	50841.237	81345.981	130153.572	208245.717	333193.148	533109.039				

#### Notes:

1. Unit= mcd; Tolerance is  $\pm 20\%$



# American Opto Plus LED Corp.

## CTD-IC591QEGBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### ELECTRICAL/OPTICAL CHARACTERISTICS CURVES (RED)

(Ta=25°C)

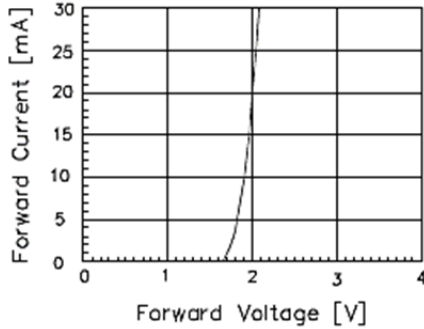


Fig 1. Forward Current vs. Forward Voltage

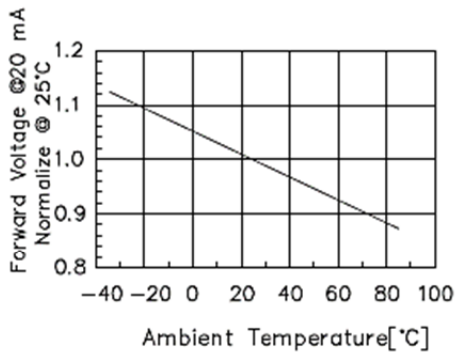
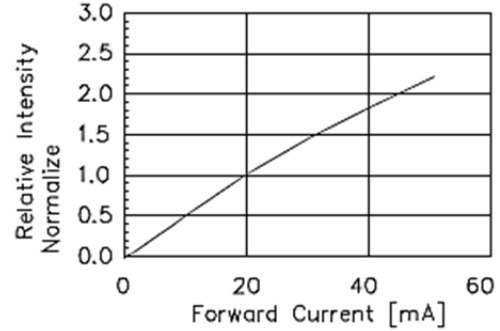


Fig 3. Forward Voltage vs. Temperature

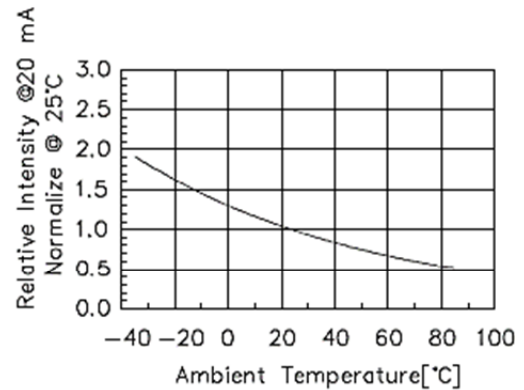


Fig 4. Relative Intensity vs. Temperature

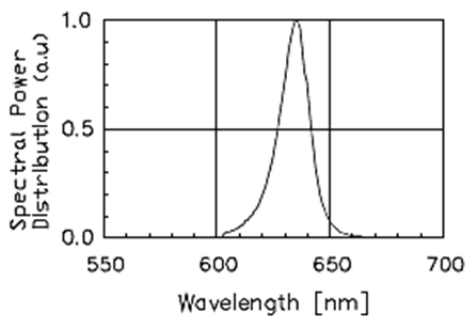


Fig 5. Spectral Power Distribution vs. Wavelength

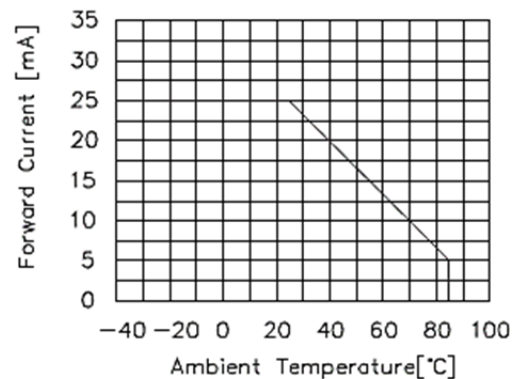


Fig 6. Forward current vs. Temperature



# American Opto Plus LED Corp.

## CTD-IC591QEPCBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### ELECTRICAL/OPTICAL CHARACTERISTICS CURVES (GREEN)

(Ta=25°C)

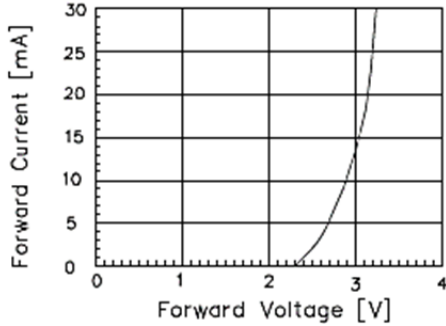


Fig 1. Forward Current vs. Forward Voltage

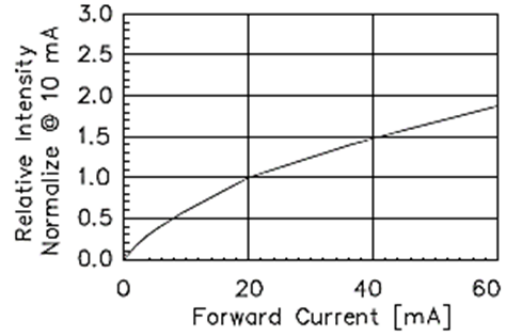


Fig 2. Relative Intensity vs. Forward Current

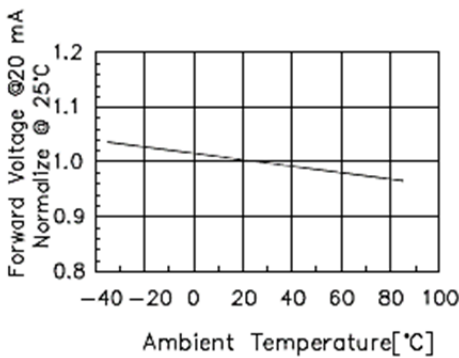


Fig 3. Forward Voltage vs. Temperature

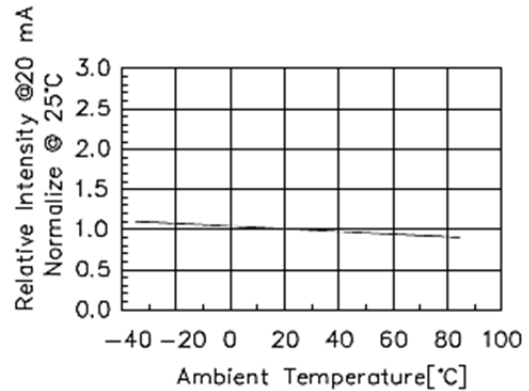


Fig 4. Relative Intensity vs. Temperature

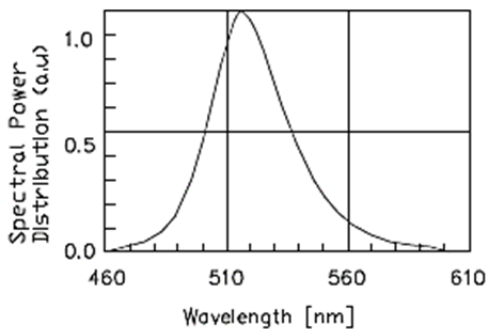


Fig 5. Spectral Power Distribution vs. Wavelength

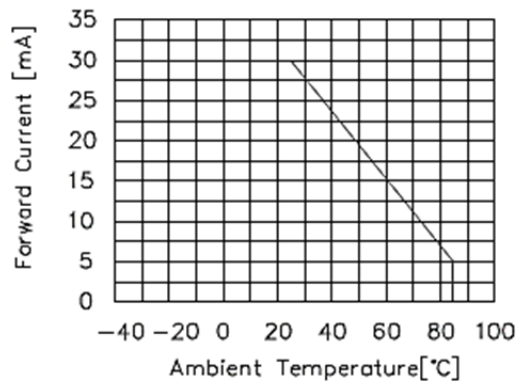


Fig 6. Forward current vs. Temperature



# American Opto Plus LED Corp.

## CTD-IC591QEPCBW

15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### ELECTRICAL/OPTICAL CHARACTERISTICS CURVES (BLUE)

(Ta=25°C)

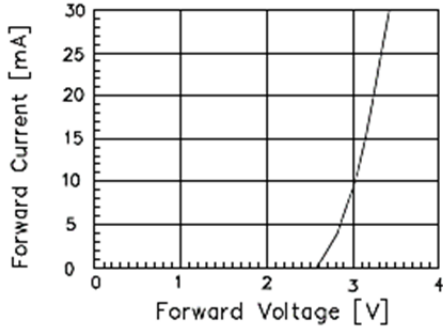


Fig 1. Forward Current vs. Forward Voltage

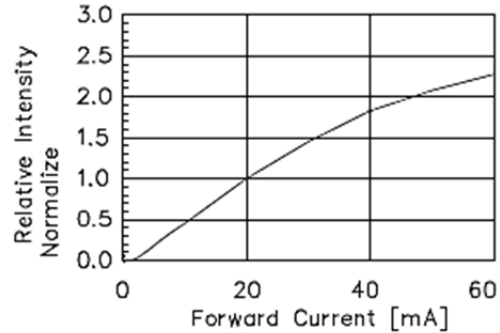


Fig 2. Relative Intensity vs. Forward Current

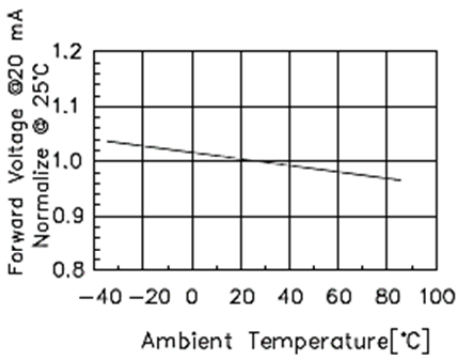


Fig 3. Forward Voltage vs. Temperature

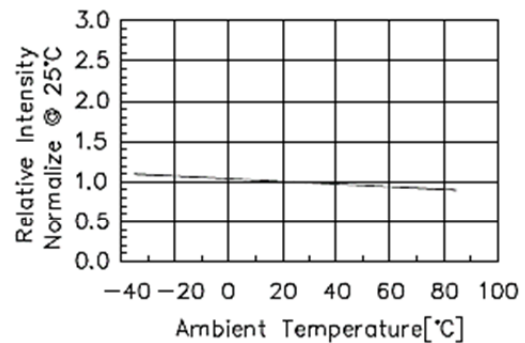


Fig 4. Relative Intensity vs. Temperature

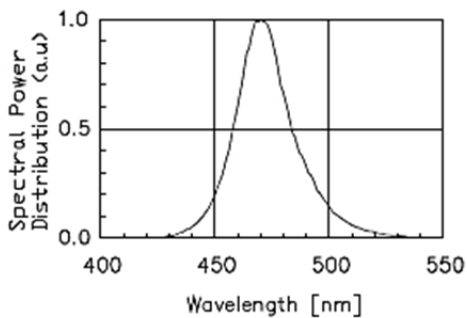


Fig 5. Spectral Power Distribution vs. Wavelength

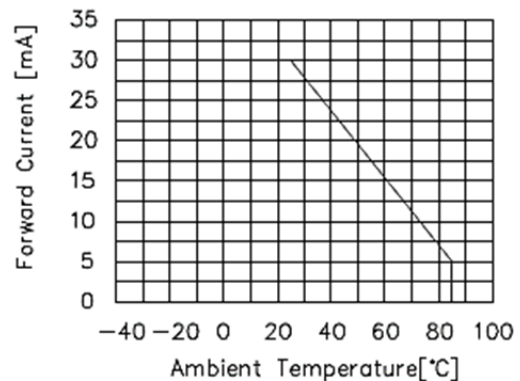


Fig 6. Forward current vs. Temperature



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## CTD-IC591QEPCBW

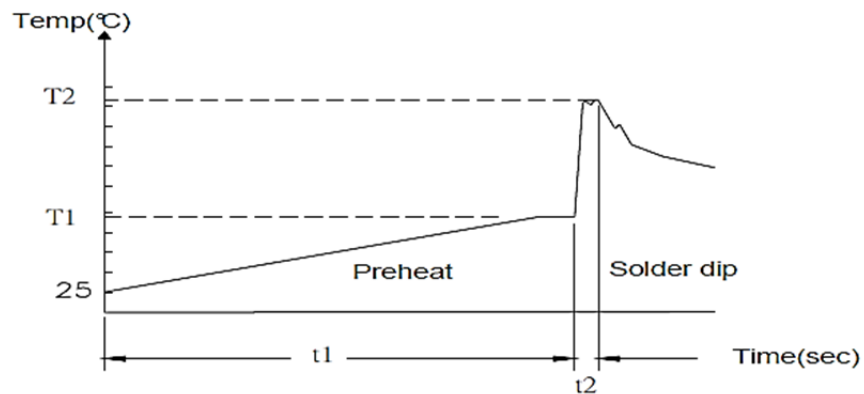
15.0 x 15.0 x 11.0 mm RGB Touch LED Display w/Touch Drive IC

### SOLDERING CONDITION

#### 1. Wave Soldering Profile

Distance: 1.6mm min (From seating plane)

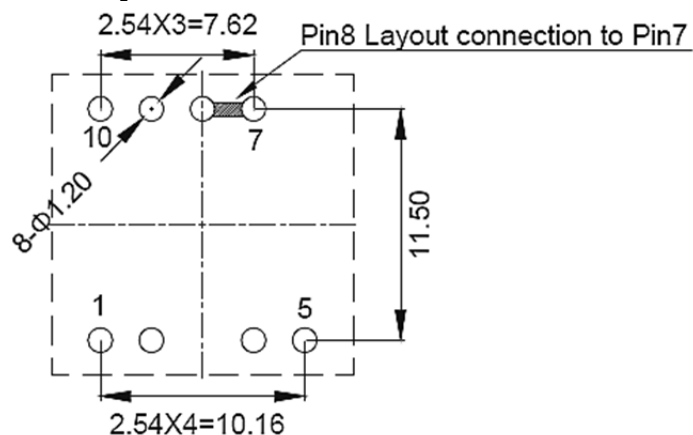
Item	Condition		Note
Preheat	Temperature T1	80~120°C	PWB Temperature (Soldering Side Surface)
	Time t1	60~180sec	
Solder Dip	Temperature T2	230~260°C	Bath Temperature
	Time t2	2~4sec	Solder Tank Passage Time



#### 2. Hand Soldering (Iron Condition)

1. Soldering Iron: 30W Max.
2. Temperature: 350°C Max.
3. Soldering Time: 3 seconds Max. (1 time)
4. Distance: 1.6mm min.(from seating plane)

#### 3. Recommended PCB Layout





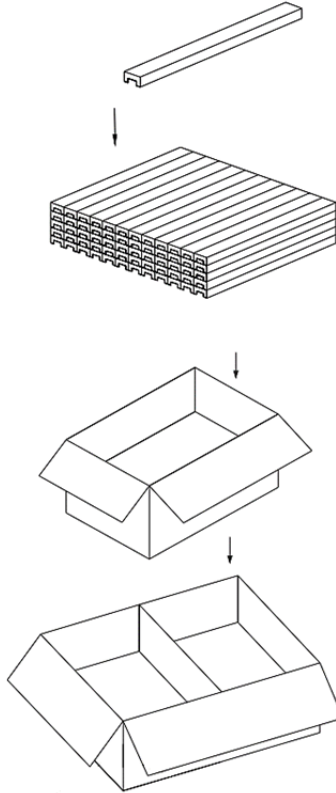


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## CTD-IC591QEPCBW

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### PACKAGE SPECIFICATION



Package	Size	Unit	Amount	Unit	Amount	Unit	Note
TUBE	L300*W190*H20	mm	1	TUBE	10	Pcs	--
Inner Box	L305*W205*H240	mm	187	TUBE	1870	Pcs	--
Outer Box	L430*W330*H270	mm	2	Inner Box	3740	Pcs	--

### STORAGE METHOD

- Products cannot be placed on the location of the sunlight
- Product storage environment: Temperature is between -35°C~85°C; RH is between 45%~85%
- After unpacking, the product must be used within 1 year
- After unpacking, cannot take anything on the product up in order to avoid PIN shift