

CTL0603FWH1T DATASHEET

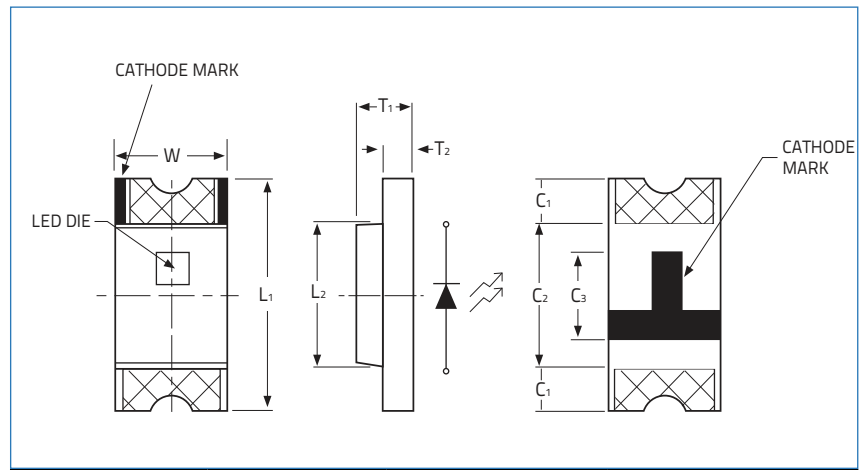
Chip Type LED, 0603, Flat Lens, White



VENKEL LTD.

Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity ($I_F=20\text{mA}$) mcd	Viewing Angle (2θ 1/2)
CTL0603FWH1T	0603	White	InGaN	Yellow Diffused	200 min 500 typ	130°

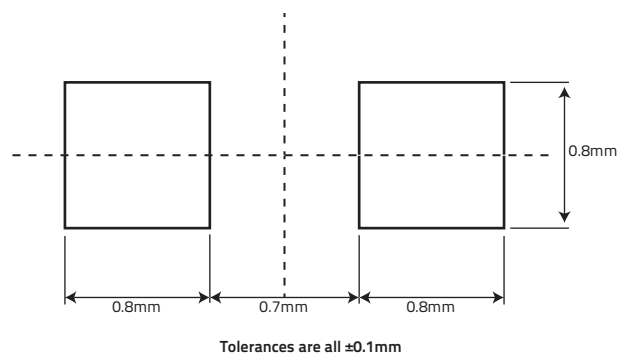
Electrical & Optical Specifications ($T_A=25^\circ\text{C}$)	WH1 (InGaN)	Unit
Forward Voltage (Min.) ($I_F=20\text{mA}$)	V_F	2.8 V
Forward Voltage (Max.) ($I_F=20\text{mA}$)	V_F	3.6 V
Reverse Current (Max) ($V_R=5\text{V}$)	I_R	50 μA
Chromatic Coordinates (Min.) ($I_F=20\text{mA}$)	X	0.26
Chromatic Coordinates (Max.) ($I_F=20\text{mA}$)	X	0.31
Chromatic Coordinates (Min.) ($I_F=20\text{mA}$)	Y	0.225
Chromatic Coordinates (Max.) ($I_F=20\text{mA}$)	Y	0.34
Spectral Line Half Width (Typ.) ($I_F=20\text{mA}$)	$\Delta\lambda$	30 nm



Dimensions		Units: Inches (mm)	
L_1	L_2	T_1	T_2
0.063 ± 0.004 (1.6±0.1)	0.0394 ± 0.004 (1.0±0.1)	0.0157 ± 0.004 (0.4±0.1)	0.0079 ± 0.004 (0.2±0.1)
W	C_1	C_2	C_3
0.031 ± 0.004 (0.8±0.1)	0.012 ± 0.004 (0.3±0.1)	0.0394 ± 0.004 (1.0±0.1)	0.024 ± 0.004 (0.60±0.1)

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)	WH1 (InGaN)	Unit
Reverse Voltage	V_R	5 V
DC Forward Current	I_F	20 mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	1_{FP}	100 mA
Power Dissipation	P_D	72 mW
Operating Temperature	T_A	-40 ~ +85 °C
Storage Temperature	T_{stg}	-40 ~ +100 °C

Soldering Pad Layout



CTL0603FWH1T DATASHEET

Chip Type LED, 0603, Flat Lens, White



VENKEL LTD.

Graphs

Fig.1 Forward Current vs Forward Voltage

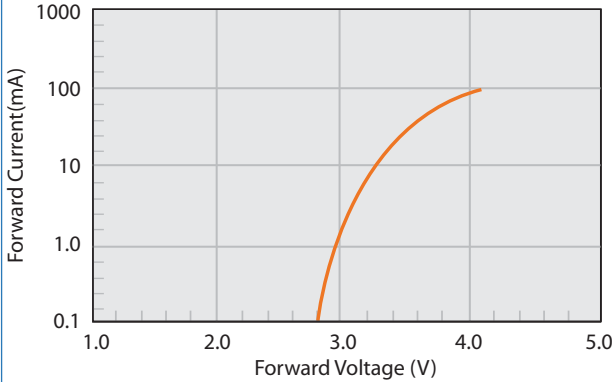


Fig.2 Relative Intensity vs Forward Current

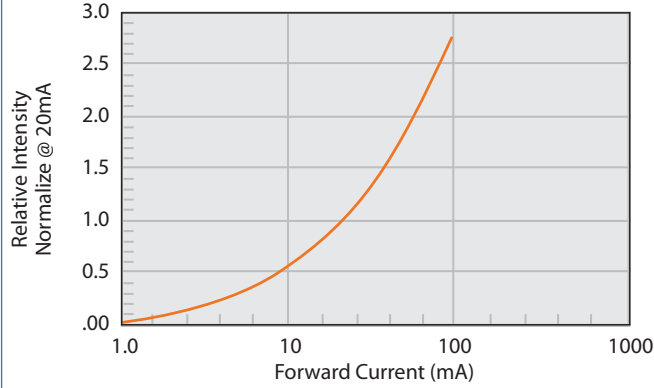


Fig.3 Current vs Temp

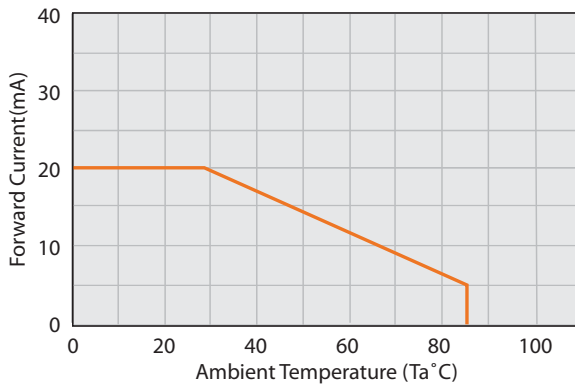


Fig.4 Relative Intensity vs Temperature

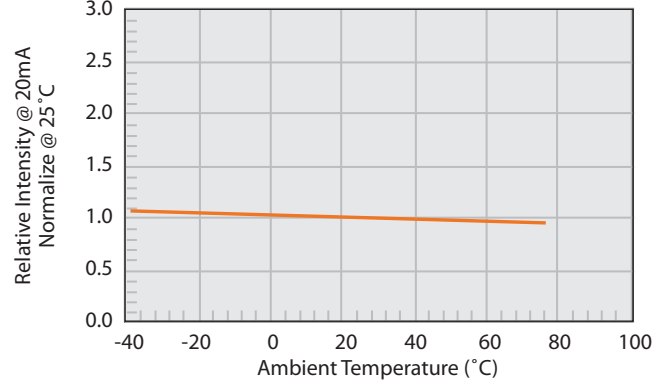


Fig. 5 Spectral Radiance

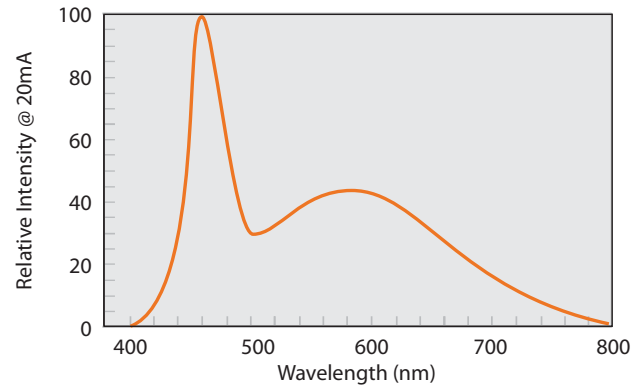
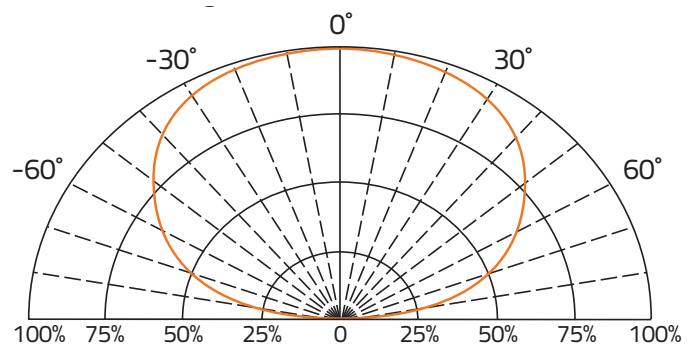


Fig. 6 Direct Radiation



Environmental information

RoHS Status	6 of 6 Compliant
REACH Status	Compliant
Halogen Status	Halogen Free
Conflict Mineral Status	Conflict Mineral Free
Moisture Sensitivity Level (MSL)	3

Reflow profile

Max Reflow Temperature	260°C
Number of Reflow Cycles	2

CTL0603FWH1T DATASHEET

Chip Type LED, 0603, Flat Lens, White



VENKEL LTD.

Label Example

Item: CTL0603FWH1T

Chip Type LED,0603,Flat Lens,White

Qty: 4000

D/C: 1616

Lot: 20160502001

BIN/HUE: T/B1

VF: 3.1-3.2

VENKEL LTD

YOUR SINGLE SOURCE FOR SURFACE MOUNT PASSIVES

Codes:

VF: Forward Voltage | BIN: Luminous Intensity | HUE: Dominant Wavelength

Luminous Intensity Classification (BIN Code)

BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
S	200	320
T	320	500
U	500	800

CTL0603FWH1T DATASHEET

Chip Type LED, 0603, Flat Lens, White

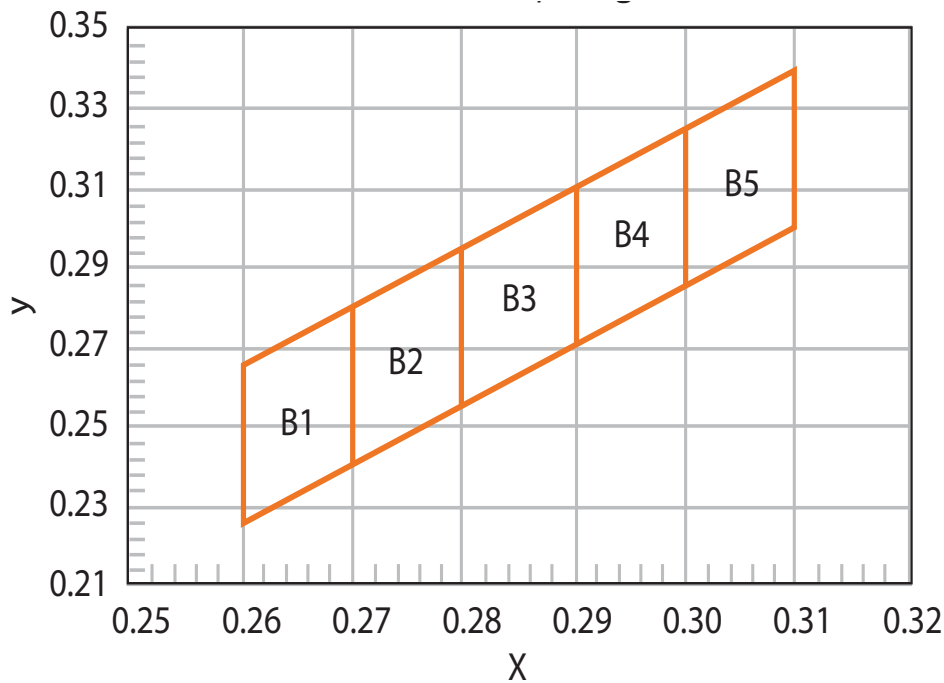


VENKEL LTD.

CHROMATICITY COORDINATES SPECIFICATIONS FOR HUE GRADING

Color Coordinates at 20mA								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B1	0.26	0.265	0.26	0.225	0.27	0.24	0.27	0.28
B2	0.27	0.28	0.27	0.24	0.28	0.255	0.28	0.295
B3	0.28	0.295	0.28	0.255	0.29	0.27	0.29	0.31
B4	0.29	0.31	0.29	0.27	0.3	0.285	0.3	0.325
B5	0.3	0.325	0.3	0.285	0.31	0.3	0.31	0.34

CIE CHROMATICITY DIAGRAM



CTL0603FWH1T DATASHEET

Chip Type LED, 0603, Flat Lens, White



VENKEL LTD.

Reel Specifications		Units: mm		
M	C	F	E	G
178±1.50	56.0±1.0	12.0±1.0	60.0±1.0	9.0±1.0

Packaging Specifications	
Reel Size:	7"
Quantity per Reel :	4,000

Storage Specifications
1. Storage temperature and RH: 5°C~35°C, RH60%
2. Once the package is opened, the LEDs should be used within a week. Otherwise, they should be kept in a moisture proof bag with desiccant. We suggest that you use this product within one year from date code.
3. If opened for more than one week in an atmosphere of 5°C~35°C, RH60%. The parts should be heat treated at 60°C±5°C for 15 hours.

Tape Specifications		Units: mm		
T	W	A	B	F
0.60±0.5	8.0±0.3	1.75±0.5	0.90±0.1	3.5±0.2
E	H	J	D	G
1.75±0.1	4.0±0.2	2.0±0.1	1.5±0.1	4.0±0.2

CTL0603FWH1T DATASHEET

Chip Type LED, 0603, Flat Lens, White



VENKEL LTD.

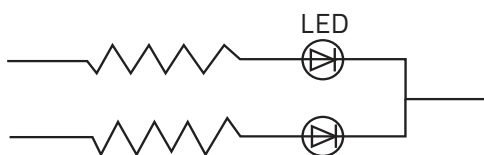
Environmental Test Criteria

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life	1. $T_a=25^{\circ}\text{C}$ 2. $I_f=20\text{mA}$ 3. $t=1000\text{hrs}$ (-24hrs, +72hrs)	22
	High Temperature Storage	1. $T_a=105^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 2. $t=1000\text{hrs}$ (-24hrs, +72hrs)	22
	Low Temperature Storage	1. $T_a=-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 2. $t=1000\text{hrs}$ (-24hrs, +72hrs)	22
	High Temperature, High Humidity Storage	1. $T_a=85^{\circ}\text{C}$ 2. $\text{RH}=85\%$ 3. $t=1000\text{hrs}$ (-24hrs, +72hrs)	22
Environmental Test	Thermal Shock	1. $T_a=100^{\circ}\text{C}\pm 5^{\circ}\text{C}$ & $-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 20min / 10sec / 20min 3. Total: 100 cycles total	22
	Temperature Cycling	1. $100^{\circ}\text{C}\pm 5^{\circ}\text{C}$ & $-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 30mins / 5mins / 30mins 2. 100 Cycles	22
	IR Reflow	1. $T=260^{\circ}\text{C}$ Max. 10 seconds Max 2. 6 Min	22

Drive Method

LED is a current operated drive, and therefore it requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED. Consider worst case voltage variations that can occur across the current limiting resistor placed in series with the LED. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B

