



## Data Sheet

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Customer: \_\_\_\_\_

Part No: \_\_\_\_\_

CLS-23011DUR-11

Sample No: \_\_\_\_\_

Description: \_\_\_\_\_

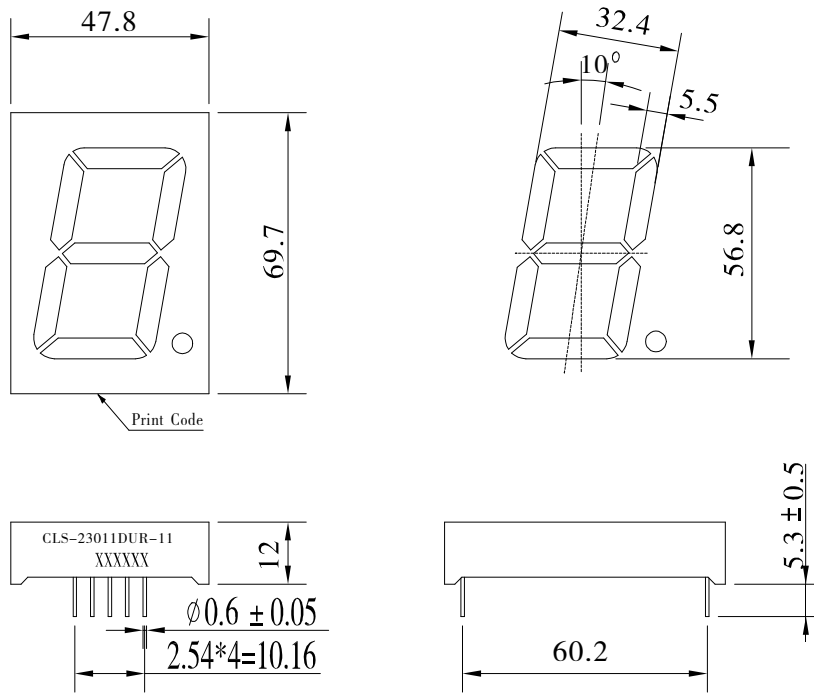
2.3 inch 1 Digit Red Color

Item No: \_\_\_\_\_

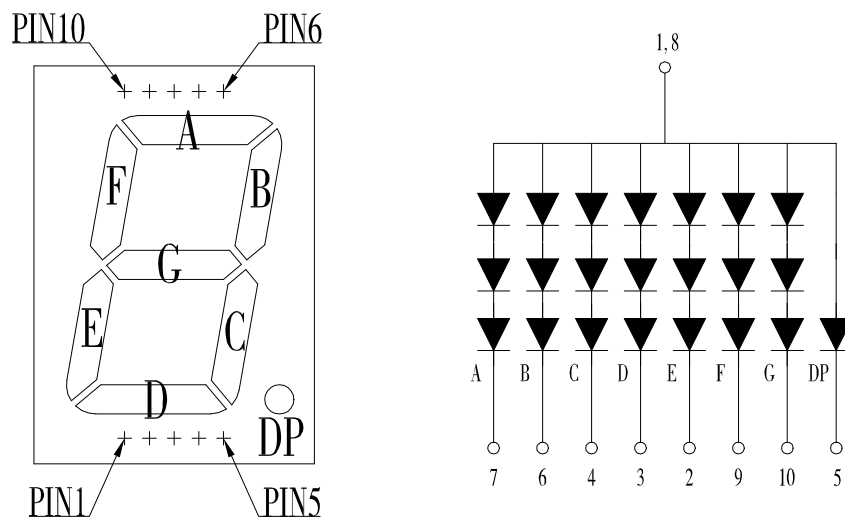
Customer			
Check	Inspection	Approval	Date

**Descriptions**

1. Emitting Color: Ultra Red
2. Lens Color: White Diffuse
3. Surface Black Color : Black
4. Dice Material: AlGaInP/GaAs

**Outline drawing**


Tolerance is  $\pm 0.25$ mm unless otherwise noted

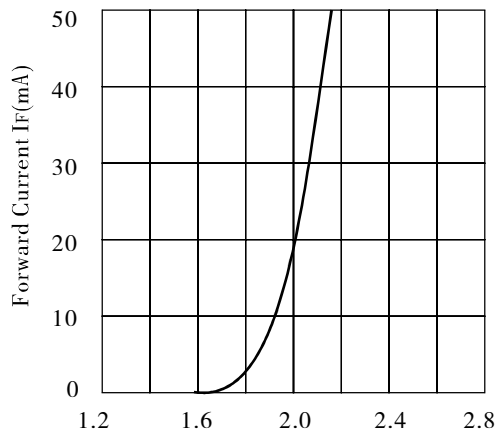
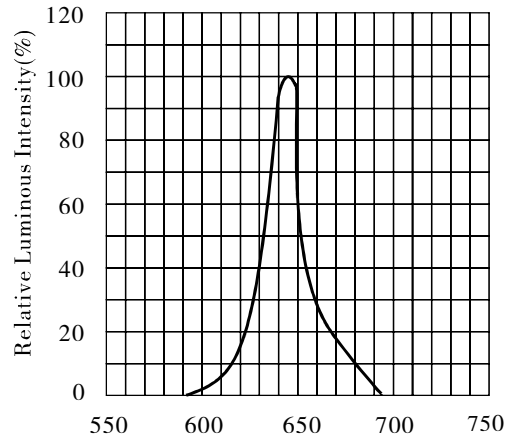
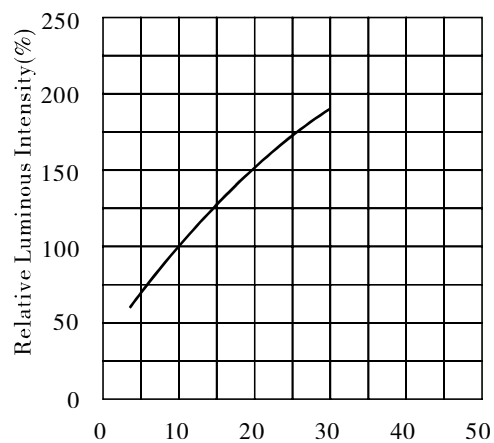
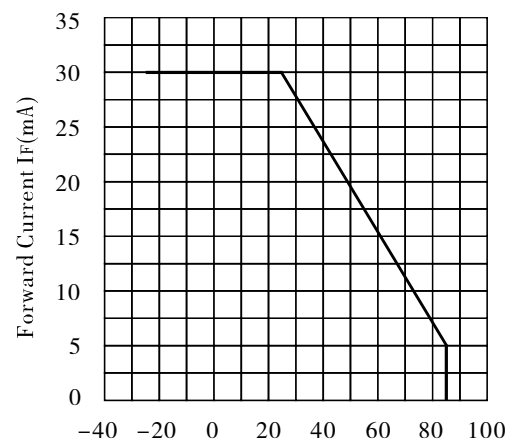
**Internal Circuit Diagram(C.A.)**


## Electrical optical characteristics ( Ta=25°C )

Parameter	Symbol	Ultra Red			Unit	Test Condition
		Min	Typ	Max		
Forward Voltage	$V_F$	---	2.0	2.4	V	IF=20mA
Luminous Intensity	$I_V$	26.6	52.0	---	mcd	IF=10mA
Peak Wavelength	$\lambda_P$	---	645	---	nm	IF=20mA
Dominant Wavelength	$\lambda_d$	---	635	---	nm	IF=20mA
Spectral Line half-width	$\Delta\lambda$	---	20	---	nm	IF=20mA
Reverse Leakage Current	$I_R$	---	---	50	$\mu A$	VR=5V

## Absolute Maximum Parameters(Ta=25°C)

Parameter	Symbol	Condition	Rating	Unit
Power Dissipation	$P_D$	---	80	mW
Reverse Voltage	$V_R$	---	5	V
Forward Average Current	$I_F$	---	30	mA
Temperature Coefficient	I/C	---	0.33	mA/°C
Pulse Current	IFP	Duty=1/10,1kHz	100	mA
Operating Temperature Range	Topr	---	-25 ~ +85	°C
Storage Temperature Range	Tstg	---	-30 ~ +100	°C
Soldering Condition	Tsd	---	260°C/5sec	°C

Typical Electro-Optical characteristic curves (  $T_a=25^{\circ}\text{C}$  )

 Forward Voltage  $V_F$  (V)

 Peak Wavelength  $\lambda_P$  (nm)

 Forward Current  $I_F$  (mA)

 Ambient Temperature  $T_a$  ( $^{\circ}\text{C}$ )

**Reliability test conditions**

Test Item	Test Condition	Result	Judgment criteria
Consecutive operating life test	IF=20mA, T=25°C, t=168h	0/12	Forward Voltage $V_F(V) = \text{Upper Limit} \times 1.2$ Reverse Leakage Current $I_R(\mu A) = \text{Upper Limit} \times 2.0$ Luminous Intensity Iv (mcd) = Lower Limit $\times 0.7$
High temperature storage life test	T=100°C, t=168h	0/12	
Low temperature storage life test	T=-25°C, t=168h	0/12	
high Temperature humidity storage life test	T=85 ± 2°C, RH=85% ± 3, t=168h	0/12	
Temperature cycle test	-25°C~25°C~100°C, 30min 5min 30min 10cycles	0/12	
Thermal shock test	100°C 0°C 5min 5min 20 cycles	0/12	
Soldering heat test	T=260 ± 5°C, t=10s ± 1s	0/12	
Solderability test	T=230 ± 5°C, t=5s ± 0.5s	0/12	Steeped Part ≥ 95%
Fall test	h=100cm, Free fall, 3times	0/12	Intact
Terminal strength test	W=9.8N, t=30 ± 5s	0/12	
Lead Bending test	W=4.9N, 2times	0/12	