

# **SPECIFICATIONS FOR LED DISPLAYS**

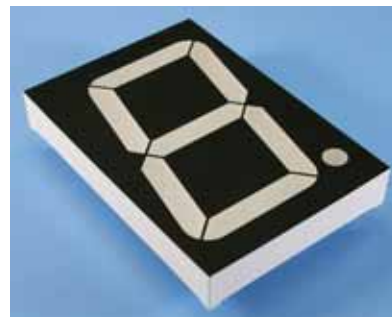
**56.8mm(2.3") Seven Segments Single Digit**

**LSD230 -10 Series**

**WENRUN OPTOELECTRONIC**

**Features:**

- High efficiency, low power consumption.
- Extremely low current.
- Luminous evenly distributed on each segment.
- Low development cost.

**LSD230A/B/C/D/G/H/I/J/K/L -10****Descriptions:**

- Industrial standard size.
- These display provide excellent reliability in bright ambient light.
- These devices are made with white segments and black surface.

**Applications:**

- Audio equipment or Instrument panels.
- General use for digital indicators.
- Multimedia product.

**Selection Guide:**

Part No.		Chip		Lens Color
Anode	Cathode	Material	Emitting Color	
LSD230B/D/H/J/LSR-10	LSD230A/C/G/I/KSR-10	GaAlAs	Super Red	White Diffused
LSD230B/D/H/J/LG-10	LSD230A/C/G/I/KG-10	GaP	Green	
LSD230B/D/H/J/LE-10	LSD230A/C/G/I/KE-10	GaAsP/GaP	Orange	

**Absolute Maximum Rating ( Ta=25 )****【LSD230A/B/C/D】**

Parameter	Symbol	Super Red	Green	Orange	Unit
Power Dissipation/Segment	P <sub>d</sub>	190	220	220	mW
Peak Forward Current /Segment (Duty 1/10@ 1KHz)	I <sub>FP</sub>	60	60	60	mA
Continuous Forward Current /Segment	I <sub>F</sub>	15	15	15	mA
Recommend use current /Segment	I <sub>F</sub>	5~10	5~10	5~10	mA
Reverse Voltage /Segment	V <sub>R</sub>	12	12	12	V
Operating Temperature Range	Topr	-25~ +75			
Storage Temperature Range	Tstg	-30 ~ +85			
Solder Temperature	Tsol	260 ± 5			

- Notes :**
- 1、 This is the limit current. It is not allowed to use when the product work continuously.
  - 2、 It is recommended that the product is driven by TTL,CMOS .
  - 3、 Soldering time 5 seconds.

**Absolute Maximum Rating ( Ta=25 )****【LSD230G/H/I/J】**

Parameter	Symbol	Super Red	Green	Orange	Unit
Power Dissipation/Segment	P <sub>d</sub>	150	180	180	mW
Peak Forward Current /Segment (Duty 1/10@ 1KHz)	I <sub>FP</sub>	60	60	60	mA
Continuous Forward Current /Segment	I <sub>F</sub>	15	15	15	mA
Recommend use current /Segment	I <sub>F</sub>	5~10	5~10	5~10	mA
Reverse Voltage /Segment	V <sub>R</sub>	10	10	10	V
Operating Temperature Range	Topr	-25~ +75			
Storage Temperature Range	Tstg	-30 ~ +85			
Solder Temperature	Tsol	260 ± 5			

- Notes :**
- 1、 This is the limit current. It is not allowed to use when the product work continuously.
  - 2、 It is recommended that the product is driven by TTL,CMOS .
  - 3、 Soldering time 5 seconds.

**Absolute Maximum Rating ( Ta=25 )****【LSD230K/L】**

Parameter	Symbol	Super Red	Green	Orange	Unit
Power Dissipation/Segment	P <sub>d</sub>	280	300	300	mW
Peak Forward Current /Segment (Duty 1/10@ 1KHz)	I <sub>FP</sub>	120	120	120	mA
Continuous Forward Current /Segment	I <sub>F</sub>	40	40	40	mA
Recommend use current /Segment	I <sub>F</sub>	10~20	10~20	10~20	mA
Reverse Voltage /Segment	V <sub>R</sub>	8	8	8	V
Operating Temperature Range	Topr	-25~ +75			
Storage Temperature Range	Tstg	-30 ~ +85			
Solder Temperature	Tsol	260 ± 5			

- Notes :**
- 1、 This is the limit current. It is not allowed to use when the product work continuously.
  - 2、 It is recommended that the product is driven by TTL,CMOS .
  - 3、 Soldering time 5 seconds.

**Electrical Optical Characteristics ( Ta=25 )****【LSD230A/B/C/D】**

Parameter	Symbol	Super Red		Green		Orange		Unit	Test Condition
		Typ.	Max.	Typ.	Max.	Typ.	Max.		
Luminous Intensity /Segment	I <sub>v</sub>	27	--	14	--	14	--	mcd	I <sub>F</sub> =10mA
Forward Voltage /Segment	V <sub>F</sub>	7.4	9.2	8.8	10	8.0	10	V	I <sub>F</sub> =20mA
Reverse Current /Segment	I <sub>R</sub>	--	50	--	50	--	50	uA	V <sub>R</sub> =5V
Dominant Wavelength	d	645	--	565	--	630	--	nm	I <sub>F</sub> =20mA
Spectral Line Half Width		30	--	30	--	30	--	nm	I <sub>F</sub> =20mA

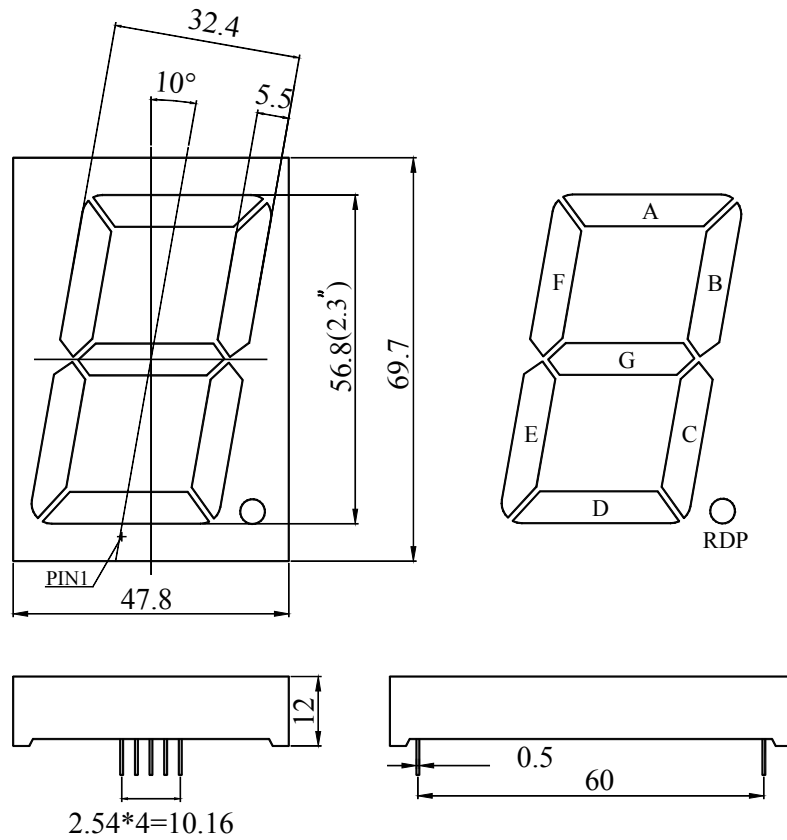
**Electrical Optical Characteristics ( Ta=25 )****【LSD230G/H/I/J】**

Parameter	Symbol	Super Red		Green		Orange		Unit	Test Condition
		Typ.	Max.	Typ.	Max.	Typ.	Max.		
Luminous Intensity /Segment	I <sub>V</sub>	20	--	10	--	10	--	mcd	I <sub>F</sub> =10mA
Forward Voltage /Segment	V <sub>F</sub>	5.55	6.9	6.6	7.5	6.0	7.5	V	I <sub>F</sub> =20mA
Reverse Current /Segment	I <sub>R</sub>	--	50	--	50	--	50	uA	V <sub>R</sub> =5V
Dominant Wavelength	d	645	--	565	--	630	--	nm	I <sub>F</sub> =20mA
Spectral Line Half Width		30	--	30	--	30	--	nm	I <sub>F</sub> =20mA

**Electrical Optical Characteristics ( Ta=25 )****【LSD230K/L】**

Parameter	Symbol	Super Red		Green		Orange		Unit	Test Condition
		Typ.	Max.	Typ.	Max.	Typ.	Max.		
Luminous Intensity /Segment	I <sub>V</sub>	40	--	20	--	20	--	mcd	I <sub>F</sub> =20mA
Forward Voltage /Segment	V <sub>F</sub>	5.55	6.9	6.6	7.5	6.0	7.5	V	I <sub>F</sub> =20mA
Reverse Current /Segment	I <sub>R</sub>	--	50	--	50	--	50	uA	V <sub>R</sub> =5V
Dominant Wavelength	d	645	--	565	--	630	--	nm	I <sub>F</sub> =20mA
Spectral Line Half Width		30	--	30	--	30	--	nm	I <sub>F</sub> =20mA

**Package Dimensions:**

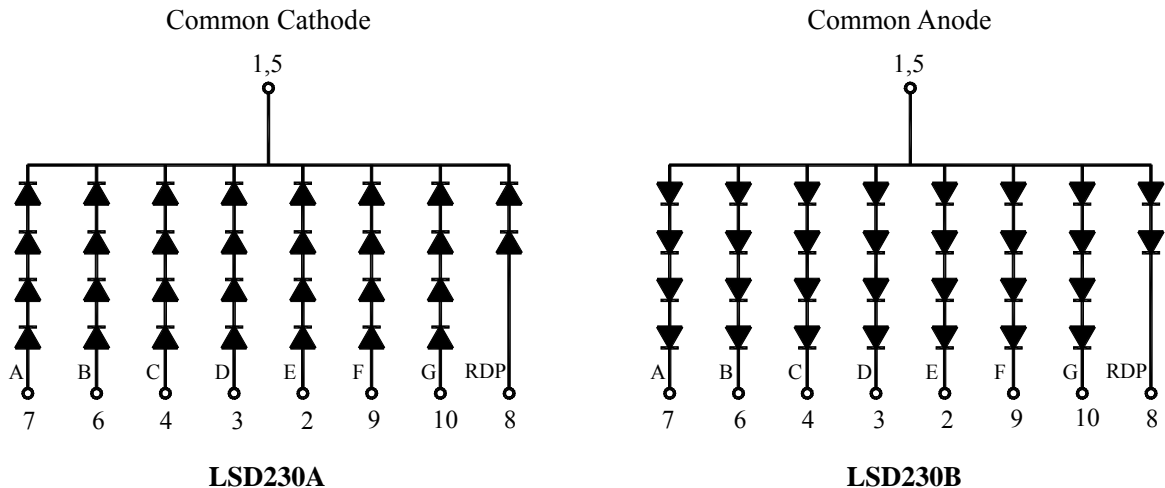


**【LSD230A/B/C/D/G/H/I/JK/L】**

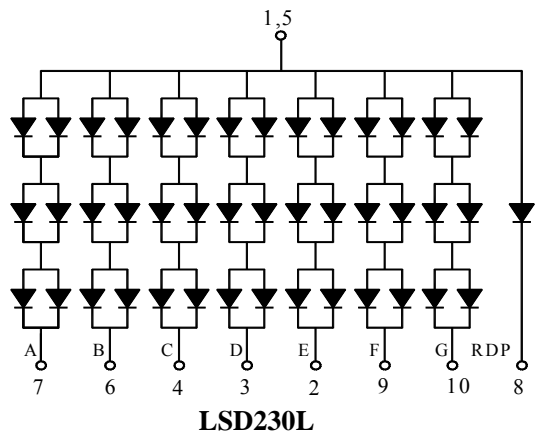
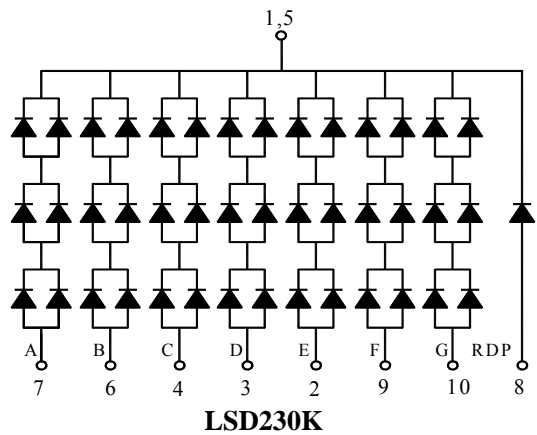
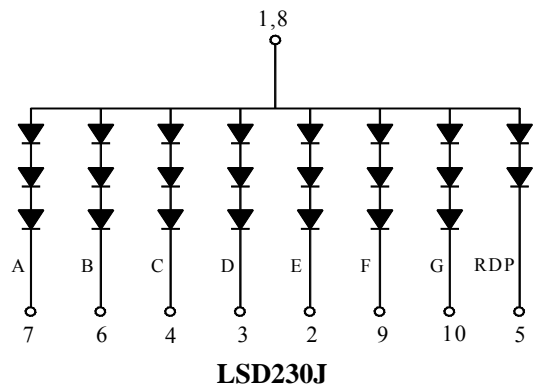
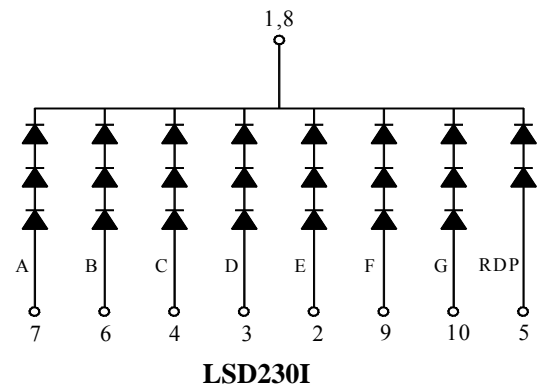
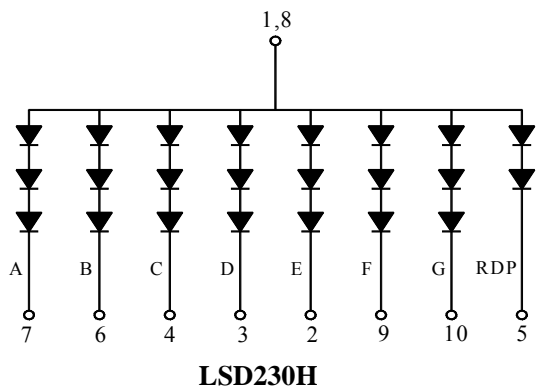
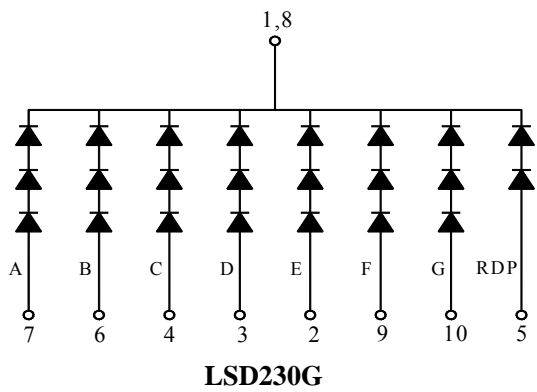
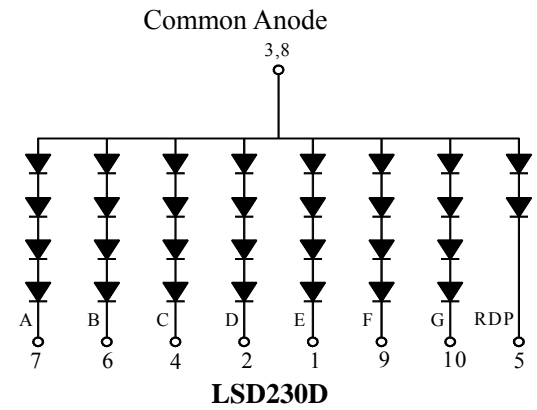
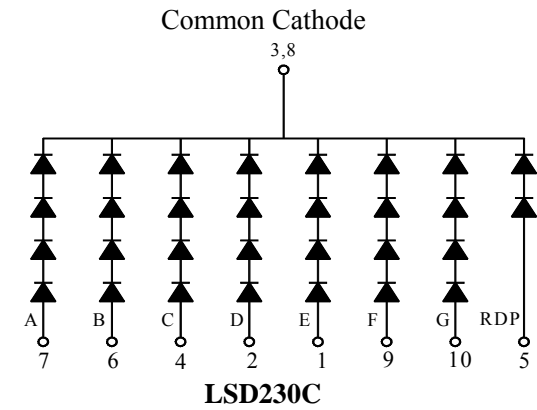
**NOTES :**

- All dimensions are in millimetres (mm), Tolerance is  $\pm 0.25\text{mm}$  unless otherwise noted.
- Specifications are subject to change without notice.

**Internal Circuit:**



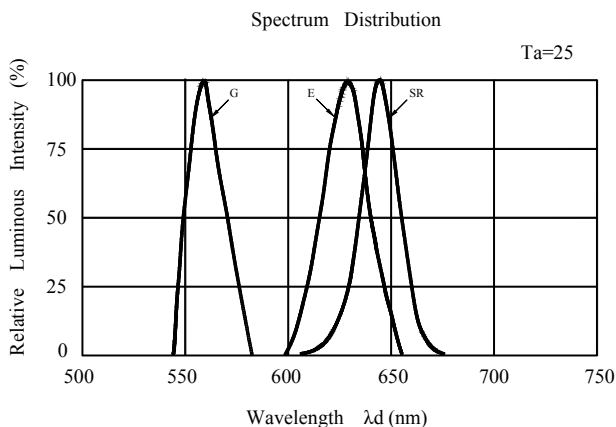
**Internal Circuit:**



### Reliability Test Items and Conditions

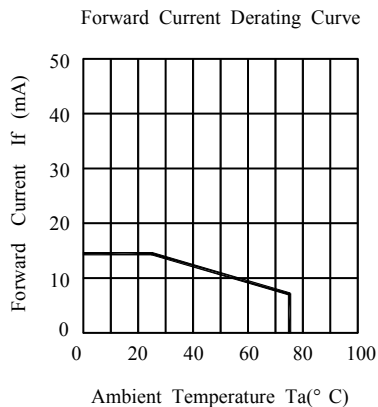
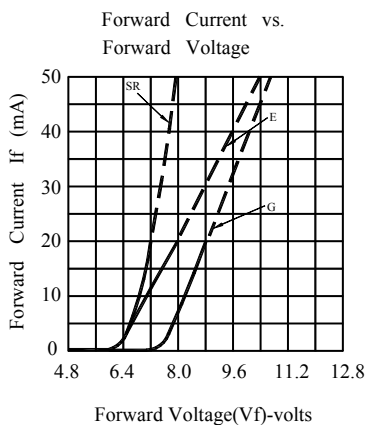
NO	Test Item	Test Conditions	Duration	Sample	Ac/Re
1	Temperature Cycle	-30 ~ 25 ~ 85 ~ 25 30min 5min 30min 5min	50cycles	100	0/1
2	High Temp. Storage	Ta=85	1000hours	100	0/1
3	Temp.& Humidity Test	Ta=85 RH=85%	1000hours	100	0/1
4	Low Temp. Storage	Ta=-30	1000hours	100	0/1
5	Operating Life Test	Ta=25 ± 5 DC IF=15mA	1000hours	100	0/1
6	Solder Heat	Tsol=260 ± 5 , 10s	1times	20	0/1

### Typical Electro-Optical Characteristics Curves



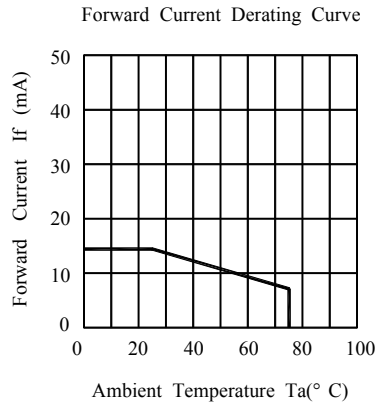
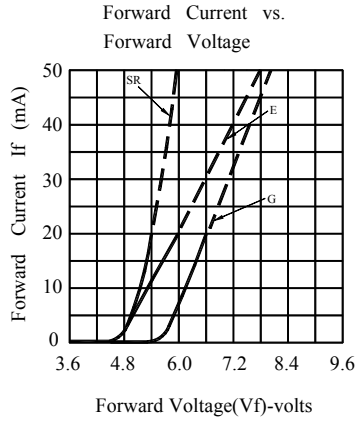
LSD230A/B/C/D

SR/G/E





**LSD230G/H/I/J**  
**SR/G/E**



**LSD230K/L**  
**SR/G/E**

