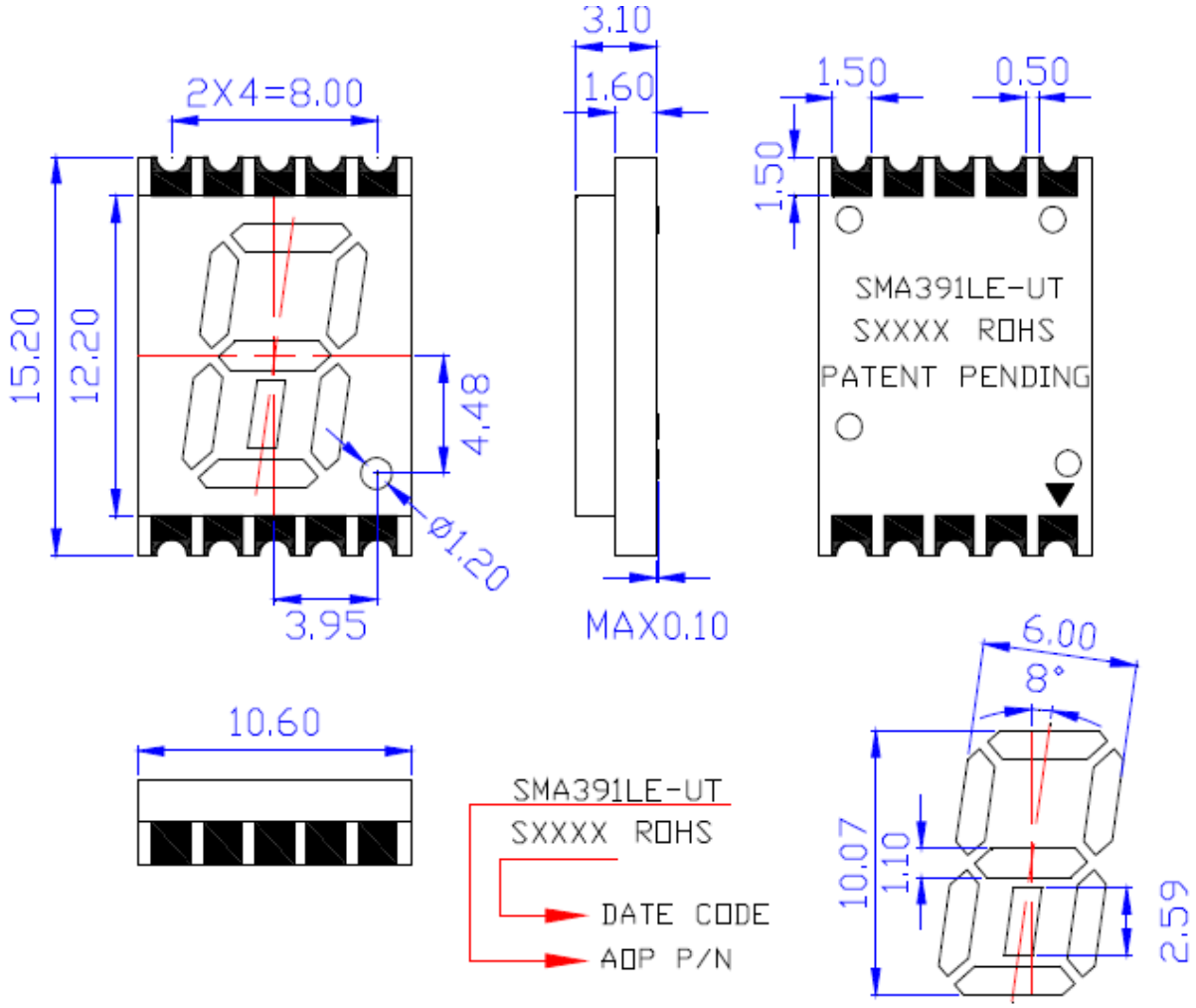
American Opto Plus LED Corp.
SMA-391LE-UT B/W
0.40” Red Single Digit Display

MECHANICAL DIMENSIONS



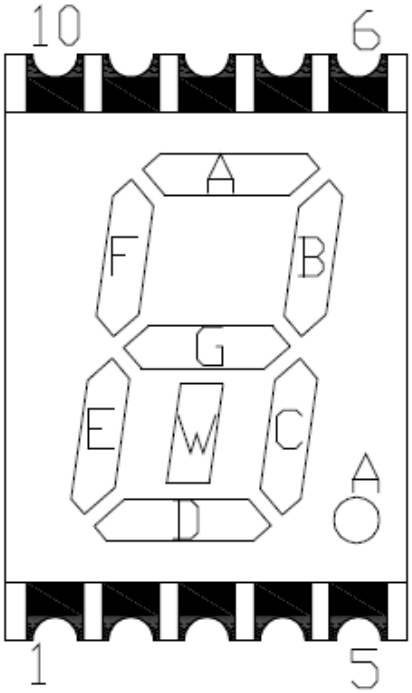
Notes:

1. Dimension in millimeter [inch], tolerance is ±0.25 [0.10] unless otherwise noted.
2. Bending ≤ 0.25mm

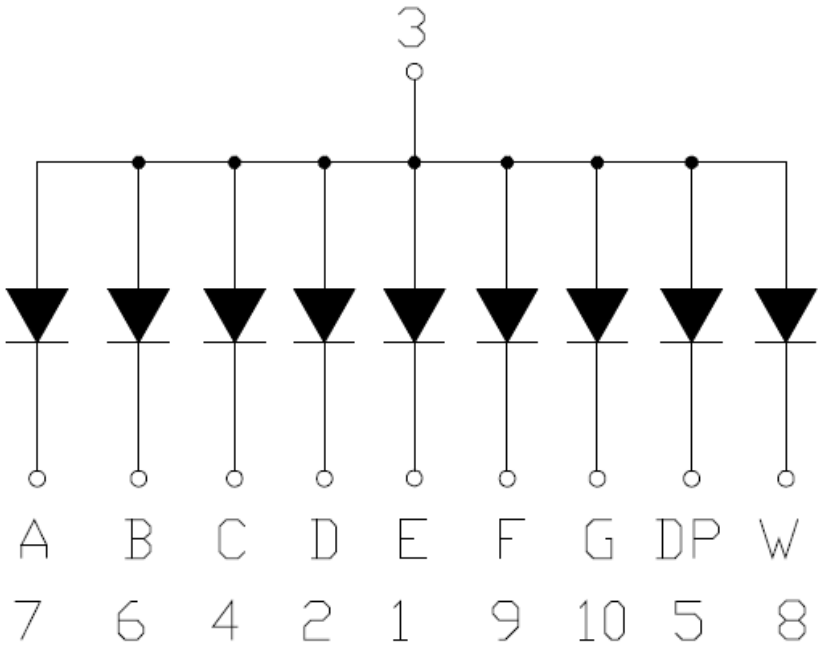
Chip Material	Emitted Color	Segment/Face	Description
AlGaInP	Red	White/Black	Common Anode

Version 1.0 Date: 06-21-2019 Specifications are subject to change without notice.
American Opto Plus LED Corp. 1206 E. Lexington Ave. , Pomona CA 91766 Tel: 909-465-0080 Fax: 909-465-0130 www.aopled.com

ALL LIGHT ON SEGMENTS FEATURE & PAD POSITION



INTERNAL CIRCUIT DIAGRAMS



ABSOLUTE MAXIMUM RATING **(Ta=25°C)**

Parameter	Symbol	Rating	Unit
Power Dissipation (Per Dice)	P_D	70	mW
Continuous Forward Current (Per Dice)	I_F	25	mA
Peak Current (Per Dice, duty cycle 1/10,1KHz)	I_{FP}	90	mA
Derating Liner from 25°C(Per Dice)	$\Delta I_F/\Delta T$	0.28	mA/°C
Reverse Voltage (Per Dice)	V_R	5	V
Operating Temp.	T_{OPR}	-40 ~ +105	°C
Storage Temp.	T_{STG}	-40 ~ +105	°C
Hand Soldering Temp.	T_{SOL}	350	°C

ELECTRO-OPTICAL CHARACTERISTICS **(Ta=25°C)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage (Per Dice)	V_F	IF=20mA	--	2.0	2.4	V
Peak Emission Wavelength	Λ_p		--	632	--	nm
Dominant Wavelength	Λ_d		619	624	629	nm
Spectrum Radiation Bandwidth	$\Delta\lambda$		--	20	--	nm
Luminous Intensity (Per Segment)	I_V		--	35	--	mcd
Luminous Intensity Matching Ratio	I_V-m		--	--	2:1	--
Reverse Current	I_r	VR=8V	--	--	10	μA

ELECTRICAL/OPTICAL CHARACTERISTICS CURVES

(Ta = 25°C Unless Otherwise Noted)

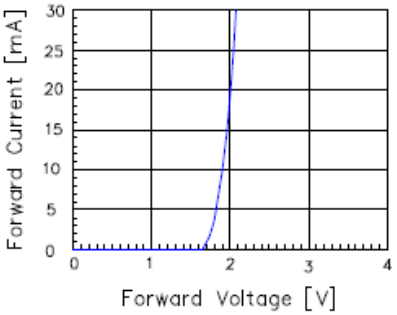
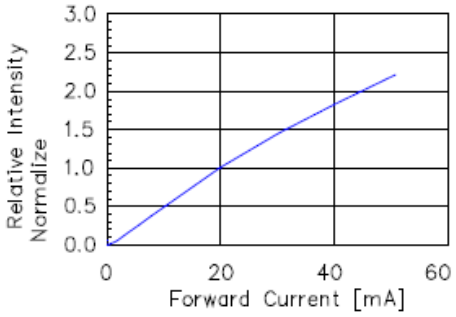


Fig 1. Forward Current vs. Forward Voltage



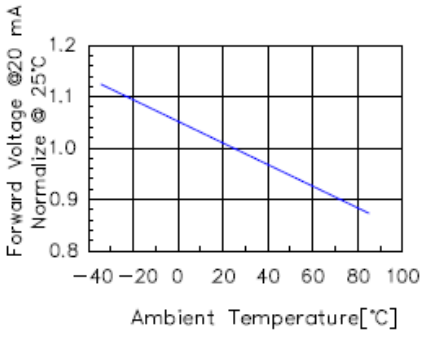


Fig 3. Forward Voltage vs. Temperature

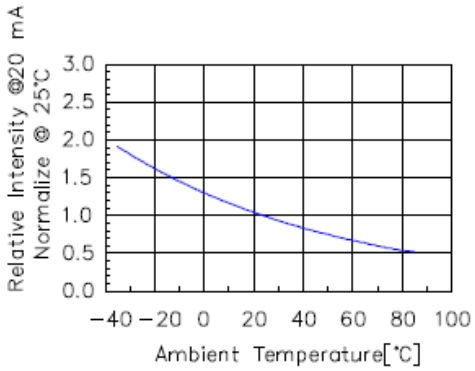


Fig 4. Relative Intensity vs. Temperature

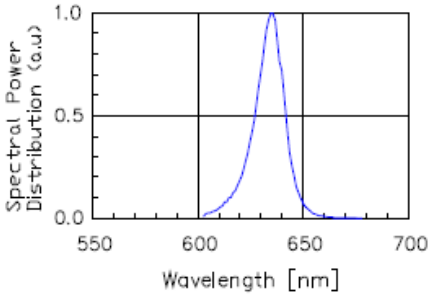


Fig 5. Spectral Power Distribution vs. Wavelength

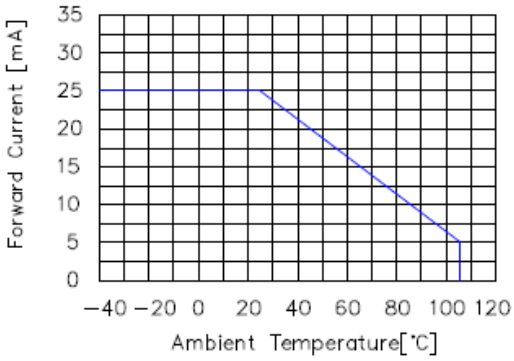
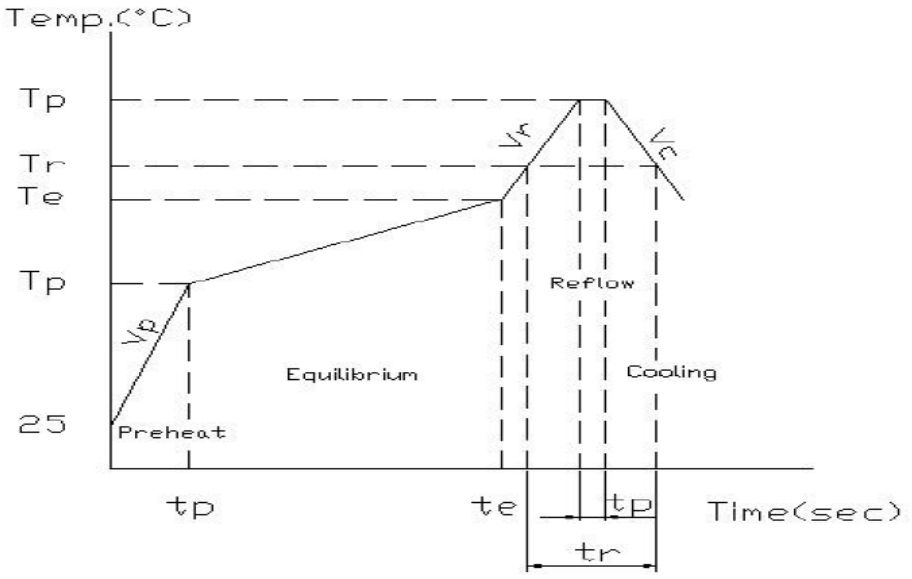


Fig 6. Forward current vs. Temperature

SOLDERING CHARACTERISTICS

1. IR-Reflow Soldering Profile

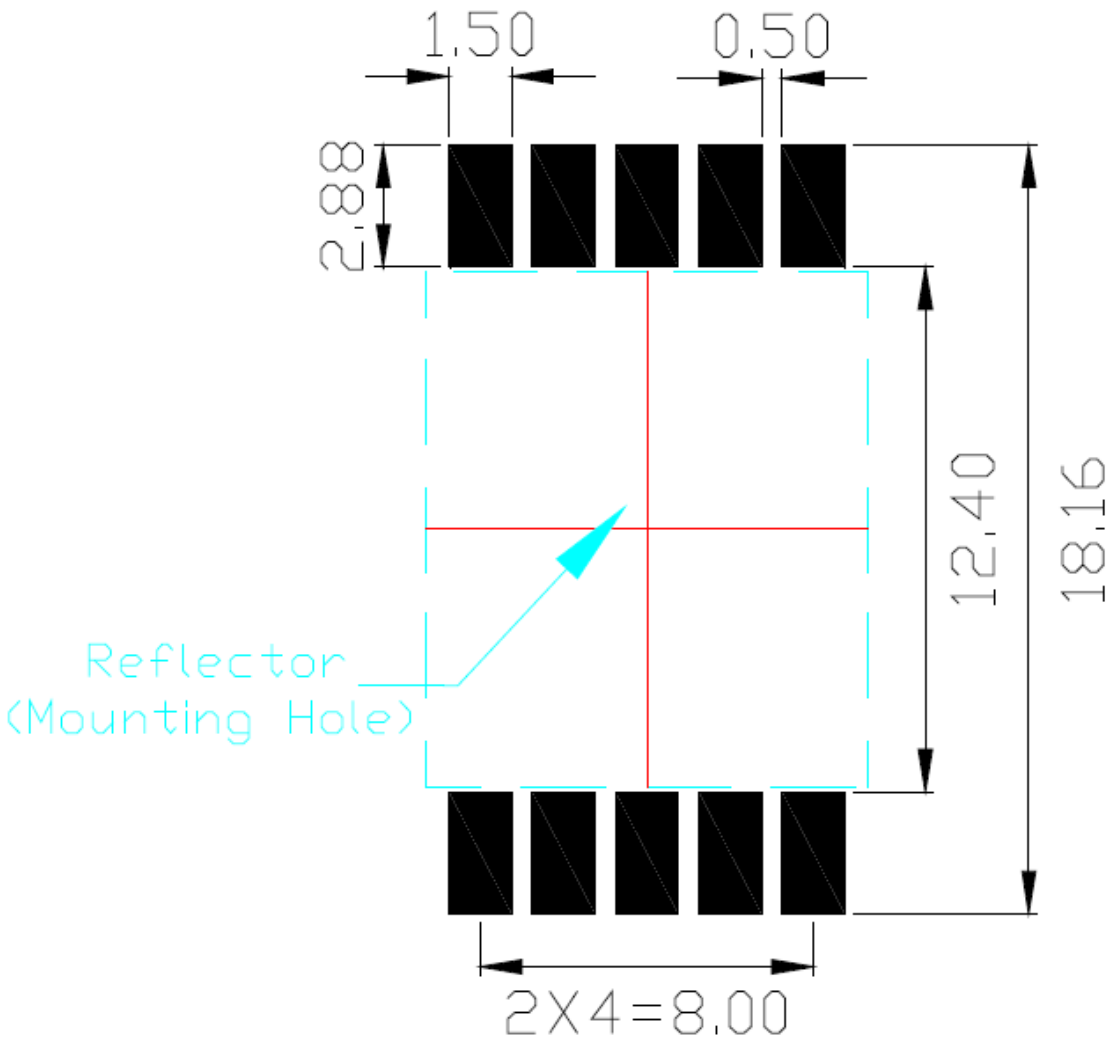
Item	Title	Symbol	Min	Max	Unit
Preheat	Ramp-Up Rate	Vp	1	5	°C/Sec
	Temperature	Tp	150	--	°C
	Time	tp	--	--	Sec
Solder Dip	Ramp-Up Rate	Ve	--	--	°C/Sec
	Temperature	Te	150	200	°C
	Time	te	60	120	Sec
Reflow	Ramp-Up Rate	Vr	1	5	°C/Sec
	Temperature	Tr	220	--	°C
	Time	tr	--	60	Sec
	Peak Temperature	Trp	--	260	°C
	Peak Time	trp	--	10	Sec
Cooling	Ramp-Down Rate	Vc	3	6	°C/Sec



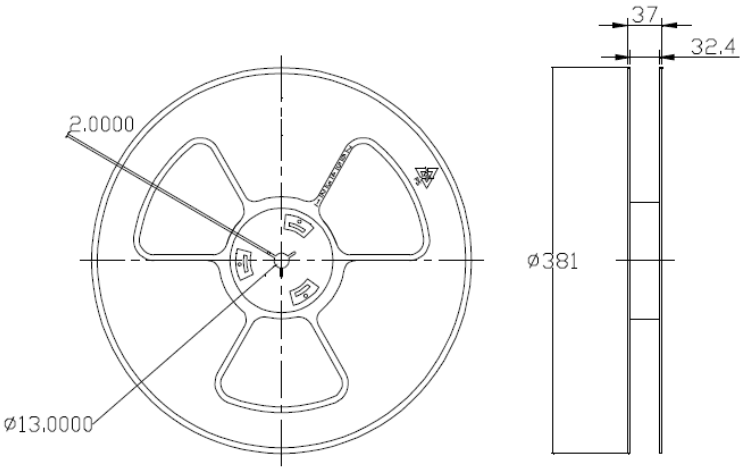
2. Hand Soldering Condition

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)

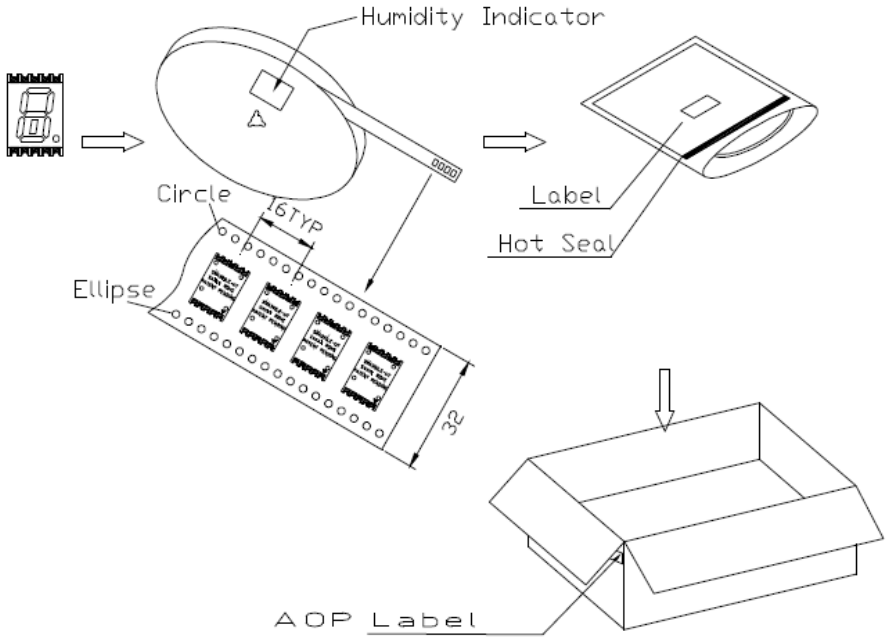
SOLDERING PAD SIZE



REEL DIMENSIONS



PACKING & LABEL DIMENSIONS



Package Name	Size	Unit	Amount	Unit	Amount	Unit	Note
Reel	Φ300	mm	1	Reel	1000	Pcs	/
Bag	L450*W430	mm	1	Reel	1000	Pcs	/
Outer Box	L430*W390*H300	mm	7	Inner Box	7000	Pcs	/

STORAGE METHOD

1. Storage Conditions:
   Before opening the package:
   The LEDS should be kept at 30°C or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

   After opening the package:
   The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture bag and to reseal the moisture proof bag again.

2. If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions:
   Baking treatment: more than 24hours at 65±5°C