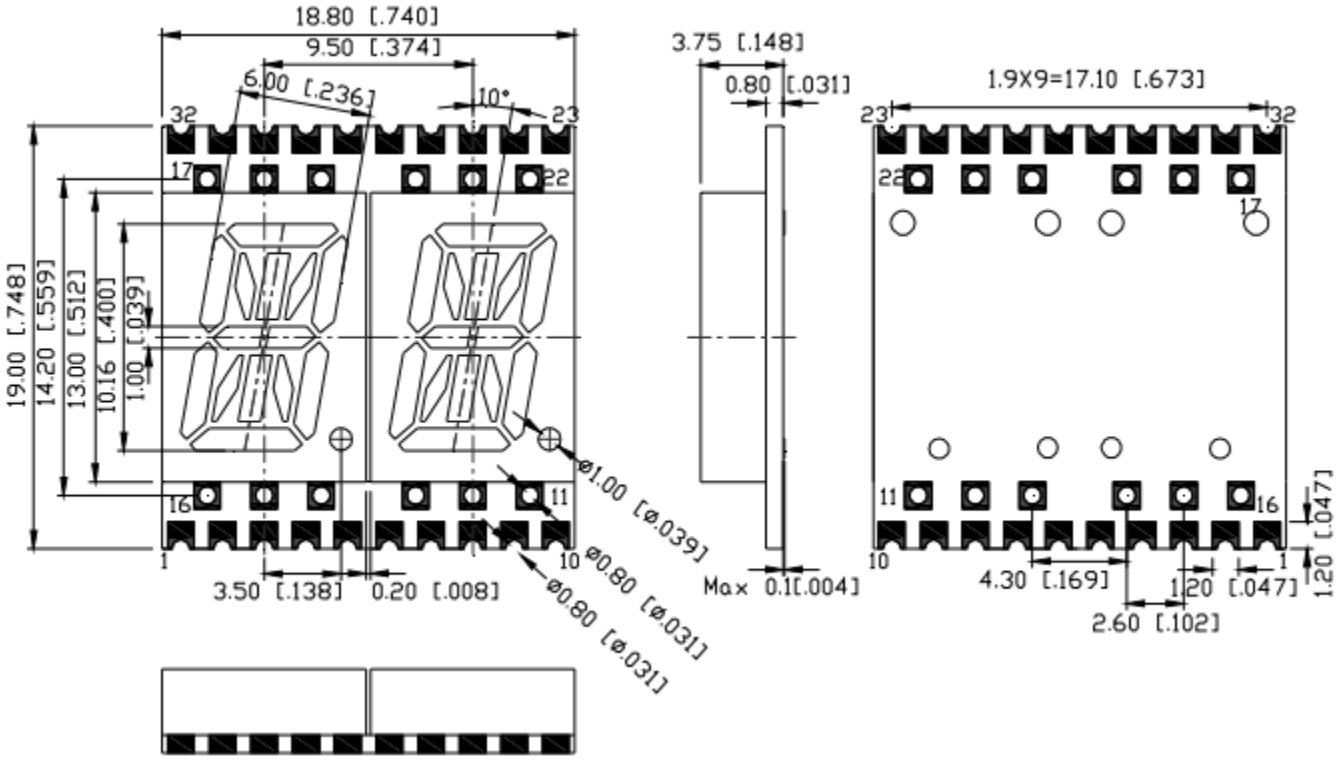
American Opto Plus LED Corp.
SMA4028B-C G/W
0.4” Blue Dual Digit Alphanumeric SMD Display

MECHANICAL DIMENSIONS

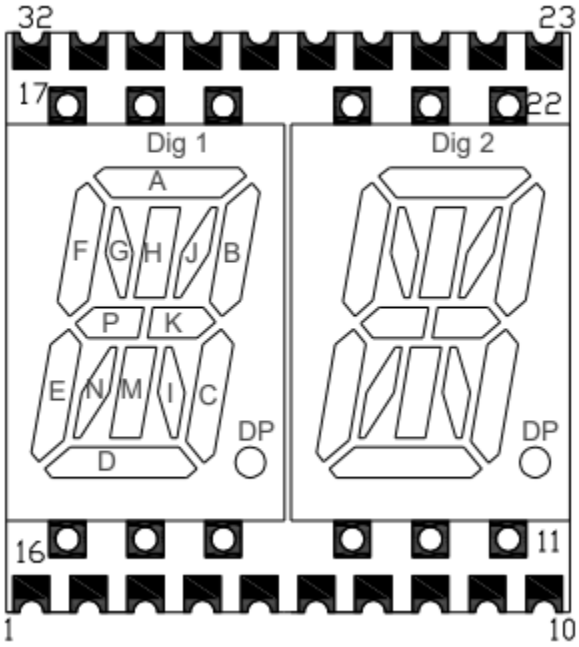


Notes:

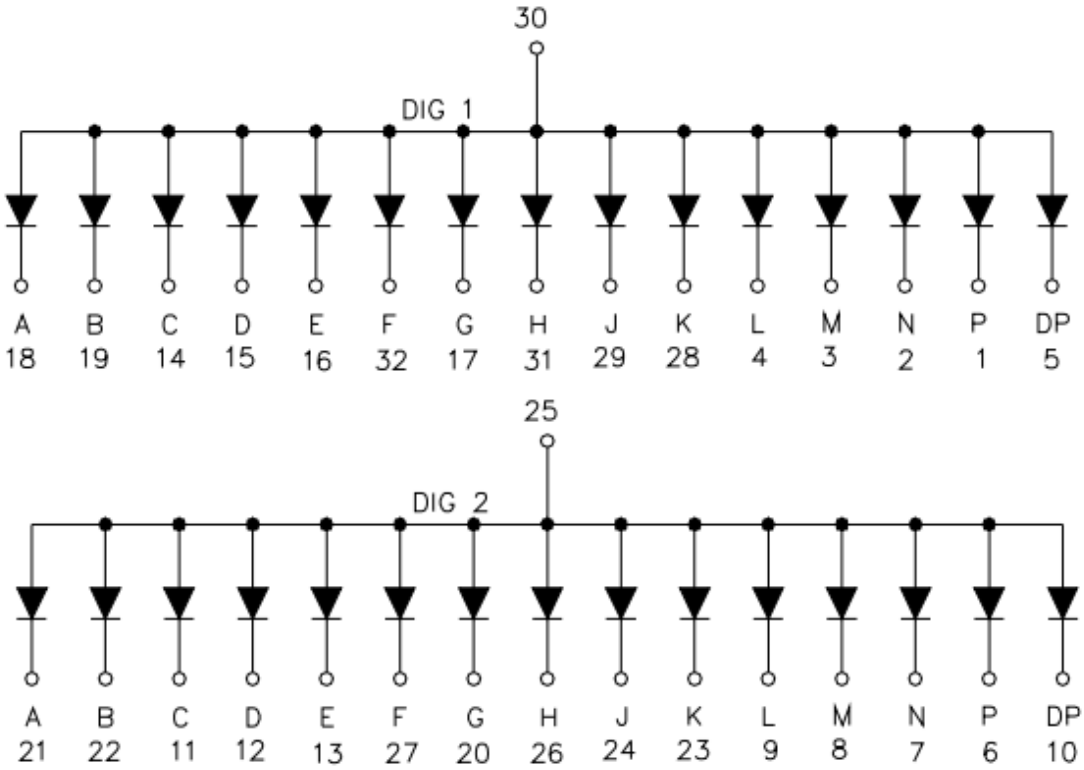
1. Dimension in millimeter [inch], tolerance is ±0.25 [0.10] unless otherwise noted.
2. Bending≤Length*1%.

Chip Material	Emitted Color	Segment/Face	Description
InGaN	Blue	White/ Gray	Common Anode

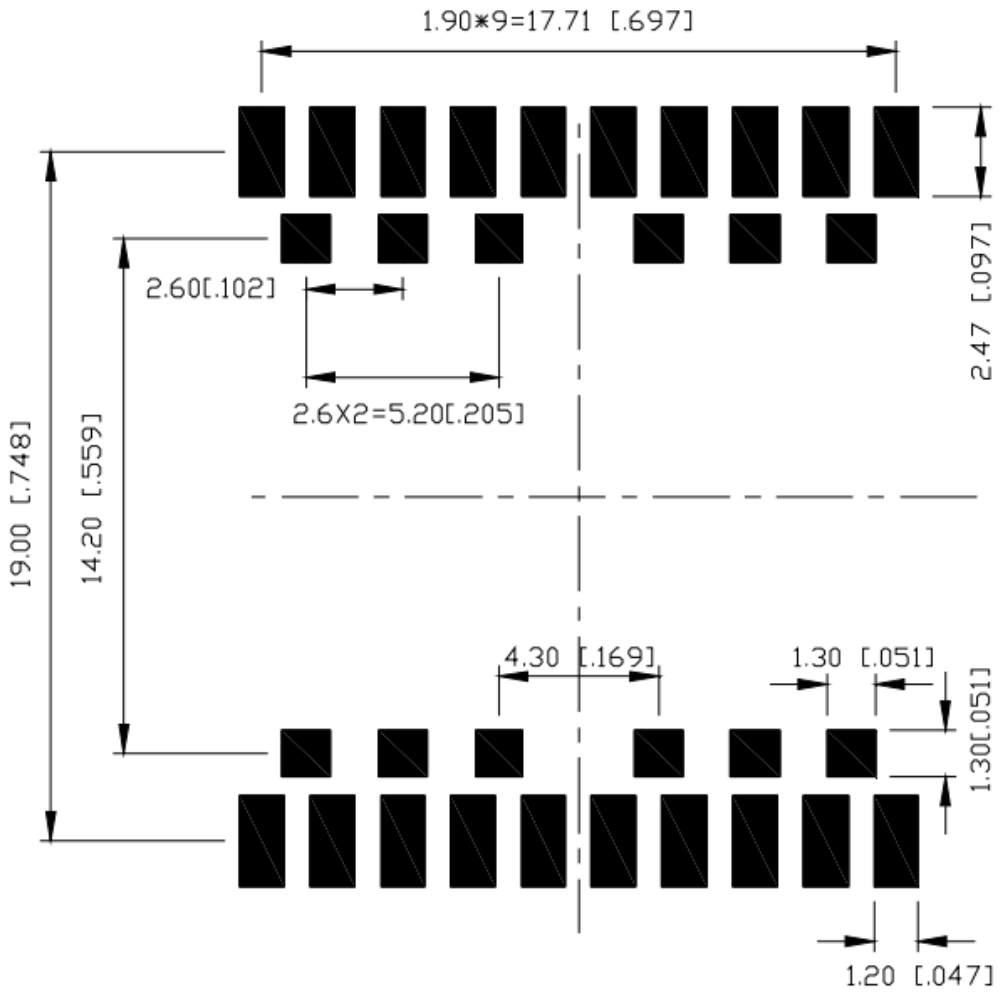
ALL LIGHT ON SEGMENTS FEATURE



INTERNAL CIRCUIT DIAGRAMS



RECOMMENDED SOLDERING PAD SIZE



ABSOLUTE MAXIMUM RATING **(Ta=25°C)**

Parameter	Symbol	Rating	Unit
Power Dissipation (Per Dice)	P_D	114	mW
Continuous Forward Current (Per Dice)	I_F	30	mA
Peak Current (Per Dice, duty cycle 1/10,1KHz)	I_{FP}	100	mA
Derating Liner from 25°C(Per Dice)	$\Delta I_F/\Delta T$	0.4	mA/°C
Reverse Voltage (Per Dice)	V_R	5	V
Electrostatic discharge(HBM)	ESD	1500	V
Operating Temperature	T_{OPR}	-40 ~ +105	°C
Storage Temperature	T_{STG}	-40 ~ +105	°C
Hand Soldering Temperature	T_{sol}	350	°C

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage (Per Segment)	VF	IF=20mA	--	3.2	3.8	V
Peak Wavelength	λP		--	470	--	nm
Luminous Intensity Matching Ratio	IV-m	IF=10mA	--	--	2:1	--
Luminous Intensity (Per Segment)	IV		--	20	--	mcd
Reverse Current	Ir	VR=5V	--	--	50	μA

Note: The device cannot operate under continuous reverse voltage.

LUMINOUS GENERAL BIN GRADE **(I_f = 10mA)**

Bin	Min	Max	Unit
K	10.764	17.223	mcd
L	17.224	27.558	
M	27.559	44.095	

Notes: Tolerance: ±20%

COLOR RANK LIMITS **(I_f = 20mA)**

Bin	Min	Max	Unit
1	456	458.9	nm
2	459	461.9	
3	462	464.9	
4	465	467.9	
5	468	470.9	
6	471	474	

Notes: Tolerance: ±1nm

ELECTRICAL/OPTICAL CHARACTERISTICS CURVES

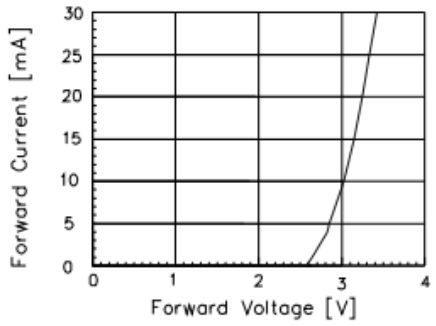


Fig 1. Forward Current vs. Forward Voltage

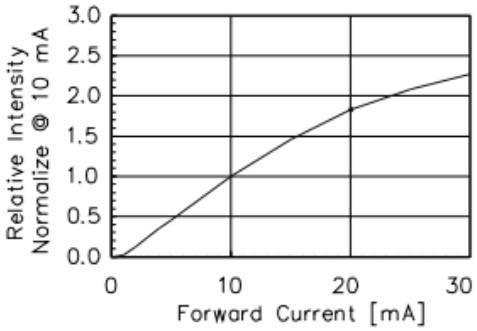


Fig 2. Relative Intensity vs. Forward Current

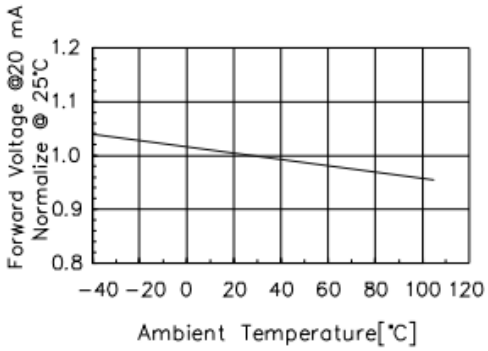


Fig 3. Forward Voltage vs. Temperature

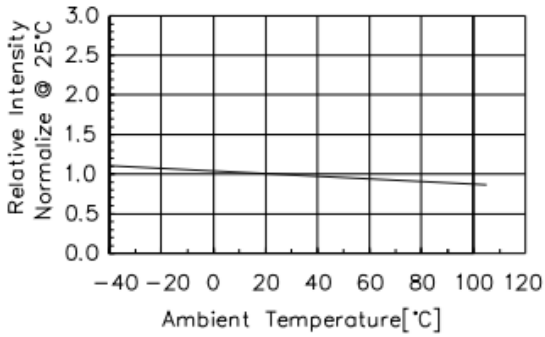


Fig 4. Relative Intensity vs. Temperature

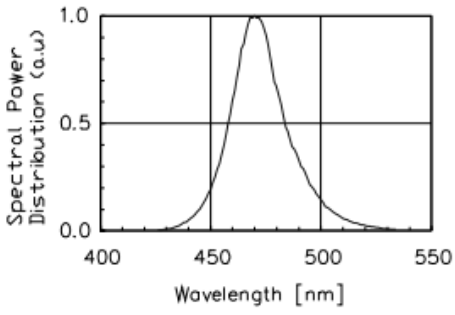


Fig 5. Spectral Power Distribution vs. Wavelength

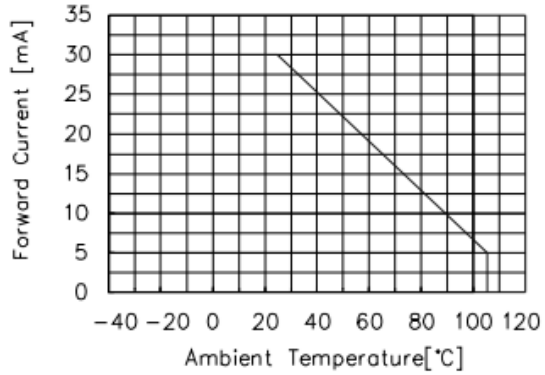
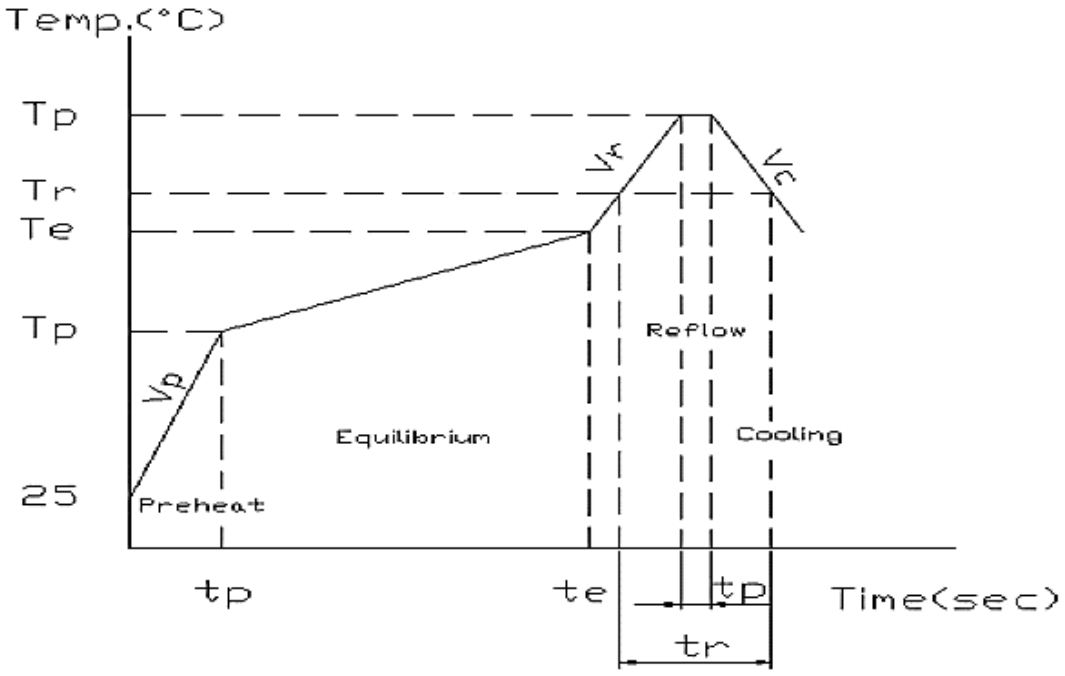


Fig 6. Forward current vs. Temperature

SOLDERING CHARACTERISTICS

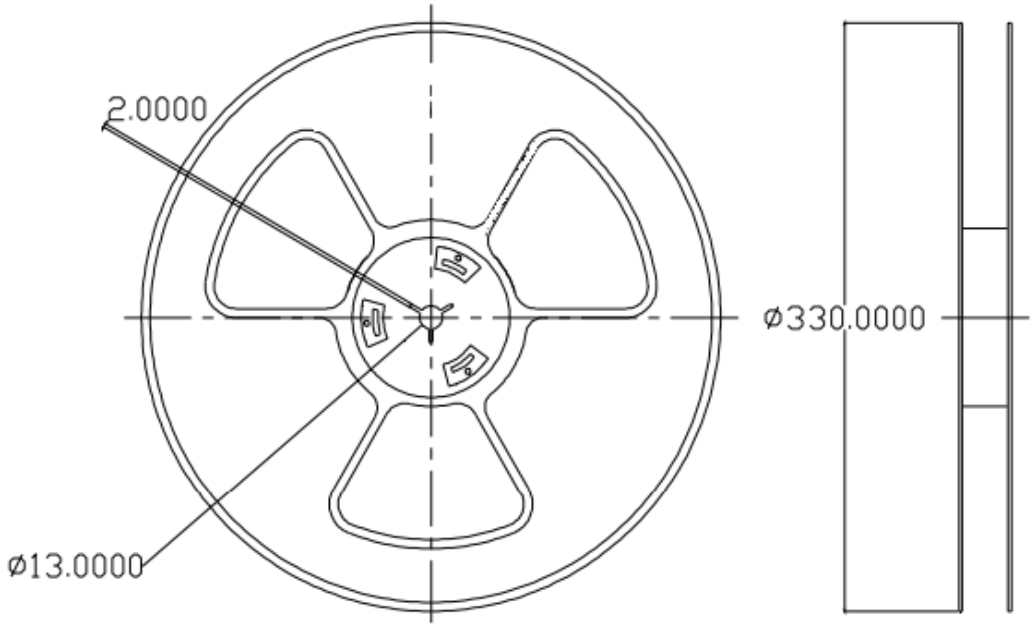
1. **IR-Reflow Soldering Profile**

Stage	Parameter	Symbol	Min.	Max.	Unit
Preheat	Ramp-up Rate	Vp	1	5	°C/sec
	Temperature	Tp	150	--	°C
	Time	tp	--	--	Sec
Equilibrium	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

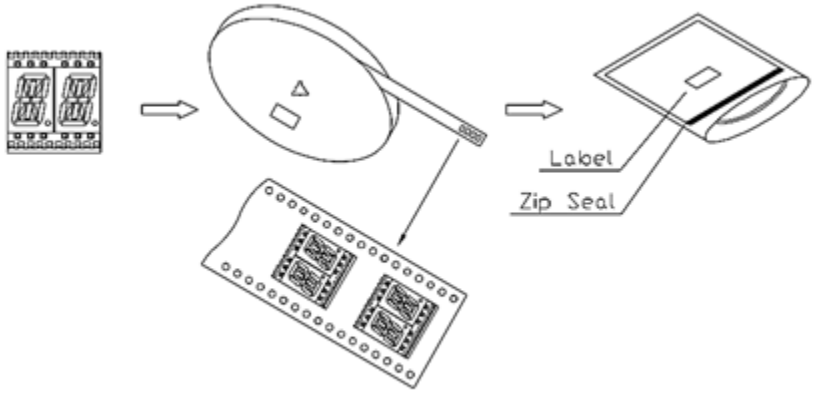


2. **Hand Soldering (Iron Condition)**
   1. Soldering Iron: 30W Max.
   2. Temperature: 350°C Max.
   3. Soldering Time: 3 seconds Max. (1 time)
   4. Distance: 1.6mm min.(from seating plane)

REEL DIMENSIONS



PACKING & LABEL DIMENSIONS



Package Name	Size	Unit	Amount	Unit	Amount	Unit
Reel	Ø330	mm	1	Reel	750	Pcs
Bag	L450*W430	mm	1	Reel	750	Pcs
Outer Box	L430*W330*H270	mm	5	Bag	3750	Pcs

STORAGE METHOD

Storage Conditions

Before opening the package:

- The LEDs should be kept at -40°C~105°C, RH 45%~85%. 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, 70%RH or less.
- The LEDs should be soldered within 672 hours (4 weeks) after opening the package.
- If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moistures absorbent material (silica gel).
- It is recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.
- If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking is required and should be performed under the following condition:
    - 24 hours at 65±5°C