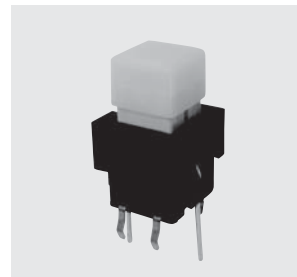


13AL

RoHS Compliant

Illuminated Pushbutton Switches



■ Specification

Rating	Non-switching : 1mA, DC20V Max.or 5mA,DC5V Max. Break current : Same as Non-switching Min. rating : 1mA, DC5V
Contact Resistance	200Ω Max.
Dielectric Strength	100MΩ Min. (DC100V)
Insulation Resistance	AC250Vrms 1minute
Operating Force	060/090 : 0.883~1.57N 110 : 0.981~1.96N
Stroke	060/090 : 1.3mm, 110 : 1.5mm
Operating Temperature Range	-10°C~+60°C
Storage Temperature Range	-25°C~+70°C
Electrical Life	060/090 operations : 300,000, 110 operations : 500,000
Material/Finish	Key top : Polycarbonate Housing : PBT Contact terminals : Phosphor bronze/ Gold over Nickel plating LED terminal : Iron/Silver plated

■ Part Numbering

13AL - 060 - 0 01 0 - X

Series Code	Key Top Style	Key top / LED color	LED Max Rating	Pb Free
	Code style	Code Color Key Top LED Code Color Key Top LED	Code Forward Current	
	060 6mm sq.	00 White Yellow 03 Green Green	0 30mA	
	090 9mm sq.	01 Red Red 04 Orange Orange		
	110 11mm sq.	02 Blue Green 05 Yellow Green		

Custom legends and engravings available.

■ Type and LED Specification

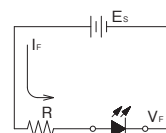
Part No.	Color		LED Characteristics					
	Key Top	LED	Max. Rating (25°C)		Forward Voltage (V _F)		Recommended Forward Current	Ambient Temperature and Allowable Forward Current
			Reverse Voltage (V _R)	Forward Current (I _F)	Standard	Max		
13AL-***-0000-X	White	Yellow	4V	30mA	2.2V	2.8V	20mA	
13AL-***-0010-X	Red	Red			2.0V			
13AL-***-0020-X	Blue	Green			2.1V			
13AL-***-0030-X	Green	Green		25mA	2.1V			
13AL-***-0040-X	Orange	Orange			2.2V			
13AL-***-0050-X	Yellow	Green			2.1V			

(Note 1) *** designate Key Top Style ("060" = 6mm sq., "090" = 9mm sq., "110" = 11mm sq.).

■ Precautions

(a) To prevent overcurrent of LED, connect a protective resistance in series.

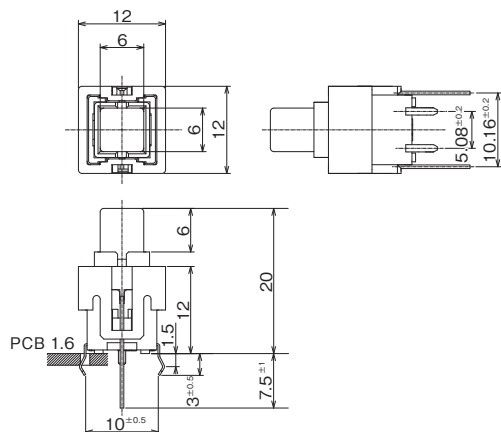
(b) R: Protective resistance ES: Supply voltage VF: Forward voltage of LED IF: Forward current of LED



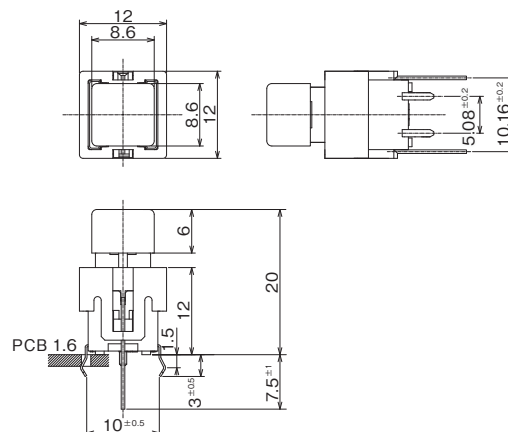
$$R = \frac{E_S - V_F}{I_F}$$

13AL

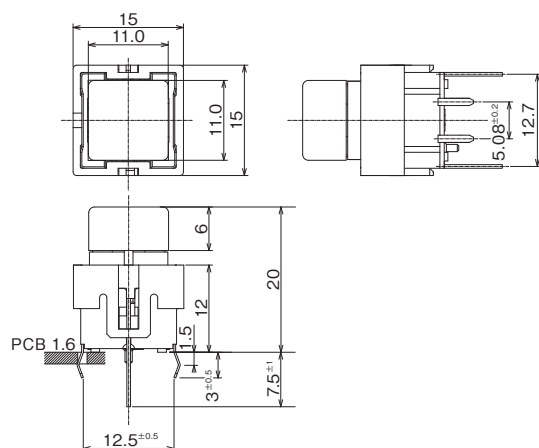
13AL-060 6 mm Sq. Type



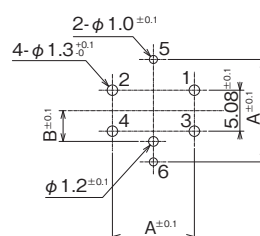
13AL-090 9 mm Sq. Type



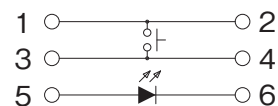
13AL-110 11 mm Sq. Type



PC Hole Layouts



Circuit



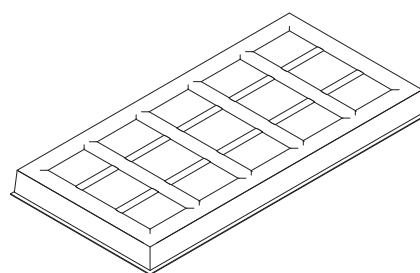
Type	A±0.1	B±0.1
13AL-060	10.16	2.54
13AL-090	10.16	2.54
13AL-110	12.7	3.81

Table of Part Numbers

Part No.	Key Top Style	Key Top Color	LED Color	MOQ
13AL-060-0000-X	6mm 6mm sq.	White	Yellow	30
13AL-060-0010-X		Red	Red	
13AL-060-0020-X		Blue	Green	
13AL-060-0030-X		Green	Green	
13AL-060-0040-X		Orange	Orange	
13AL-060-0050-X		Yellow	Green	
13AL-090-0000-X	9mm 9mm sq.	White	Yellow	
13AL-090-0010-X		Red	Red	
13AL-090-0020-X		Blue	Green	
13AL-090-0030-X		Green	Green	
13AL-090-0040-X		Orange	Orange	
13AL-090-0050-X		Yellow	Green	
13AL-110-0000-X	11mm 11mm sq.	White	Yellow	
13AL-110-0010-X		Red	Red	
13AL-110-0020-X		Blue	Green	
13AL-110-0030-X		Green	Green	
13AL-110-0040-X		Orange	Orange	
13AL-110-0050-X		Yellow	Green	

Packaging Specifications

30pcs/tray



Soldering

- Manual soldering
Device : Solder iron
350°C Max. 3sec. Max.
- Auto soldering
Device : Jet wave or dip type
260°C Max. 10sec. Max. Twice