

SERIES: TS28 | **DESCRIPTION:** TACTILE SWITCH

FEATURES

- illuminated
- 4 color options
- right angle

**SPECIFICATIONS**

parameter	conditions/description	min	typ	max	units
rated voltage				30	Vdc
rated current				30	mA
withstanding voltage	for 1 minute		250		Vac
contact resistance	applying load of 2 times operating force at 5 Vdc, 10 mA			100	mΩ
insulation resistance	for 1 minute at 100 Vdc	100			MΩ
operating force		190	260	330	gf
return force		20			gf
actuator travel		0.15	0.25	0.35	mm
operating temperature		-30		80	°C
storage temperature		-40		90	°C
life	at 5 Vdc, 5 mA, 20 cycles/second, 1.5 times operating force		100,000		cycles
vibration	10~55~10 Hz, 1.5 mm amplitude, 2 hours on each XYZ				
flammability rating	see material table				
RoHS	yes				

SOLDERABILITY

parameter	conditions/description	min	typ	max	units
hand soldering	for maximum 3 seconds			350	°C
wave soldering	for maximum 5 seconds			260	°C

PART NUMBER KEY

TS28 - 63 - 63 - XX - 260 - RA - D

Base Number

LED Color:
BL = blue
R = red
G = green
Y = yellow

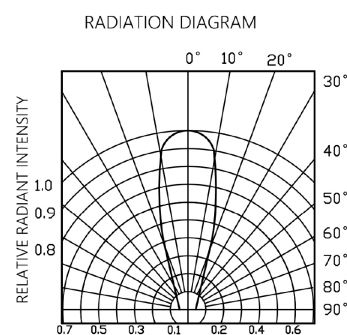
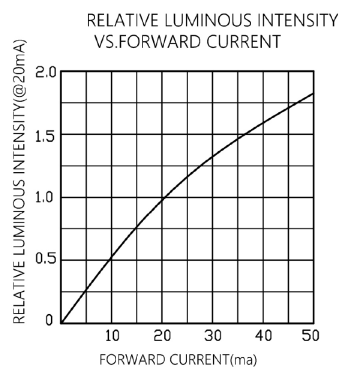
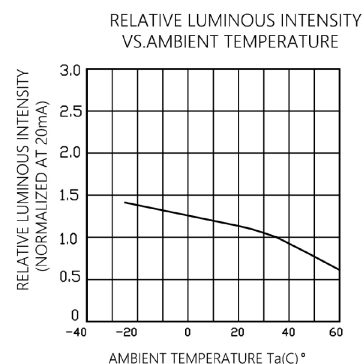
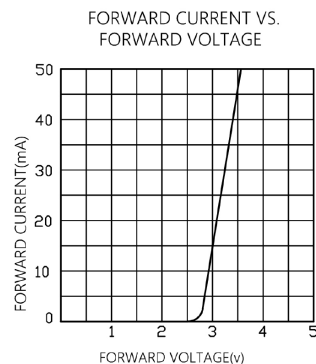
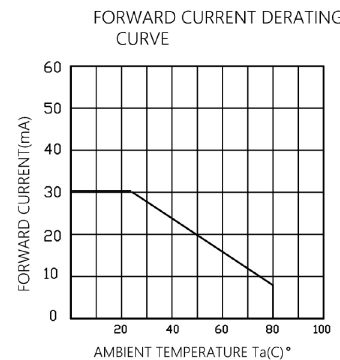
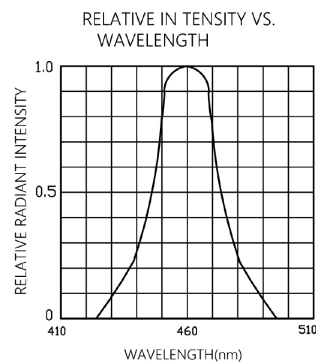
LED ABSOLUTE MAXIMUM RATINGS (BLUE) (TA=25°C)

parameter	conditions/description	min	typ	max	units
power dissipation (Pd)				120	mW
DC forward current (If)				30	mA
peak forward current (Ifp)	pulse of 1/10 duty and 0.1 ms width			100	mA
reverse voltage (Vr)				5	V

LED ELECTRO-OPTICAL CHARACTERISTICS (BLUE) (TA=25°C)

parameter	conditions/description	min	typ	max	units
forward voltage (Vf)	at If=20 mA		3.0	3.2	V
luminous intensity (Iv)	at If=20 mA	1,000	1,400		mcd
peak wavelength (λp)	at If=20 mA		460		nm
dominant wave length (λd)	at If=20 mA	465		470	nm
spectral line half-width (Δλ)	at If=20 mA		30		nm
viewing angle (2θ1/2)	at If=20 mA		30		deg

LED ELECTRO-OPTICAL CHARACTERISTIC CURVES (BLUE)



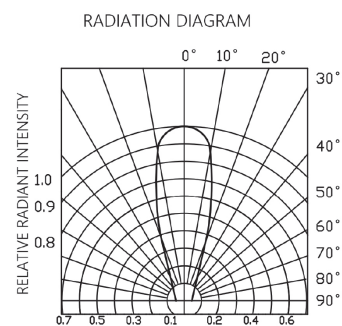
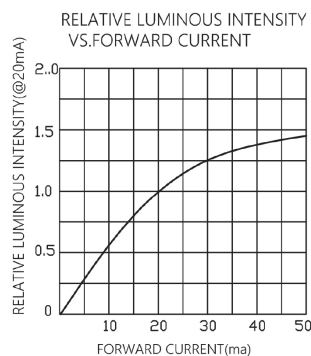
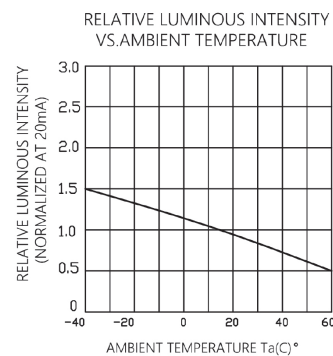
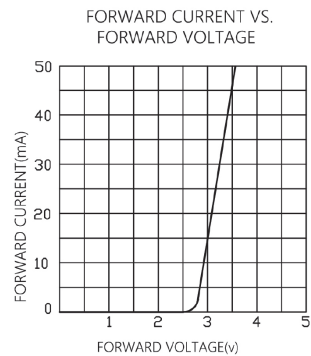
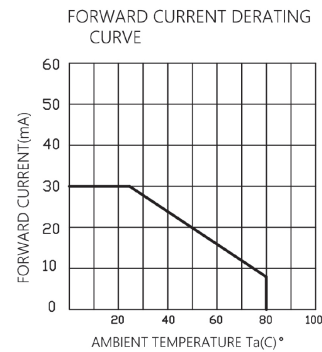
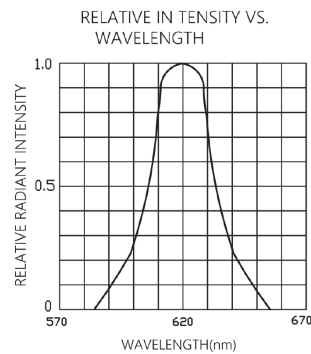
LED ABSOLUTE MAXIMUM RATINGS (RED) (TA=25°C)

parameter	conditions/description	min	typ	max	units
power dissipation (Pd)				52	mW
DC forward current (If)				20	mA
peak forward current (Ifp)	pulse of 1/10 duty and 0.1 ms width			100	mA
reverse voltage (Vr)				5	V

LED ELECTRO-OPTICAL CHARACTERISTICS (RED) (TA=25°C)

parameter	conditions/description	min	typ	max	units
forward voltage (Vf)	at If=20 mA		2.0	2.6	V
luminous intensity (Iv)	at If=20 mA	2,600	3,000		mcd
reverse current (Ir)	at Vr=5 V			100	μA
peak wavelength (λp)	at If=20 mA		622		nm
dominant wave length (λd)	at If=20 mA	620		625	nm
spectral line half-width (Δλ)	at If=20 mA		20		nm
viewing angle (2θ1/2)	at If=20 mA		30		deg

LED ELECTRO-OPTICAL CHARACTERISTIC CURVES (RED)



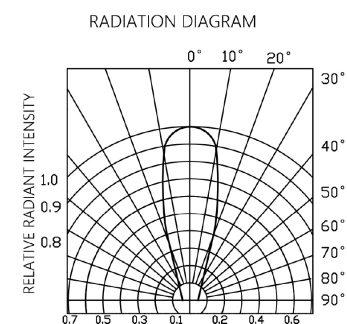
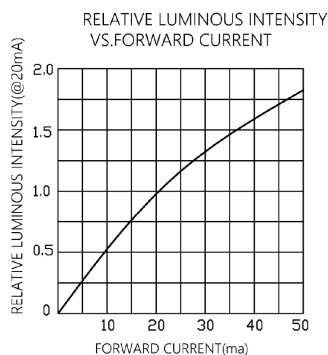
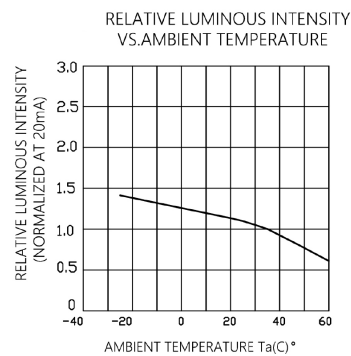
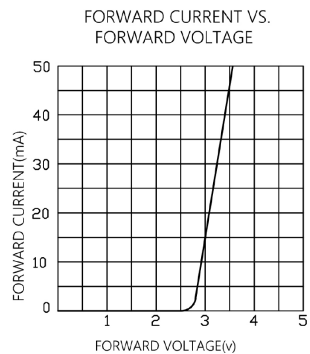
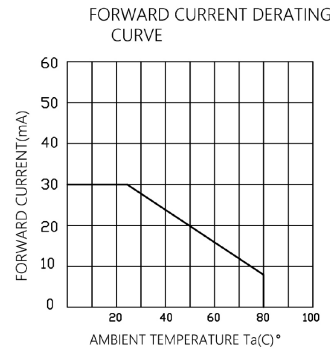
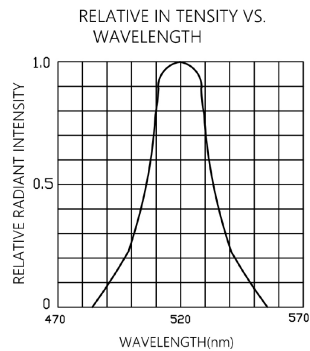
LED ABSOLUTE MAXIMUM RATINGS (GREEN) (TA=25°C)

parameter	conditions/description	min	typ	max	units
power dissipation [Pd]				72	mW
DC forward current [If]				20	mA
peak forward current [Ifp]	pulse of 1/10 duty and 0.1 ms width			100	mA
reverse voltage [Vr]				5	V

LED ELECTRO-OPTICAL CHARACTERISTICS (GREEN) (TA=25°C)

parameter	conditions/description	min	typ	max	units
forward voltage [Vf]	at If=20 mA		3.2	3.6	V
luminous intensity [Iv]	at If=20 mA	14,500	15,000		mcd
reverse current [Ir]	at Vr=5 V			1	μA
peak wavelength [λp]	at If=20 mA		515		nm
dominant wave length [λd]	at If=20 mA	510		525	nm
spectral line half-width [Δλ]	at If=20 mA		30		nm
viewing angle [2θ1/2]	at If=20 mA		30		deg

LED ELECTRO-OPTICAL CHARACTERISTIC CURVES (GREEN)



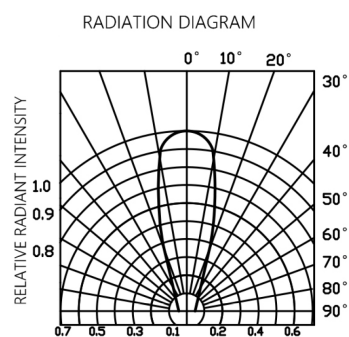
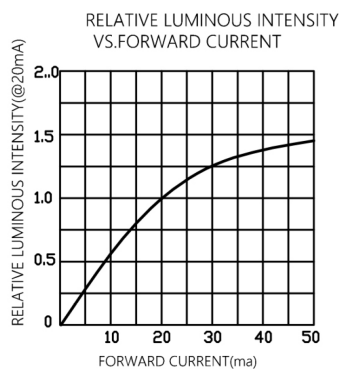
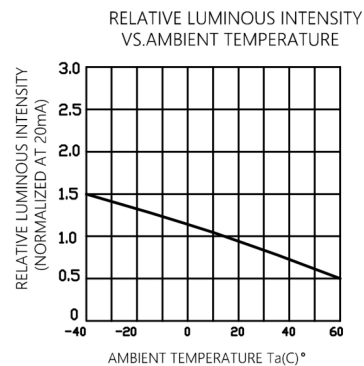
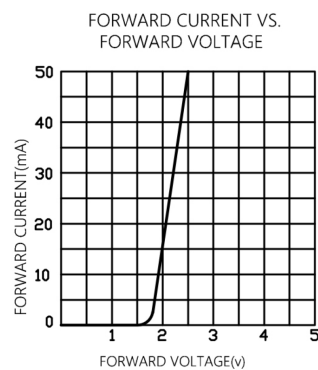
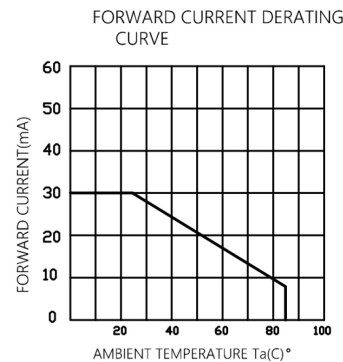
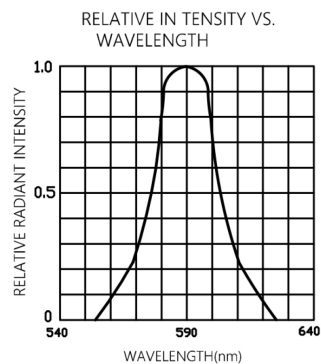
LED ABSOLUTE MAXIMUM RATINGS (YELLOW) (TA=25°C)

parameter	conditions/description	min	typ	max	units
power dissipation (Pd)				60	mW
DC forward current (If)				20	mA
peak forward current (Ifp)	pulse of 1/10 duty and 0.1 ms width			100	mA
reverse voltage (Vr)				5	V

LED ELECTRO-OPTICAL CHARACTERISTICS (YELLOW) (TA=25°C)

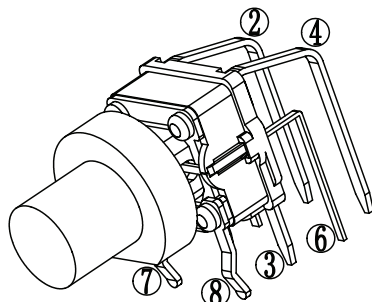
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forward voltage (Vf)	at If=20 mA		2.0	2.3	V
luminous intensity (Iv)	at If=20 mA	500	800		mcd
peak wavelength (λp)	at If=20 mA		589		nm
dominant wave length (λd)	at If=20 mA	587	590	593	nm
spectral line half-width (Δλ)	at If=20 mA		30		nm
viewing angle (2θ1/2)	at If=20 mA		30		deg

LED ELECTRO-OPTICAL CHARACTERISTIC CURVES (YELLOW)

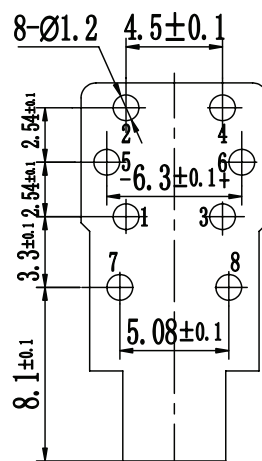
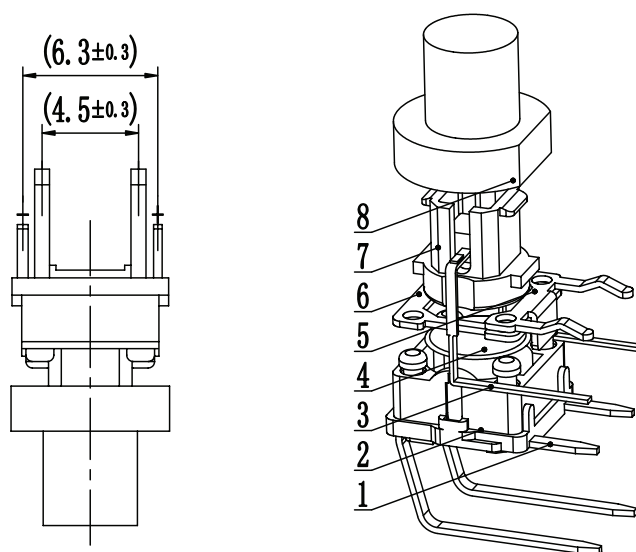
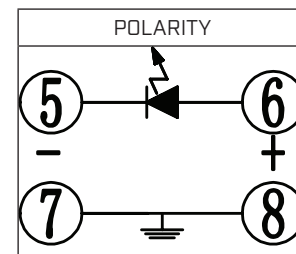
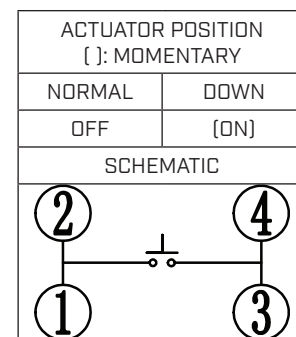
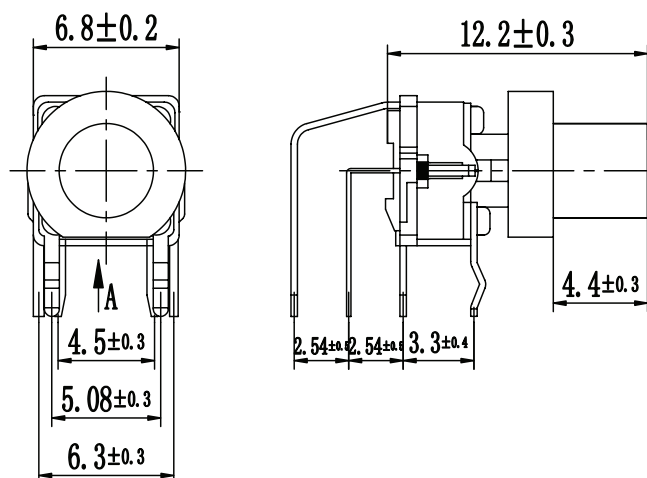


MECHANICAL DRAWING

units: mm
tolerance: ± 0.4 mm
unless otherwise noted



ITEM	DESCRIPTION	MATERIAL	PLATING/COLOR
1	terminals	H62	silver
2	base	PA66 (UL94HB)	black
3	LED		see part number key
4	contacts	SUS	silver
5	earth tag	H62	silver
6	cover	PC (UL94HB)	white
7	stem	PA66 (UL94HB)	white
8	cap	PC (UL94HB)	

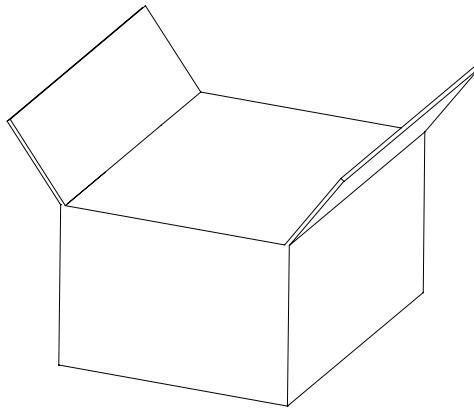
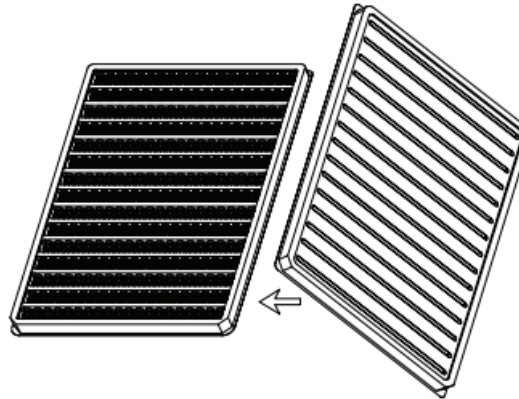


Recommended PCB Layout
Top View

PACKAGING

units: mm

Inner Box QTY: 100 pcs per box
Carton Size: 430 x 340 x 350 mm
Carton QTY: 4,000 pcs per carton



REVISION HISTORY

rev.	description	date
1.0	initial release	06/14/2023

The revision history provided is for informational purposes only and is believed to be accurate.



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