

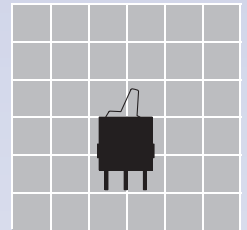
New Product

CONTACT No.103



Series **GW**

ILLUMINATED-STATUS PADDLES Fully Illuminated Paddle Switch



Actual Size



GW12LCPF



GW12LCHC



GW12LCVD

Brilliant Illumination

Fully Illuminated Paddle Switch

Illuminated-Status Paddles

Series GW

The actuator is entirely illuminated for outstanding visibility.
(Patent pending, world's smallest)

Actuator with Excellent Visibility

- Fully illuminated paddle for highly visible status indication with LED in green, red, or amber for single color and red/green for bicolor.
- World's smallest, bright, full illumination switch. (Patent pending).
- The angle of throw is 28°, which makes the position unmistakably clear.

Environmentally Friendly

- Suited to lead-free solder processing applications because of heat resistant resin materials.
- Components and packaging materials meet RoHS Directive of March 31, 2004, restricting use of hazardous materials such as lead, cadmium, mercury, hexavalent chromium, PBB, and PBDE.

Light Touch

Specially designed mechanism gives reliable switching and a light sense of touch. (Patent pending)

Super Bright LED

The switch features a super bright LED to maximize the visibility of the actuator.

Insert-molded Terminals

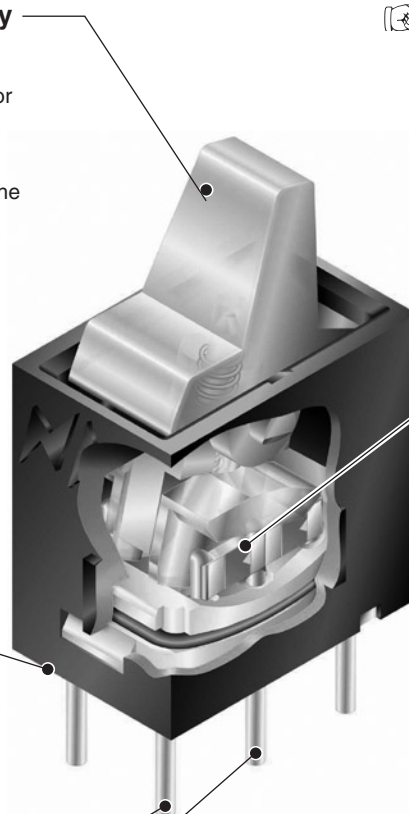
Insert-molded terminals prevent the entry of flux, solvents, and other contaminants and prevent loosening of terminals.

Award-winning Contact Mechanism

The sliding twin crossbar (STC) contact mechanism results in smoother, positive detent actuation, increased contact stability, and unparalleled logic-level reliability.

Standard PCB Spacing

Terminal-to-terminal spacing (2.54 mm) matches standard PC board grid spacing.

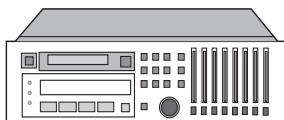


Applications

Office equipment, video camcorders, electrical measuring instruments, control panels, etc.

Release date

May 26, 2004



Consumer electronics



Office equipment

► Specifications

Switch Specifications			
Electrical Capacity Common to AC/DC	<ul style="list-style-type: none"> ► Recommended range 0.4 VA max., 28 V max. (Applicable voltage range: 20 mV to 28 V) (Applicable current range: 0.1 mA to 0.1 A) ► For 28 V max. at 0.1 A: life is 10,000 operations. ► Operation is possible at the minimum of 20 mV, 0.1 μA. (For a current of less than 0.1 mA, the specified contact resistance will not be applied.) 	Dielectric Strength	500 V AC for one minute min.
		Mechanical Life	50,000 operations min.
		Electrical Life	50,000 operations min.
		Angle of Throw of the Lever (α)	$28^{\circ} \pm 4^{\circ}$
		Operating Temp. Range	-25 to +55°C
Contact Resistance	80 mΩ or less (at 20 mV, 10 mA) (Contacts not including conductor resistance show 50 mΩ or less.)	Soldering Time & Temperature	<ul style="list-style-type: none"> ► Manual Solder: 4 seconds max. at 390°C max. ► Solder Pot: 6 seconds max. at 265°C max. (Preheating: 40 seconds max. at 110°C max.)
Insulation Resistance	500 MΩ min. at 500 V DC		

► LED Specifications

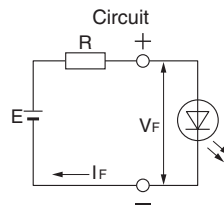
Super-Bright LED						
Ambient temperature Ta = 25°C						
LED Specification	Single-color Illumination			Bicolor Illumination		
LED Color	Green (F)	Red (C)	Amber (D)	Red (C)	Green (F)	Unit
Maximum Operating Current I _{FM}	25			25		mA
Recommended Operating Current I _F	20			20		mA
Forward Voltage (Typical Value) V _F	2.1	2.0	2.1	2.0	2.1	V
Maximum Reverse Voltage V _{RM}	4			4		V
Current Reduction Ratio at an Operating Temp. of 25°C, ΔI _F	0.33			0.33		mA/°C
Operating Temp. Range	-25 to +55			-25 to +55		°C

LED Circuit Ballast Resistance

To calculate the ballast resistance [R] of the LED circuit, substitute the forward voltage V_F and recommended operating current I_F of each LED's specifications into the following equation.

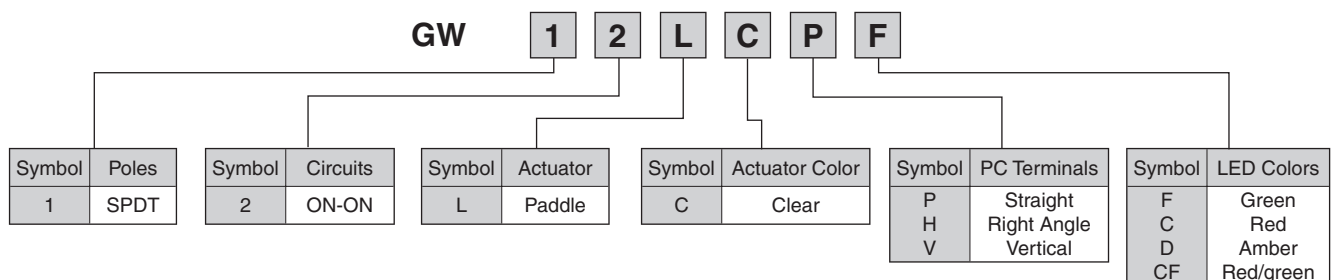
$$R = \frac{E - V_F}{I_F \text{ (recommended value)}}$$

where : E = source voltage
 V_F = forward voltage
 I_F = recommended operating current
 R = ballast resistance



The wattage of resistance R should be twice to three times greater than usual as a safety margin such as for operating ambient temperature.

► Structure of Part Number



► Fully Illuminated Toggle Switches

Paddle Position		Straight PC Part No.	Right-Angle PC Part No.	Vertical PC Part No.	Contact Terminal Number		
(A)	(B)	SPDT	SPDT	SPDT	Circuit	(A)	(B)
ON	ON	GW12CP <input type="checkbox"/>	GW12CH <input type="checkbox"/>	GW12CV <input type="checkbox"/>	SPDT	2-3	1-2

Symbol in : F (green), C (red), D (amber), or CF (red/green)

Straight PC terminal

► The terminal numbers are not indicated on the case.

SPDT

Footprint
(Top view of PC board)

Terminal 4 is a support pin on single color models.

► The LED circuit is isolated and requires external power source.

Right Angle PC terminal

► The terminal numbers are not indicated on the case.

SPDT

Footprint
(Top view of PC board)

Terminal 4 is a support pin on single color models.

► The LED circuit is isolated and requires external power source.

PCB Design Caution: Shaded area indicates mounting bracket.

Vertical PC terminal

► The terminal numbers are not indicated on the case.

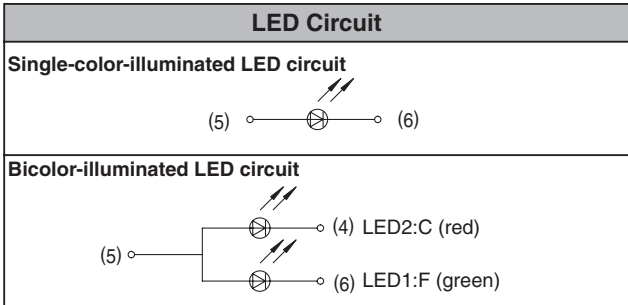
SPDT

Footprint
(Top view of PC board)

Terminal 4 is a support pin on single color models.

► The LED circuit is isolated and requires external power source.

PCB Design Caution: Shaded area indicates mounting bracket.



► **Handling Instructions**

- Cleaning**
These switches are not washable.
- Flux Removal**
- Alcohol-based cleaning fluid is recommended.

* Note that the specifications are subject to change without notice.

