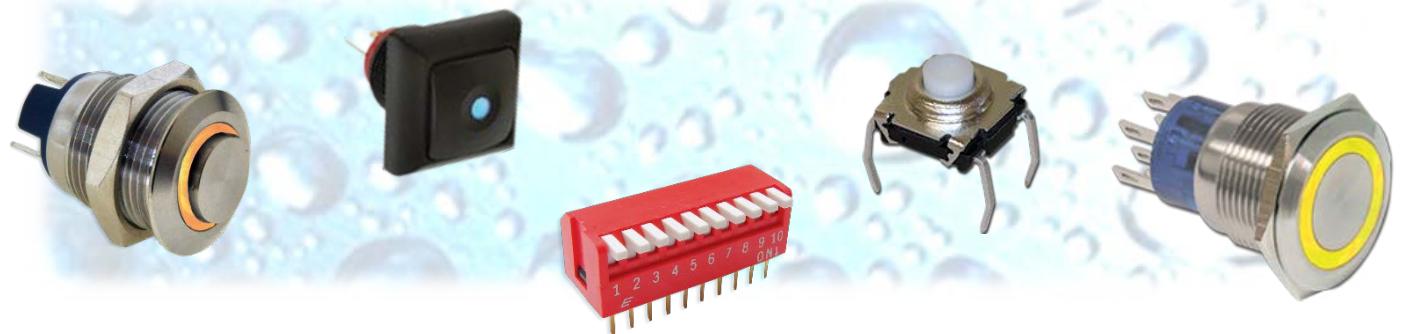




Sealed Switches

Product Training



Service ◆ Selection ◆ Speed



Introduction

Purpose

- Introduce designers, engineers and customers to E-Switch's wide range of sealed electro-mechanical switches, which includes the definition of process seal and IP rated seal, advantages of sealed switches, features and applications for various types of sealed switches.

Objective

- Define the meaning of process sealed and IP rated seal
- Provide overview of industry standard IP rating system
- Provide advantages of using a sealed switch
- Review E-Switch's categories of sealed switches along with typical applications

Content

- 18 pages



Process Seal or IP Rated Seal

What is the difference between a process sealed switch and an IP rated sealed switch?

PROCESS SEAL

A process sealed switch withstands a typical water washing procedure that takes place during the PCB assembly cleaning process to remove flux and other contaminates from the finished PCB assembly.

IP RATED SEAL

An IP rated sealed switch withstands various predefined levels of protection from dust and moisture. The predefined levels are established by the international classification system specified by the IEC60529 standard, known as the IP Rate.

PROCESS SEALED Tact Switches



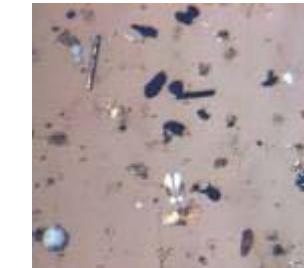
Industry IP Rating Standard

IP Rating Standard

Some switch applications reside in uncontrolled environments where temperature, humidity level and airborne debris fluctuate at any given time. In these types of environments, it is recommended to utilize a sealed switch, which is specifically designed and manufactured to protect against the entry of foreign bodies and moisture.

Electro-mechanical switches can be sealed to different levels of effectiveness against intrusion from moisture and foreign bodies, like tools, fingers, dirt and debris.

The seal effectiveness level is ranked according to the international classification system specified by the IEC60529 standard, known as the IP Rate. IP stands for “**International Protection**” Rating or “**Ingress Protection**” Rating.



Code Definitions and Rating Chart

Code Definitions

This code consists of the letters “I” “P” followed by two digits. The first digit references solids protection, which ranges from 0 to 6. The second digit refers to liquids protection and ranges from 0 to 8. As an example, a switch rating would appear as IP67.

Each number is assigned a specific definition. Based on the chart to the right, a switch rated IP67 specifies solids protection as 6, which means that the switch is totally protected from dust penetration. The second digit specifies the liquids protection level as 7, which means that protection against effects of immersion from 15cm to 1m (6" to 40") or will pass a water submersion test at 40" (1 meter), for up to 30 minutes.

This chart can be found at e-switch.com, under Technical Information.

IP Rating Chart			
First Number	Definition	Second Number	Definition
Protection against solid objects		Protection against liquids	
0	No protection	0	No protection
1	Protected against solid objects over 50mm (e.g. accidental touch by hands)	1	Protected against vertically falling drops of water
2	Protected against solid objects over 12mm (e.g. fingers)	2	Protected against direct sprays up to 15° from the vertical
3	Protected against solid objects over 2.5mm (e.g. tools and wires)	3	Protected against direct sprays up to 60° from vertical
4	Protected against solid objects over 1mm (e.g. tools, wires and small wires)	4	Protected against sprays from all directions - limited ingress permitted
5	Protected against dust - limited ingress (no harmful deposit)	5	Protected against low pressure jets if water from all directions - limited ingress permitted
6	Totally protected against dust	6	Protected against strong jets of water (e.g. for use on shipdecks - limited ingress permitted)
		7	Protected against the effects of temporary immersion between 15cm and 1m. Duration of test 30 min.
		8	Protected against long periods of immersion under pressure



Advantages of Using A Sealed Switch

Why use a sealed switch?

- Protects switch functionality at which it has been rated
- Develop to withstand rugged use and harsh environmental elements
- Prevents premature switch failure
- Protects switch against accidental spillage
- RoHS compliant





Types of Sealed Switches

Toggle



Rocker



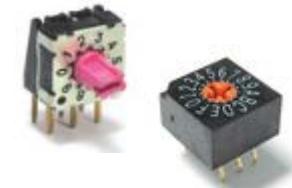
Dip



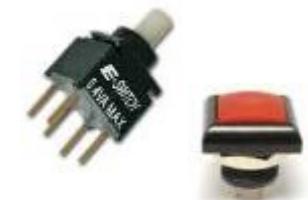
Slide



Rotary Dip



Pushbutton



Anti-vandal



Tactile



Illuminated Styles



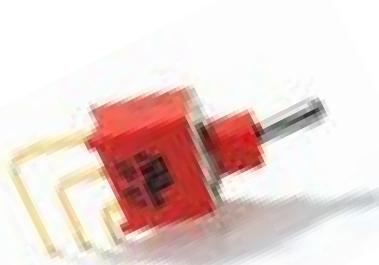
Rocker

Pushbutton

Anti-vandal

Tactile

Sealed Toggle Switches & Applications



100A



200A



200B



200U

Rated IP67

Mounting Options

- Vertical mount
- Right angle mount
- Surface mount

Applications

- Telecommunication
- Instrumentation
- Medical equipment
- Networking equipment
- Handheld devices



Sealed Rocker Switches & Applications



400A/IP67



400B/IP67



R7/IP67

Rated IP55 to IP67



RBW2/IP66



WB2/IP55

Applications

400A / 400B / R7

- Industrial Equipment
- Marine Transportation
- Construction Equipment
- Agricultural Equipment
- Recreational Vehicles
- Lawn and Garden Equipment

RBW2 and WB2

- Commercial Appliances
- Electrical Housewares
- Floor Care Appliances
- Industrial Controls
- Medical Equipment
- Household Appliances/White Goods



Sealed Slide Switch & Applications



500R

Rated IP67

Applications

- Telecommunication
- Instrumentation
- Medical equipment
- Computer Peripherals
- Audio/Visual equipment
- Consumer Electronics

Sealed Dip Switches & Applications



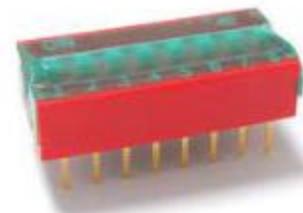
KAE*
Low Profile



KAN*
Low Profile



KAP*
Piano



KAS*
Slide Dip

Process Sealed

*Top Tape Seal Optional

Style Options

- Low profile
- Piano
- Slide

Applications

- Garage door openers
- Controllers
- Telecommunication
- Test and Instrumentation equipment
- Audio/Visual equipment
- Medical equipment



Sealed Rotary Dip Switches & Applications



RDM



RDT



SRJ*



SRM*



SRT*

Rated IP67

Process Sealed

*Top Tape Seal Optional

Applications

- Telecommunication
- Test and instrumentation devices
- Medical equipment
- Networking equipment
- Handheld devices



Sealed Pushbutton Switches & Applications



LA / IP65



700A 800A 800B 800U



RP8100 RP8200 RP8300 RP8400 RP8500 RP8600

Rated IP67

Applications

- Telecommunication
- Networking equipment
- Audio/Visual equipment
- Instrumentation
- Medical equipment
- Houseware appliances



Sealed Anti-vandal Switches & Applications



PV0 PV1 PV2 PV3 PV4 PV5 PV6 PV7 PV8 PV9

Rated IP65



PVL ULV4 ULV7 ULV8

Rated IP67

Applications

- Vending kiosk
- Ticket dispensers
- Security Devices
- Industrial controls
- Medical equipment
- Audio/Visual equipment



Sealed Tactile Switches & Applications



TL6100



TL6105



TL6110



TL6120



TL6190



TL6700

Process Sealed



TL52



TL6200



TL6210



TL6215

Rated IP67

Styles

- Through hole
- Earth ground terminal
- Right angle mount
- Surface mount
- Illumination

Applications

- Portable handheld devices
- Consumer electronics
- Telecommunication
- Medical equipment
- Audio/visual equipment
- Test equipment and
Instrumentation

Resources

www.e-switch.com

The screenshot shows the E-SWITCH website with a navigation bar at the top. Below the navigation, there is a main content area with a large image of a tact switch on the left and a detailed product page on the right. The product page for the TL52 Series Sealed Radial Lead Tact Switch includes a description, a list of features, and a 'View Large Image' button. A purple arrow points to the 'Sealed' option in the 'Catalog by Features' sidebar.

Product Catalog Training Where to Buy

Catalog by Type Catalog by Features

Cap Options Illuminated Long Life Low Profile Miniature Panel Mount Power Rated Right Angle Sealed Surface Mount

TL52 Series Sealed Radial Lead Tact Switch

- 8mm x 8mm tactile switch
- 160 ± 50 ; 260 ± 50 gram force options
- Through hole mount design
- IP67 sealed

The screenshot shows the E-SWITCH website with a navigation bar at the top. Below the navigation, there is a main content area with a large image of a tact switch on the left and a detailed product page for the TL52 Series Sealed Radial Lead Tact Switch. The product page includes a description, a list of features, and a 'View Large Image' button. A purple arrow points to the 'RoHS' certification logo in the 'CERTIFICATIONS' section.

TL52 Series Sealed Radial Lead Tact Switch

The TL52 series tactile switch is a thru hole switch that comes in radial packaging and is a sealed switch with IP67 rating.

The TL52 tactile switch with radial leads is very popular in the appliance market, and other applications, including testing/instrumentation, medical, and more.

RoHS

Other tact switches
Other sealed switches

Product Configurator Detail Specs Spec Sheets

Step 1 Configure your part number by selecting from the columns below

PART NUMBER:

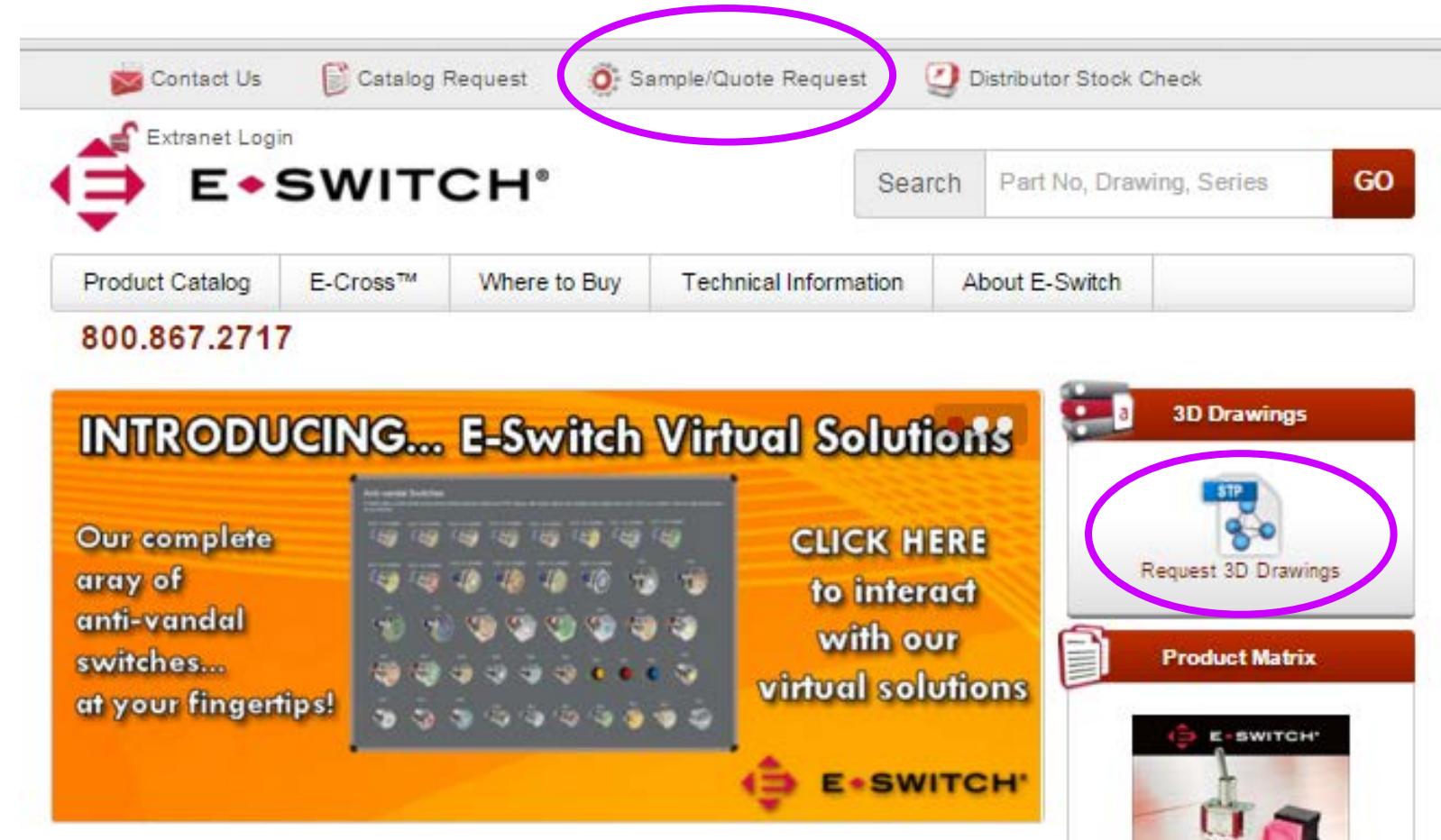
Step 2 When your part number is complete, click to view additional options

Additional Options

Series	Model	Actuator	Operating Force	Contact Material
TL	52	A 8mm	F160 160g	Q Silver

Resources

www.e-switch.com



Contact Us Catalog Request Sample/Quote Request Distributor Stock Check

Extranet Login

E-SWITCH®

Search Part No, Drawing, Series GO

Product Catalog E-Cross™ Where to Buy Technical Information About E-Switch

800.867.2717

INTRODUCING... E-Switch Virtual Solutions

Our complete array of anti-vandal switches... at your fingertips!

CLICK HERE to interact with our virtual solutions

E-SWITCH®

3D Drawings

Request 3D Drawings

Product Matrix

Summary

- E-Switch provides both process sealed and IP rated switches rating from IP55 to IP67.
- A process seal can withstand the normal wash procedure used in the PCB assembly process.
- Seal effectiveness level is ranked according to the international protection rating or ingress protection rating, known at the IP rate.
- The IP code has two digits; the first digit specifies the solids (dust/particles) protection level and the second digit specifies the liquids protection level.
- A sealed switch protects switch functionality, can withstand rugged use and harsh environmental elements, prevents premature failure, prevents against accidental spillage, and is RoHS compliant.
- E-Switch provides numerous sealed switches from toggle, rocker, slide, dip, rotary dip, pushbutton, anti-vandal and tactile. Many of the switch types offer multiple illumination options.
- Specific product details on sealed switches can be found at e-switch.com.