

Contact No. 183

New 400V DC Rating

High Capacity S Toggles & SW Rockers



NIKK
SWITCHES

General Specifications

Small Size

Meets 10~50A current capacity

Heat Resistant • High Insulation

Materials meet UL 94V-0 standards

Elimination of Arc

There are several ways to eliminate arcing. NKK uses an internal magnet close to the contacts to protect them from arcing. Considering size, space between contacts and space inside the switch, a permanent magnet is placed inside switch. The magnetic field stretches the arc to a limited length and disperses the arcing.

This method is based on Fleming's Left Hand Rule:

$$F = IB\ell$$

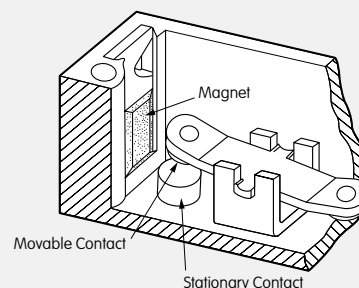
F : power (N) B : magnetic flux density (Wb/m²)
 ℓ : conductor length (m) I : current (A)

Most Suitable for DC Load

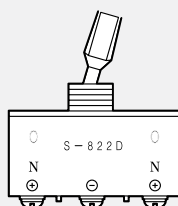
Small in size yet meets 10A @ 400V DC (resistive load).

When switching a large load of DC current, it is necessary to eliminate the arc that occurs to prevent the switch contacts from welding. Arc discharges create high temperatures and lead to contact failure, which could cause an accident.

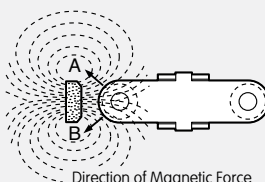
Internal magnet and contact point



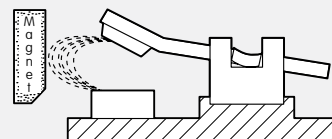
DC models have minus pole (-) on center terminals



Top view of magnet and contact point: arc disperses to A or B direction



Side view of magnet and contact point: arc extends as shown below



Ratings

Contact Resistance:	10 milliohms maximum
Insulation Resistance:	1,000 megohms minimum @ 500V DC
Dielectric Strength:	2,000V AC minimum for 1 minute minimum
Mechanical Life:	50,000 operations minimum
Toggle Electrical Life:	10,000 operations minimum (1,000 operations minimum for 10A @ 400V DC)
Rocker Electrical Life:	25,000 operations minimum (1,000 operations minimum for 10A @ 400V DC)
Angle of Throw:	Shown on following drawings

Environmental Data

Operating Temp Range: -10°C through +70°C (+14°F through +158°F)

Standards & Certifications

UL: File No. E44145
 UL or cULus recognition designated beside part numbers on following pages.
 Add "/U" to end of part number to order UL mark on switch.
 Add "/CUL" to end of part number to order cULus mark on switch.

CSA: File No. 023535_0_000
 CSA certification designated beside part numbers on following pages.
 Add "/C" to end of part number to order CSA mark on switch.

S SERIES DOUBLE POLE TOGGLE

When using resistive load refer to handling on back page.

Model	Approvals   	Pole & Throw	Toggle Position/Connected Terminals			Electrical Capacity				
			Down 	Center 	Up 	Resistive				
			ON 2-3 5-6	NONE	OFF —	DC 30V	DC 48V	DC 125V	DC 250V	DC 400V
S821D	* See note below	DPST	ON 2-3 5-6	NONE	OFF —	30A	30A	20A	15A	4A (10A)
S822D		DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	30A	30A	20A	15A	4A

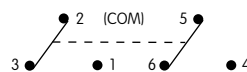
() capacity is due to series wiring. Refer handling on back page.

Throw & Schematics:

DPST



DPDT

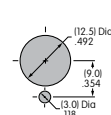
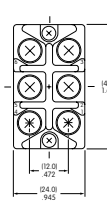
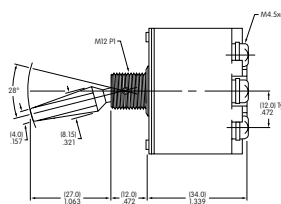
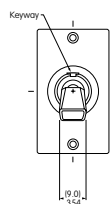


Note: Terminal numbers are on the switch.

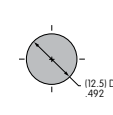
* UL/CUL & CSA for the following ratings: UL/CUL: 30A @ 30V DC, 15A @ 125V DC; CSA: 30A @ 30V DC, 15A @ 125V DC (See page 2 for approval marking.)



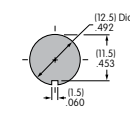
S822D



Maximum Panel Thickness: .177" (4.5mm)



Maximum Panel Thickness: .217" (5.5mm)

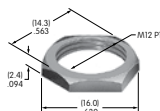


Maximum Panel Thickness: .217" (5.5mm)

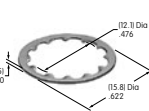
S821D does not have terminals 1 & 4

Hardware

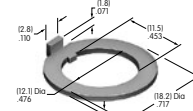
AT503M
Hex Face Nut



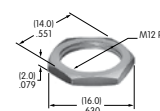
AT508
Internal Tooth Lockwasher



AT506M
Locking Ring



AT527M
Hex Mounting Nut



CUSTOM PRODUCT

SW SERIES DOUBLE POLE ROCKER

When using resistive load refer to handling on back page.

Model	Approvals   	Pole	Rocker Position/Connected Terminals			Electrical Capacity				
			Down 	Center 	Up 	Resistive				
			ON 2-3 5-6	NONE	OFF —	DC 30V	DC 48V	DC 125V	DC 250V	DC 400V
SW3821D	* See note below	DPST	ON 2-3 5-6	NONE	OFF —	30A	30A	20A	15A	4A (10A)
SW3822D		DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	30A	30A	20A	15A	4A

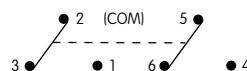
() capacity is due to series wiring. Refer handling on back page.

Throw & Schematics:

DPST



DPDT

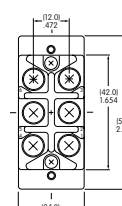
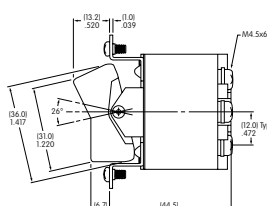
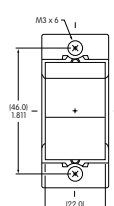


Note: Terminal numbers are on the switch.

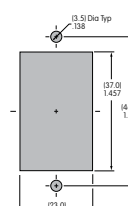
* UL/CUL & CSA for the following ratings: UL/CUL: 30A @ 30V DC, 15A @ 125V DC; CSA: 30A @ 30V DC, 15A @ 125V DC (See page 2 for approval marking.)



SW3822D



SW3821D does not have terminals 1 & 4



Maximum Panel Thickness: .177" (4.5mm)

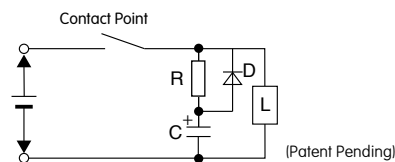
STORAGE & HANDLING

1. DC switch use

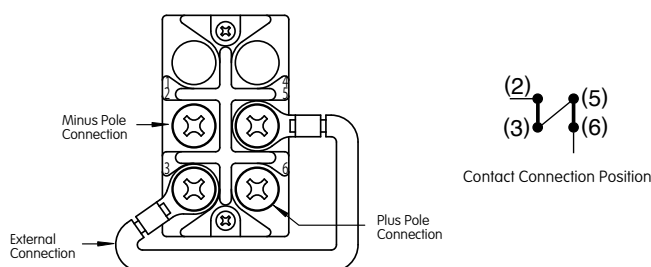
- Middle terminal shall be the minus pole when using DC circuit. Switch case is marked with (+) and (-).
- Do not store near (5cm) highly magnetic items.
- If actuation is interrupted when switching from ON to OFF, arcing may continue and switch could be burned.

3. Inductive load

Inductive loads produce an arc caused by counter-electromotive force when opening the circuit. Recommend inserting spark elimination circuit. Contact factory for details.

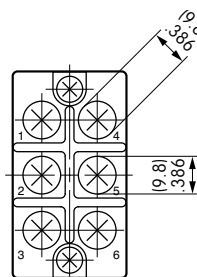


2. Wiring for DC400V 10A

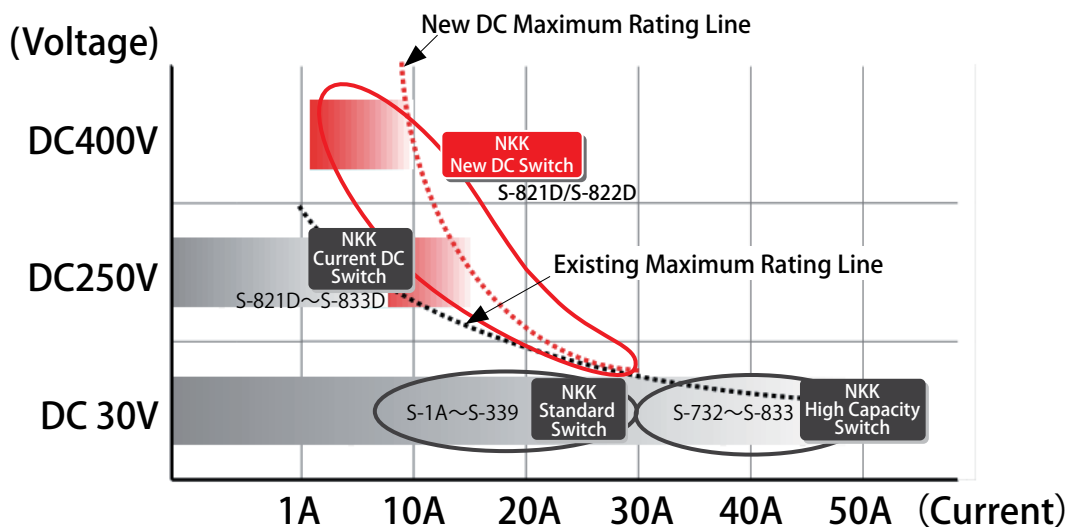


4. Compressed terminal connection

When connecting screw terminal with compressed terminal, select compressed terminal using drawing below.



NKK's DC Rating Higher than Any Other Switches in the Market



Availability

February 10, 2011

S Series Toggles with new rating and markings on housing will be available with January 26, 2011 production.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NKK Switches:

[SW3821D/UC-RO](#) [SW3822D/UC-RO](#) [SW3822D/U-RO](#) [SW3821D-RO](#) [S821D-RO](#) [S822D-RO](#) [SW3822D-RO](#)