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Standard Custom Electro-Mechanical Switches

Custom Part Number and SEM (Stocked) Cross Reference

CUSTOM PART NUMBER	SEM NUMBER	TYPE	FREQUENCY RANGE (GHz)	CONNECTOR	ACTUATION	TERMINATION 50 ohms	INDICATOR CIRCUITRY	SUPPRESSION DIODES	TTL LOGIC	SELF DE-ENERGIZING CIRCUIT	PAGE
025-A0-A1D-4C0	020	SP2T	DC TO 18	SMA	FAILSAFE, 28V						206
025-A0-A1B-4C0	020-12	SP2T	DC TO 18	SMA	FAILSAFE, 12V						206
025-A0-A1C-4C0	020-24	SP2T	DC TO 18	SMA	FAILSAFE, 24V						206
025-B0-A1D-4A0	020L	SP2T	DC TO 18	SMA	LATCHING, 28V						206
025-A2-A1D-4C0	123	SP2T	DC TO 18	SMA	FAILSAFE, 28V		✔				206
025-A234-A1D-4C0	123D	SP2T	DC TO 18	SMA	FAILSAFE, 28V		✔	✔	✔		206
026-A12-A1D-4C0	123T	SP2T	DC TO 18	SMA	FAILSAFE, 28V	✔	✔				206
025-B23-A1D-4A0	123L	SP2T	DC TO 18	SMA	LATCHING, 28V		✔	✔			206
026-B123-A1D-4A0	123LT	SP2T	DC TO 18	SMA	LATCHING, 28V	✔	✔	✔			206
025-B234-A1D-4C0	123LD	SP2T	DC TO 18	SMA	LATCHING, 28V		✔	✔	✔		207
026-A1234-A1D-4C0	123DT	SP2T	DC TO 18	SMA	FAILSAFE, 28V	✔	✔	✔	✔		207
026-B12347-A1D-4C0	123LDT	SP2T	DC TO 18	SMA	LATCHING, 28V	✔	✔	✔	✔	✔	207
026-B12347-A1C-4C0	123LDT-24	SP2T	DC TO 18	SMA	LATCHING, 24V	✔	✔	✔	✔	✔	207
023-A2-D1D-3A0	123N	SP2T	DC TO 12.4	N	FAILSAFE, 28V		✔				207
023-A234-D1D-3C0	123DN	SP2T	DC TO 12.4	N	FAILSAFE, 28V		✔	✔	✔		207
025-A2-A1D-6C0	124	SP2T	DC TO 26.5	SMA	FAILSAFE, 28V		✔				207
030-D2-A1D-4A2	133	SP3T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔				213
030-D234-A1D-4C2	133D	SP3T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔	✔	✔		213
032-D1234-A1D-4C2	133DT	SP3T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔	✔	✔		213
032-B12-A1D-4A2	133LT	SP3T	DC TO 18	SMA	LATCHING, 28V	✔	✔				213
032-D12-A1D-4A2	133T	SP3T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔				213
040-D2-A1D-4A2	143	SP4T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔				216
040-D234-A1D-4C2	143D	SP4T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔	✔	✔		216
042-D1234-A1D-4C2	143DT	SP4T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔	✔	✔		216
042-D1234-A1C-4C2	143DT-24	SP4T	DC TO 18	SMA	NORMALLY OPEN, 24V	✔	✔	✔	✔		216
042-D12-A1D-4A2	143T	SP4T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔				216
050-D2-A1D-4A2	153	SP5T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔				218
066-D0-A2D-4C2	066	SP6T	DC TO 18	SMA	NORMALLY OPEN, 28V						219
060-D2-A1D-4A2	163	SP6T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔				219
060-D234-A1D-4C2	163D	SP6T	DC TO 18	SMA	NORMALLY OPEN, 28V		✔	✔	✔		219
062-D1234-A1D-4C2	163DT	SP6T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔	✔	✔		219
062-B2347-A1D-4C2	163LD	SP6T	DC TO 18	SMA	LATCHING, 28V		✔	✔	✔	✔	219
062-B12347-A1C-4C2	163LDT-24	SP6T	DC TO 18	SMA	LATCHING, 24V	✔	✔	✔	✔	✔	219
062-D12-A1D-4A2	163T	SP6T	DC TO 18	SMA	NORMALLY OPEN, 28V	✔	✔				219
130-A2-A1D-4A1	XSEM323	TRANSFER	DC TO 18	SMA	FAILSAFE, 28V		✔				223
130-A234-A1D-4C1	XSEM323D	TRANSFER	DC TO 18	SMA	FAILSAFE, 28V		✔	✔	✔		223
130-B23-A1D-4A1	XSEM323L	TRANSFER	DC TO 18	SMA	LATCHING, 28V		✔	✔			223
130-B234-A1D-4C1	XSEM323LD	TRANSFER	DC TO 18	SMA	LATCHING, 28V		✔	✔	✔		223
130-B234-A1C-4C1	XSEM323LD-24	TRANSFER	DC TO 18	SMA	LATCHING, 24V		✔	✔	✔		223

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Custom may now be Standard

We believe your first choice should be Narda's standard SEM switch series – even if you have always ordered custom-part switches. Narda has more standard switches than any company in the industry. If you haven't reviewed this expanded line of stocked SEM switches, please refer to the cross reference at the left.

But, if standard still won't do...

It's easy to determine the number of a custom pick Narda switch that will correctly satisfy your intended application. Simply use the Part Number Chart on the next page. Referring to this chart, sequentially select the desired switch characteristics and options from Group 1 through Group 9. (The terms used here are defined in the Glossary on page 233.)

Within each group, select the number or letter representing the desired configuration or feature and record it in the manner shown by the "typical part number" on the chart. (The open boxes below are provided to assist you in using the part numbering process.)

Note that the last digit in part number Group 1 is indicative of envelope size and requires reference to the individual specifications and drawings in this catalog.

Select only one character from each part number group except for the Group 3 options. In Group 3, you many select as many options as applicable.

In Group 1, four items identified as "series number modifiers" call for further explanation:

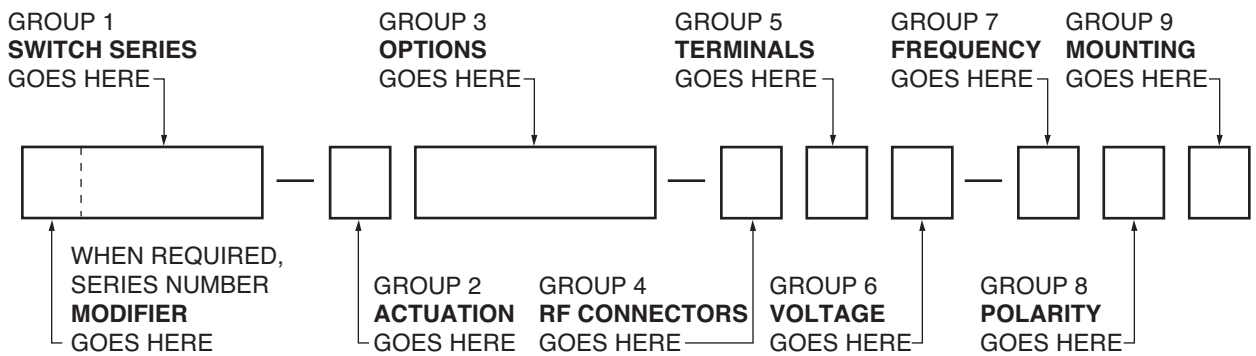
6XXX - If a matrix type switch is required, precede the selected series number with modifier number "6" (for example, specify 6080 for an eight position matrix switch).

8XXX - If you are able to configure a required switch from the features and options listed here, but will be imposing your own design or test specification, precede the selected series number with modifier number "8" to indicate to us that our standard switch may require special treatment.

9XXX - When a deviation from a standard design is required (for example, painted housing instead of black anodized), precede the selected series number with the number "9." Then contact your Narda Regional Sales Manager (see Sales Representatives listing on page 354).

To confirm that desired options are available for the selected switch series, please refer to the individual switch specifications in this catalog. Any other question that may arise in determining the proper part number should be addressed to your Narda Regional Sales Manager.

Part Number Grouping *(see next page for part number charts)*



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Standard Custom Electro-Mechanical Switches

Part Number Charts

GROUP 1 SWITCH SERIES

022 - SP2T	063 - SP6T
023 - SP2T	073 - SP7T
025 - SP2T	075 - SP7T
026 - SP2T	083 - SP8T
030 - SP3T	085 - SP8T
032 - SP3T	091 - SP9T
033 - SP3T	093 - SP9T
036 - SP3T	100 - SP10T
040 - SP4T	101 - SP10T
042 - SP4T	103 - SP10T
043 - SP4T	110 - SP11T
046 - SP4T	120 - SP12T
050 - SP5T	130 - Transfer
052 - ST5T	132 - Transfer
053 - SP5T	136 - Transfer
056 - SP5T	150 - 2-SP2T
060 - SP6T	156 - 2-SP2T
062 - SP6T	

MODIFIERS:
6XXX - Matrix Switches
8XXX - Customer Specification
9XXX - Modified Standard

GROUP 3 OPTIONS

0 - None
1 - 50 Ohm Terminations
2 - Indicator Circuitry
3 - Suppression Diodes
4 - TTL Logic High*
5 - Other (Specify)‡‡
7 - Self De-energizing Circuitry*
V - MOSFET Driver*
Y - BCD TTL Decoder*

GROUP 5 TERMINALS

1 - Solder (Standard)
2 - Power Connector/ Fast Disconnect (Standard MIL)
3 - Power Connector/ Fast Disconnect (Sub Min. "D")
4 - Solder (Loop)
5 - Other (Specify)‡‡
S - Side Mounted Terminals

GROUP 7 FREQUENCY

0 - DC - 1 GHz
1 - DC - 3 GHz
2 - DC - 8 GHz
3 - DC - 12.4 GHz
4 DC - 18 GHz
5 - DC - 18.5 GHz
6 - DC - 26.5 GHz
8 - DC - 6 GHz
7 - Other (Specify)‡‡

GROUP 9 MOUNTING

0 - Standard Mounting Holes
1 - Bracket
2 - Flange
3 - Other (Specify)‡‡

TYPICAL PART NUMBER‡:

022	–	B	1234	–	A	1	C	–	6	C	0

GROUP 2 ACTUATION

A - Failsafe
B - Latching**
C - Latching Reset
D - Normally Open
DA - Normally Open Failsafe to Position 1

GROUP 4 RF CONNECTORS

A - SMA
E - TNC
D - Type N
G - Other (Specify)‡‡

GROUP 6 VOLTAGE

B - 12 Vdc
C - 24 Vdc
D - 28 Vdc
E - 48 Vdc
G - Other (Specify)‡‡
H - 15 Vdc
I - 18 Vdc

GROUP 8 POLARITY

A - Common Plus
B - Common Minus
C - Not Relevant to Application for Switches with Logic

* If this option is selected, suppression diodes (option 3) must also be selected

** Requires pulse control of duration 30 to 100 ms unless self de-energizing circuitry option is chosen; Self de-energizing circuitry is recommended for multi-throw switches

‡ Sample Part Number identifies: SP2T switch, latching, 50 ohm termination, indicator circuitry, suppression diodes, TTL logic, SMA connectors, solder terminals, 24 Vdc, DC-26.5 GHz, polarity not relevant

‡‡ Consult the factory if "Other" is specified in any field

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Glossary

The following glossary defines the various options and features available on Narda switches. All Switches are bi-directional. Inputs and Outputs are interchangeable.

SP2T Switch - A single pole, double throw switch has one input port and two selectable output ports.

Multiposition Switch - A multiposition switch has one input port and more than two selectable output ports. Standard Narda switches offer up to 12 outputs operating from a single input. Unlike some switch designs, Narda multiposition models can be switched directly to any one of the available output positions without sequencing through any intervening positions.

Transfer Switch (DP2T) - A transfer switch has two independent paths that operate simultaneously in either of two selected positions.

Failsafe - A mode of operation in which the switch moves to the closed position when the actuating voltage is applied and always returns to a predetermined position when the voltage is removed.

Hot Switching - A mode of operation where a high power RF signal is continually applied to the RF contacts while the switch is changing positions. It must be noted that switch life is a factor in this type of operation (1 Watt max.).

Latching - Also called pulsed latching, a mode of operation in which the switch remains in a preselected position whenever the actuating voltage is removed or interrupted and holds that preselected position until a voltage is applied to another position. *Latching switches specified without self de-energizing circuitry require pulse control, with pulse duration of 30 to 100 ms.*

Latching Reset - A mode of operation in which the switch remains in the pre-selected position whenever the actuating voltage is removed or interrupted. However, switching to a new position cannot occur until a voltage has been applied to the reset terminal to open all closed switching positions. This reset mode then permits random selection of any desired switch position and guarantees clean break before make switching.

Normally Open - A mode of operation in which all output ports of the switch are disconnected from the input port until a voltage is applied to maintain a selected position. The switch returns to its open position with the removal of voltage.

Normally Open Failsafe to Position 1 - In this mode of operation, (available only on multiposition switches), Position 1 is always closed until another switch position has been selected.

50 Ohm Termination - With this option, each unused or open output RF port is internally terminated in a 50 ohm resistive load. 1 W CW per position max.; 5 W CW max. input total per switch.

Indicator Circuitry - With the indicator circuitry option, a set of internally mounted contacts allow external monitoring of switch RF status.

Suppression Diodes - With this option, fast-recovery silicon recitifiers (diodes) are connected in parallel with the coils of the switch to suppress any transient voltage generated by the coils.

TTL - Selected position of the switch is controlled by a TTL Logic High. The switch requires only nominal +28 Vdc (additional 5 Vdc is not required).

TTL Logic Voltage Level:
Low 0 to 0.8 Vdc
High 2.5 to 5.0 Vdc
TTL Logic Input Current:
Low 0 mA
High 1.6 mA max. @ 3.85 Vdc

TTL Logic, High Input - Completely contained within the switch housing, this Transistor-Transistor-Logic driver circuitry enables the status of the switch to be controlled by the high level of the TTL logic input.

Self De-energizing Circuitry - With this option, a set of internally mounted contacts or electronically generated pulses disconnects the driver voltage as soon as RF contact has been made. This option is only available with latching type switches. Suppression diodes must be specified with this option.

Power Handling Capability (Watts CW) - Several factors determine the power handling capability of a given switch design. A general indication of power capability versus frequency is shown on the next page.

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Standard Custom Electro-Mechanical Switches

BCD TTL Decoder - Completely contained within the switch housing, BCD logic circuitry establishes compatibility of the switch with binary logic inputs.

MOSFET Driver - Completely contained within the switch housing, the MOSFET driver establishes compatibility of the switch with external CMOS (15 Vdc) control logic. This type of driver can be controlled by any DC voltage from 3 Vdc up to 15 Vdc. A MOSFET circuit is switched with voltage and requires virtually no current. Also, it does not require a separate +5 Vdc power supply.

Standard Solder Terminal - The standard solder terminal offered with switches is a gold plated, double turret terminal, as shown in Figure 1.

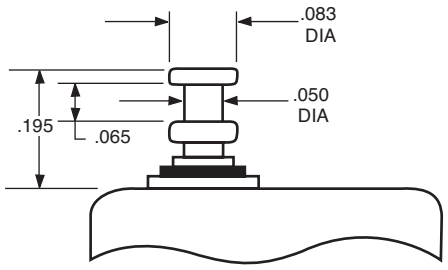


Figure 1. Standard Solder Terminal

Solder (Loop) Terminal - As an option, Narda offers a glass to metal loop type solder terminal, as shown in Figure 2.

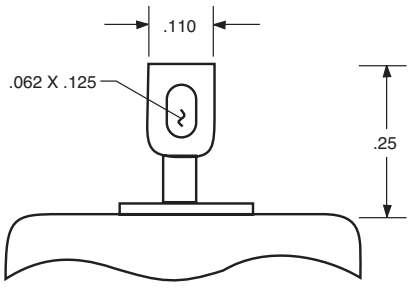


Figure 2. Optional Loop Type Solder Terminal

Power Connector / Fast Disconnect - The standard power connectors offered with Narda switches are specified on the individual data sheets in this catalog. Narda switches can also be supplied with other power connectors specified by the customer.

Polarity - Either common plus polarity or common minus polarity must always be specified when ordering the following switches:

- Latching
- Latching Reset
- Latching with Self De-energizing Circuitry
- Latching Reset with Self De-energizing Circuitry
- Make Before Break
- Normally Open with Suppression Diodes
- Failsafe with Suppression Diodes
- Normally Open Failsafe to Position 1 with Suppression Diodes
- Indicators

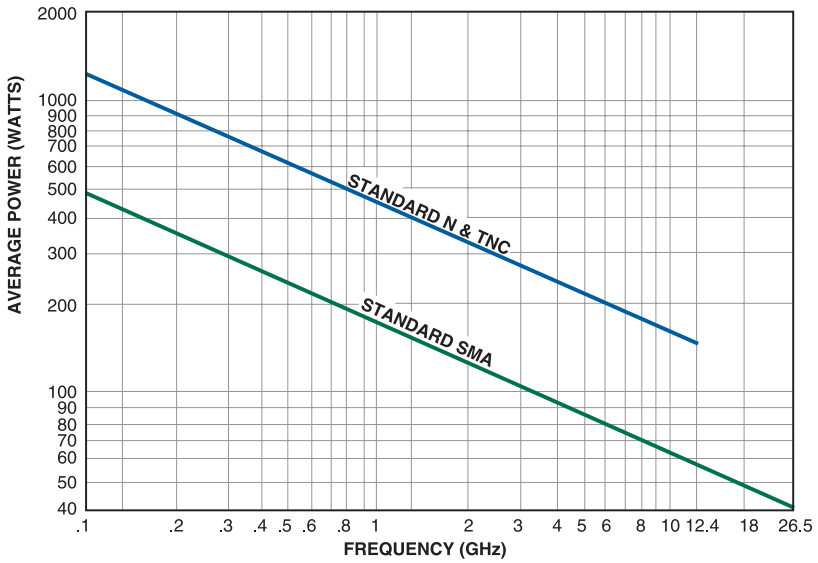
Polarity is not relevant to application for switches listed as follows:

- Normally Open – No Options
- Failsafe – No Options, except for XSEM323 or 130 Series
- Switches with TTL logic driver, BCD decoder or MOSFET driver

Actuator Voltage - Standard Narda DC actuating voltages are 12, 15, 18, 24, 28 and 48. When other voltages are required, contact your Narda Regional Sales Manager for instructions (page 354).

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Power Handling Capability



Power Handling Capability of Narda Switches vs. Frequency for Common RF Connectors
(for 25°C ambient temperature, matched 50ohm systems, sea level and cold switching)

For VSWR above 1.1, Derate Power Handling Capability as shown:

VSWR	Derating Factor
1.5	.94
2.0	.88
2.5	.83
3.0	.78
3.5	.73
4.0	.70

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