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HAMLIN REED SWITCH SELECTION GUIDE

A quick reference guide to selecting reed switches for electronic applications

Power	Size	Terminals	Switch Type	Package	Pictures	P/N	Body Length (mm)/[Inch]	Total Length (mm)/[Inch]	Switching Power (W)	Switching Voltage (V)	Switching Current (A)	Contact Resistance (Ω)	Operating Temperature (°C)	Magnetic Sensitivity (AT)	Certification	RoHS Compliance
Low Power	Small	Leads	A: SPST-NO	Glass		MITI-7	7.00 [.276]	40.38 [1.590]	10	170 Vdc, 120 Vac	0.25 Adc, 0.18 Aac	0.15	-40 to +125	6-20	c UL us	RoHS
			A: SPST-NO	Glass		MDSR-10	10.16 [.400]	40.38 [1.590]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.12	-40 to +125	10-25	c UL us	RoHS
			A: SPST-NO	Glass		MDSR-7	12.70 [.500]	40.38 [1.590]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-25	c UL us	RoHS
		SMD	A: SPST-NO	Glass		MISM-7	7.00 [.276]	13.72 [.540]	10	170 Vdc, 120 Vac	0.25 Adc, 0.18 Aac	0.15	-40 to +125	6-20	c UL us	RoHS
			A: SPST-NO	Glass		MDSM-10	10.16 [.400]	15.62 [.615]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.12	-40 to +125	10-25	c UL us	RoHS
	Medium	Leads	A: SPST-NO	Glass		FLEX-14	14.00 [.551]	44.30 [1.744]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-30	c UL us	RoHS
			A: SPST-NO	Glass		MDCG-4	15.24 [.600]	40.38 [1.590]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	12-38	c UL us	RoHS
			A: SPST-NO	Glass		MACD-14	14.00 [.551]	44.30 [1.744]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-30	c UL us	RoHS
			C: SPDT-CO	Glass		MDRR-DT	14.73 [.580]	51.66 [2.034]	5	175 Vdc, 120 Vac	0.25 Adc, 0.18 Aac	0.1	-40 to +125	15-30	c UL us	RoHS
		SMD	A: SPST-NO	Glass		MDSM-4	15.24 [.600]	19.30 [.760]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	12-38	c UL us	RoHS
			A: SPST-NO	Glass		MASM-14	14.00 [.551]	44.30 [1.744]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-30	c UL us	RoHS
			C: SPDT-CO	Glass		MDSM-DT	14.73 [.580]	25.40 [1.00]	5	175 Vdc, 120 Vac	0.25 Adc, 0.18 Aac	0.1	-40 to +125	15-30	c UL us	RoHS
		Both Leads and SMD	A: SPST-NO	Overmolded		59165	16.00 [.630]	20.20 [.795]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-25	c UL us	RoHS
			A: SPST-NO	Overmolded		59166	16.00 [.630]	19.51 [.768]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.1	-40 to +125	10-26		RoHS
			A: SPST-NO	Overmolded		59170	11.43 [.450]	16.25 [.640]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.15	-40 to +125	10-25		RoHS
		Leads	A: SPST-NO	Overmolded		59045-1	17.78 [.700]	15.24 [.600]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.2	-40 to +105	15-30	c UL us	RoHS
			A: SPST-NO	Overmolded		59050-1	22.86 [.900]	20.32 [.800]	10	200 Vdc, 140 Vac	0.5 Adc, 0.35 Aac	0.2	-40 to +105	12-33	c UL us	RoHS
High Power	Medium	Leads	A: SPST-NO	Glass		HA15-2	15.24 [.600]	40.38 [1.590]	20	200 Vdc, 265 Vac	0.5 Adc, 0.35 Aac	0.1	-20 to +125	17-38	c UL us	RoHS
			A: SPST-NO	Glass		MLRR-4	15.24 [.600]	40.38 [1.590]	20	200 Vdc, 140 Vac	1.0 Adc, 0.7Aac	0.1	-40 to +125	17-38	c UL us	RoHS
			A: SPST-NO	Glass		MLRR-3	15.24 [.600]	56.64 [2.230]	20	200 Vdc, 140 Vac	1.0 Adc, 0.7Aac	0.1	-40 to +125	17-38	c UL us	RoHS
			A: SPST-NO	Glass		MARR-5	19.69 [.775]	56.77 [2.235]	10	1000 Vdc, 700 Vac	0.5 Adc, 0.35 Aac	0.1	-75 to +125	17-38	c UL us	RoHS
		SMD	A: SPST-NO	Glass		MLSM-4	15.24 [.600]	19.56 [.770]	20	200 Vdc, 140 Vac	1.0 Adc, 0.7Aac	0.1	-40 to +125	17-38	c UL us	RoHS
			A: SPST-NO	Glass		MLSM-3	15.24 [.600]	19.56 [.770]	20	200 Vdc, 140 Vac	1.0 Adc, 0.7Aac	0.1	-40 to +125	17-38	c UL us	RoHS
		Leads	A: SPST-NO	Overmolded		59050-2	22.86 [.900]	20.32 [.800]	20	200 Vdc, 265 Vac	0.5 Adc, 0.35 Aac	0.2	-20 to +105	17-33	c UL us	RoHS
		Leads	A: SPST-NO	Glass		MRPR-3	19.69 [.775]	56.64 [2.230]	50	200 Vdc, 140 Vac	1.5 Adc, 1.1 Aac	0.1	-40 to +125	22-43	c UL us	RoHS
			A: SPST-NO	Glass		MRPR-8	20.32 [.800]	56.64 [2.230]	50	250 Vdc, 265 Vac	1.0 Adc, 0.7Aac	0.1	-20 to +125	22-43	c UL us	RoHS
	Large		A: SPST-NO	Glass		DRR-129	50.80 [2.000]	82.55 [3.250]	100	400 Vdc, 280 Vac	3.0 Adc, 2.1 Aac	0.1	-40 to +125	42-83	c UL us	RoHS
			C: SPDT-CO	Glass		DRR-DTH	39.67 [1.562]	85.73 [3.375]	30	500 Vdc, 350 Vac	0.5 Adc, 0.35 Aac	0.125	-20 to +125	50-80		RoHS
			C: SPDT-CO	Glass		DRT-DTH	39.67 [1.562]	85.73 [3.375]	50	500 Vdc, 350 Vac	1.5 Adc, 1.0 Aac	0.5	-20 to +125	50-80		RoHS

Notes:
For details on electrical specifications, visit hamlin.com
A:SPST-NO - Single Pole Single Throw - Normally Open
C:SPDT-CO - Single Pole Double Throw - Change Over

Applications Assistance and Custom Switch Modification

Littelfuse offers complete application engineering assistance in selecting the correct switch, sensitivity, and configuration. Switch life is affected by electrical load and other operating conditions. Hamlin offers load / life information per customer request.

Lead Modifications

Littelfuse can cut and/or form the reed switch leads to meet your dimensional requirements. Most lead modifications can be done by Hamlin with no additional tooling costs.

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MITI-7	MDSR-10	MDSR-7	FLEX-14	MDCG-4	MACD-14	HA15-2	MLRR-4	MLRR-3
This compact reed switch is somewhat more expensive than larger parts. It is typically used only when minimizing component size is critical. This switch is also available in surface-mount* packaging as the MISM-7R (Tape & Reel) and MISM-7B (Bulk Pack).	This cost-effective, small reed switch is also available in surface-mount* packaging as the MDSM-10R (Tape & Reel), the MDSM-10B (Bulk Pack), and the 59170 (overmolded*).	This small reed switch is only slightly larger than the MITI-7 and MDSR-10 switches, but with the same small glass diameter as those switches. The MDSR-7 switch is also available in an overmolded* PCB-mount package, including surface-mount* packaging, as the 59165 and 59045.	The FLEX-14's leads are easily formed or bent to meet an application's requirements. In addition, its slightly shorter glass length and slightly longer lead length provide high flexibility when designing it into products.	The MDCG-4 is one of Hamlin's most popular reed switches and is available in a wide range of sensitivities. It is also available in an overmolded* PCB-mount package as the 59050, and in surface-mount* packaging as the MDSM-4R (Tape & Reel) and MDSM-4B (Bulk Pack).	The MACD-14 has low hysteresis between activate (closure) and deactivate (opening). This is also known as close differential. This feature can be an advantage in some sensing applications. One such example is when the activating magnet travel distance is limited. It is also available in surface-mount* packaging as the MASM-14R (Tape & Reel) and MASM-14B (Bulk Pack).	The HA15-2 is physically very similar to the MDCG-4, but it uses a pressurized nitrogen atmosphere that allows switching 240 Vac power line mains voltages. The HA15-2 also provides good switching life on non-suppressed inductive loads, as well as less demanding ones. It is available in a wide variety of Hamlin sensor packages.	The MLRR-4 has the smallest hysteresis between activate and deactivate (close differential). This can be an advantage in some sensing applications, but it can also be a disadvantage in sensing applications where the magnet is moving slowly. The MLRR-4 is well suited to switching small incandescent lamps (< 28 V, < 0.2 A). This switch is also available in surface-mount* packaging as the MLSM-4R (Tape & Reel) and MLSM-4B (Bulk Pack).	This reed switch has the longest wire leads of any of the 15.24 mm / 0.600 inch glass length switches. The MLRR-3 is a cost-effective, small 20 Watt switch. It provides good switching life on a wide range of loads. It is also available in surface-mount* packaging as the MLSM-3R (Tape & Reel) and MLSM-3B (Bulk Pack).

*See other side for product image and specifications.

MARR-5	MRPR-3	MRPR-8	MDRR-DT	DRR-129	DRR-DTH and DRT-DTH
The MARR-5 has advantages in high voltage and low temperature applications because its electrical contacts are in a vacuum instead of a nitrogen atmosphere. The voltage ratings are 1000 Vdc switching and 2000 Vdc breakdown (see data sheet for additional information). The switch is rated at a rather high 35 AT (Ampere-turn) in order to meet the 1000 Vdc switching voltage at low currents (< 10 mA). If a higher switching current or RC arc suppression is used, it's possible to realize a higher switching voltage or lower switch AT value. Contact Hamlin for recommendations. As the switch AT increases (sensitivity decreases), the contact gap increases, resulting in increased voltage capability. Typical breakdown voltage is 100 times the AT value. In addition, the MARR-5 can be used at temperatures near absolute zero if carefully packaged. For additional information, see Hamlin Application Note AN105 – Extreme Temperature Reed Switch Operation.	The MRPR-3 is very good at switching relatively high power loads up to 50 W, 200 Vdc, 140 Vac, 1.5 Adc, 1.1 Aac, including inductive loads with or without an inrush current.	The MRPR-8 uses a pressurized nitrogen atmosphere that allows switching 240 Vac power line mains voltages and higher power levels than the HA15-2.	This is a single-pole, double-throw (SPDT) reed switch, also known as a Form C reed switch. The addition of a normally closed contact to the standard normally open contact meets the needs of a wide variety of applications. It is not unusual for the normally closed contact to be the only contact used in an application. However, this capability results in compromises that affect the switching voltage and current, as well as cost.	The DRR-129 can offer the highest electrical contact ratings of any of Hamlin's reed switches because of its large wire diameter and large contact gap. However, these characteristics can also represent disadvantages in terms of size, cost, and low magnetic sensitivity. For some applications, however, the DRR-129's 100 W, 400 V, 3 A switching capability can be essential.	Like the MDRR-DT, the DRR-DTH and DRT-DTH are single-pole, double-throw (SPDT) reed switches. Their large size provides higher electrical performance but also increases their cost. The DRR-DTH uses a contact coating similar to many of Hamlin's reed switches. The DRT-DTH uses a tungsten contact coating that is very good on heavy loads; however, it tends to increase contact resistance when switching light loads such as < 0.25 A, < 6 V.

NOTE:

This tool should ONLY be used as a quick reference guide to suggest a starting point in the selection process. Once a part has been selected, the designer should retrieve the actual datasheet from Hamlin.com / Littelfuse.com.

Littelfuse always recommends conducting application testing to verify the correct part selection.

In order to use this quick reference guide, the designer has to know just a few of key parameters, such as switching power, voltage, current, size, mounting method, and safety certifications.

Market Segments / Applications:

Reed switches are used in a number of market applications including, but not limited to:

- White goods and small home appliances, such as fluid level and position sensors
- Gas and water metering such as tamper switch and pulse counting
- Safety and security, such as electronic door locks, window/door sensors, and smoke alarms
- Others, such as fitness equipment, electronic shelf labeling, solar trackers, and equipment for hazardous environments

Visit us at hamlin.com for assistance with application solutions.

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