

PERFORMANCE SPECIFICATION SHEET

SWITCHES, SENSITIVE, SPDT

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the switches described herein shall consist of this document and [MIL-PRF-8805](#).

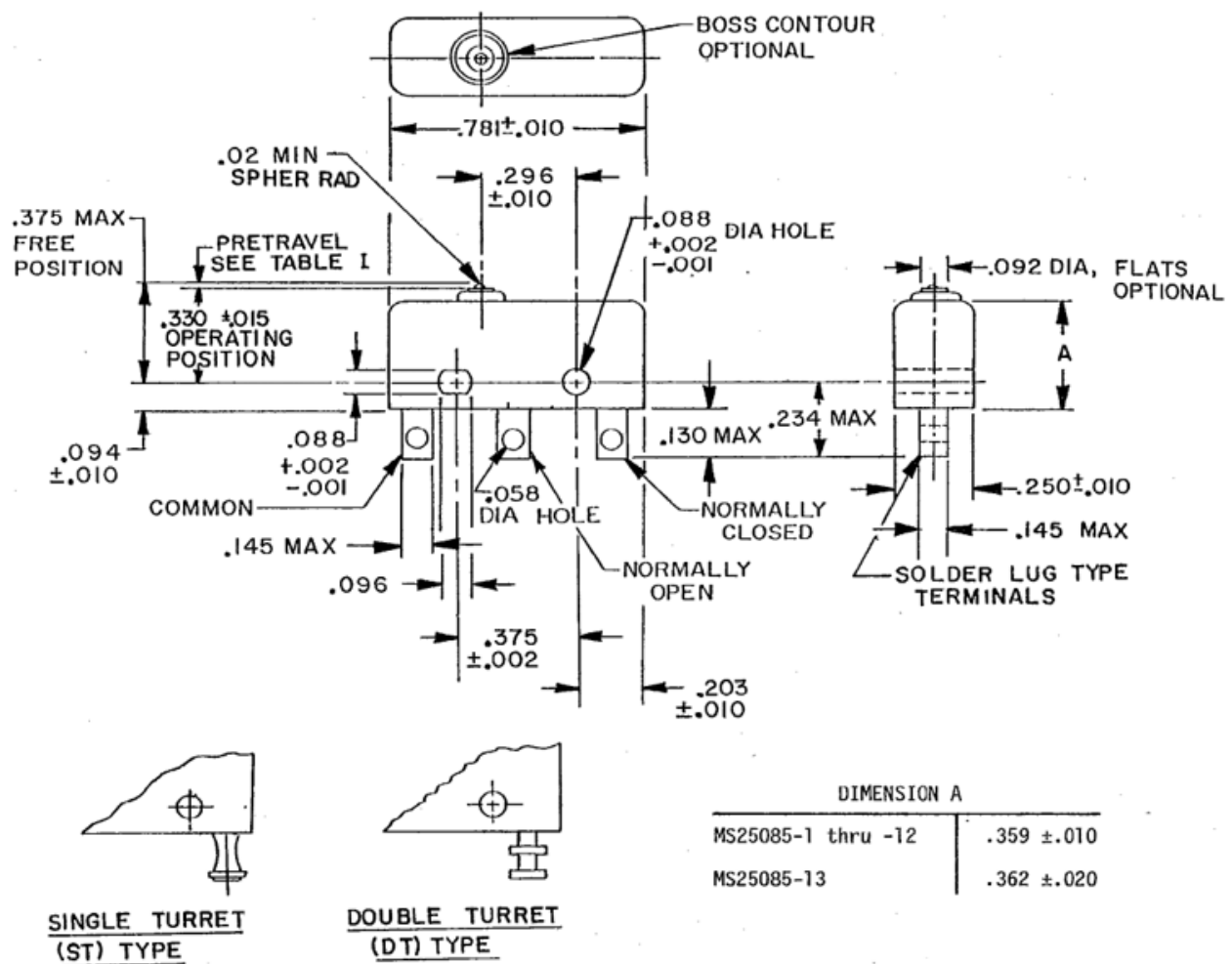


FIGURE 1. Dimensions and configurations.



NOTES:

1. Dimensions are in inches.
2. Unless otherwise stated, tolerance is $\pm .005$ for three place decimals.
3. Mounting holes shall accept .087 maximum diameter pins or screws $.375 \pm .002$ centers.
4. Double turret type terminals shall accept two AN-20 wires and shall not extend more than .328 from the center line of the mounting hole to the end of the terminal or .244 from the switch base to the end of the terminal.
5. Single turret type terminals shall not extend more than .197 from the center line of the mounting hole to the end of the terminal.
6. Solder lug terminal contour optional within maximum dimensions shown.
7. Single turret and double turret shall be cylindrical.
8. Switch contour optional provided dimensions specified are not exceeded.

FIGURE 1. Dimensions and configurations -Continued.

REQUIREMENTS:

Dimensions and configurations: See figure 1.

Enclosure design: 1 (unsealed).

Temperature characteristic:

MS25085-1 through -12: 1 (-55°C to +85°C).

MS25085-13: 2 (-65°C to + 125°C).

Shock type:

MS25085-1 through -12: M(100 g's).

MS25085-13: 75 g, test condition H, [MIL-STD-202-213](#).

Vibration grade: 1 (10 to 500 Hz sinusoidal, 10 g's).

Weight: 0.006 pound maximum.

Part or Identifying Number (PIN): See table VI.

Operating characteristics: See table 1.

MIL-PRF-8805/2M

TABLE I. Operating characteristics .

PIN	Actuating force ounces max.	Pretravel inch max.	Releasing force ounces min.	Movement differential inch max.	Overtravel inch min.
MS25085-1	5	0.030	1	0.004	0.005
MS25085-2	5	0.030	1	0.004	0.005
MS25085-6	5	0.030	1	0.004	0.005
MS25085-7	5	0.020	1	0.004	0.005
MS25085-8	5	0.020	1	0.004	0.005
MS25085-9	5	0.020	1	0.004	0.005
MS25085-10	5	0.020	1	0.004	0.003
MS25085-11	5	0.020	1	0.004	0.003
MS25085-12	5	0.020	1	0.004	0.003
MS25085-13	2.38	0.020	.875	0.0004	0.005

Strength of actuating means:

MS25085-1 through -12: 25 pounds.

MS25085-13: 10 pounds.

Terminal strength:

Solder lug (SL): 20 pounds.

Single turret (ST) and double turret (DT): 5 pounds.

Material:

Plunger: May be glass filled nylon.

Dielectric withstanding voltage:

Sea level: 1000 V rms.

Altitude: (50,000 feet):

MS25085-1 through -12: 400 volts.

MS25085-13: Not applicable.

Contact bounce:

MS25085-1 through -12: Not applicable.

MS25085-13: 3 milliseconds maximum.

Intermediate current: Not applicable.

Low level circuit:

MS25085-1, MS25085-2, MS25085-6, and MS25085-13: Not applicable.

MS25085-7 through MS25085-12: 50,000 cycles.

MIL-PRF-8805/2M

Electronic logic circuit (5.0 V dc, .010 amperes):

MS25085-1, MS25085-2, MS25085-6, and MS25085-13: Not applicable.

MS25085-7 through MS25085-12: 50,000 cycles at an actuation rate of 120 cycles per minute maximum with no “stick”, or “misses”, allowed when tested in accordance with [ECIA RS-448-4](#), method 17 as follows:

Test condition:

Each pair of switch contacts shall be tested using a 5.0 ± 0.5 V dc, 10 ± 1 mA resistive load. During each closure of the contacts, the voltage drop across the switch terminals shall be monitored for a duration of no less than 50 percent of each contact static closure. The switch contacts need not be monitored until 10 milliseconds after the initial contact closure to exclude any contact bounce. During each opening of the contacts, the voltage drop across the switch terminals shall be monitored for a duration of no less than 50 percent of each contact opening.

A voltage of 2.1 volts or greater across the switch terminals shall constitute a contact “miss” (failure to properly close the circuit). A voltage drop of less than 90 percent of the open-circuit voltage shall constitute a contact “stick” (failure to properly open the circuit).

The monitoring device shall either record the number of contact closures at which “sticks” and “misses” occur, or discontinue the test when “sticks” and “misses” occur.

Operating temperature:

- a. 25 percent of the test cycle at the minimum temperature specified.
- b. 25 percent of the test at room ambient conditions.
- c. 50 percent of the test cycles at the maximum temperature specified

Mechanical endurance:

MS25085-1, MS25085-2, and MS25085-13: 100,000 cycles, at .005 (+.002, -.001) inch overtravel.

MS25085-6 through MS25085-12: 100,000 cycles, at full overtravel.

Electrical endurance (power circuits): 25,000 cycles.

Electrical rating: See tables II, III, and IV.

Quality assurance:

Qualification inspection (group submission): See table V.

Group A inspection: When contact bounce is applicable, only two sample units per lot is required (no failures permitted).

MIL-PRF-8805/2M

Table II. Electrical ratings, MS25085-1, MS25085-2, and MS25085-6.

Load	Sea level		50,000 feet
	28 V dc	115 V ac 50 Hz	28 V dc
	Amperes	Amperes	Amperes
Resistive	5.0	5.0	5.0
Inductive	3.0	5.0	2.5
Lamp	2.4	1.5	2.4

Table III. Electrical ratings, gold and gold bifurcated contacts. 1/

Load	Sea level		50,000 feet	
	Power circuit 28 V dc	Electronic logic 5 V dc	Power circuit 28 V dc	Electronic logic 5 V dc
	(Amperes)	(Amperes)	(Amperes)	(Amperes)
Resistive	1.0	0.01	1.0	0.01
Inductive	0.5	-----	0.5	-----

1/ Gold and gold bifurcated contacts shall have gold or gold alloy at the contact interface area throughout the rated life of the switch.

Table IV. Electrical ratings, MS25085-13.

Load	Sea level	
	28 V dc	115 V ac, 60 Hz
	(Amperes)	(Amperes)
Resistive	3.0	5
Inductive	2.5	-----
Lamp	1	1

MIL-PRF-8805/2M

Table V. Qualification inspection (group submission).

Inspection	Sample	Extent of approval
Group I Visual and mechanical <u>1</u> / Solderability <u>2</u> / Dielectric withstanding voltage Insulation resistance Contact resistance Operating characteristics	All samples	All
Group II Terminal strength <u>3</u> / Strength of actuating means Thermal shock Swept sinusoidal vibration Shock Moisture resistance Marking visibility Dielectric withstanding voltage Operating characteristics	MS25085-1, -2, or -6 (4 samples) MS25085-7,-8, or -9 (4 samples) MS25085-10, -11, or -12 (4 samples) MS25085-13 (4 samples)	
Group IV Salt spray Marking visibility	(2 samples per terminal style)	
Group V Explosion Operating characteristics	(2 samples any silver contact switch)	
Group VI Permanency of marking (PC terminal switches) Resistance to soldering heat Contact resistance Contact bounce Low temperature operation Mechanical endurance at low temperature Mechanical endurance at high temperature Contact resistance Short circuit <u>4</u> / Dielectric withstanding voltage Operating characteristics	MS25085-1, -2, or -6 (4 samples) MS25085-7,-8, or -9 (4 samples) MS25085-10, -11, or -12 (4 samples) MS25085-13 (4 samples)	

See footnotes at end of table

MIL-PRF-8805/2M

Table V. Qualification inspection (group submission).- Continued.

Inspection	Sample	Extent of approval
Group VII Overload cycling Electrical endurance Dielectric withstanding voltage Contact resistance Operating characteristics	MS25085-1, -2, or -6 (18 samples) MS25085-7,-8, or -9 (8 samples) MS25085-10, -11, or -12 (8 samples) MS25085-13 (10 samples)	All
Group X Low level circuit Operating characteristics	MS25085-7,-8, or -9 (2 samples) MS25085-10, -11, or -12 (2 samples)	
Electronic logic circuit Operating characteristics	MS25085-7,-8, or -9 (2 samples) MS25085-10, -11, or -12 (2 samples)	

1/ Two samples for physical dimensions.

2/ Four samples of each applicable terminal type.

3/ Two samples minimum of each terminal type submitted for qualification shall be subjected to group II test.

4/ Short circuit test shall be conducted at 28 V dc, 60 amperes.

Table VI. PIN's.

PIN MS25085	Description				Suggested applications 2/			
	Base contact material	Rating maximum	Terminal style	Power circuit	Electronic logic	Low level	Contact redundancy	Supersedes
-1	Silver	Table II (5 amperes)	SL	X				M8805/2-001
-2	"	"	DT	X				M8805/2-002
-6	"	"	ST	X				
-7	Gold	Table III (1 ampere)	SL	X	X	X		
-8	"	"	ST	X	X	X		
-9	"	"	DT	X	X	X		
-10	Gold 3/ bifurcated	"	SL	X	X	X	X	
-11	"	"	ST	X	X	X	X	
-12	"	"	DT	X	X	X	X	
-13	Silver	Table IV (3 amperes)	SL	X				

1/ MS25085-3, MS25085-4, and MS25085-5 have been canceled.

2/ The following definitions apply:

Power circuits – Those electrical loads where the voltage and current exceed the minimum arcing conditions of the contact material, as a general rule, application loads in excess of 8 volts, 0.5 amperes are considered power circuits.

Electronic logic circuits – Those electrical loads in which the applied voltage is less than the arcing voltage and greater than the melting voltage of the contact material. As a general rule, non-arcing application loads in excess of 0.5 volts are considered logic level circuits.

Low level circuits – Those electrical loads in which the applied voltage is less than the softening of the contact material. As a general rule, application loads less than 0.8 volt are considered low level circuits.

3/ Bifurcated contacts are defined as a set of contacts in which the movable or stationary contact configuration is forked to provide two mating contact surfaces in parallel.

Reference documents:

[MIL-PRF-8805](#)

[MIL-STD-202-213](#)

[ECIA RS-448-4](#)

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Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:

DLA - CC

(Project 5930-2024-033)

Review activities:

Army – AR, MI
Navy - AS, MC, OS, SH
Air Force - 19

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