

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
—	Initial Release	7/31/12	JS
A	Revised per RN A-214	11/6/17	EFH
ORIGINAL SIGNATURES ON FILE			

SHEET REVISION STATUS

SH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REV	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV																				

ORIGINATOR: T.J. Perry/MEI Technologies	T.J. Perry	DATE 7/30/12	FSC: 5930
APPROVED: T.J. Perry/MEI Technologies	T.J. Perry	7/30/12	Switch, Thermostatic, (Bimetallic), Subminiature Sealed, Single Pole, Single Throw (SPST), 5 Amperes and Low Level, Detail Specification for
CODE 562 APPROVAL: B. Meinhold/GSFC	B. Meinhold	7/30/12	
CODE 562 SUPERVISORY APPROVAL: K. Sahu/GSFC	K. Sahu	7/30/12	
ADDITIONAL APPROVAL:			S-311-641/05

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771**

CAGE CODE: 25306 **Page 1 of 17**

GSFC DETAIL SPECIFICATION

SWITCHES, THERMOSTATIC, (BIMETALLIC), SUBMINIATURE, HERMETICALLY SEALED, SINGLE POLE, SINGLE THROW (SPST), 5 AMPERES AND LOW LEVEL

The requirements for procuring the thermostatic switches described herein shall consist of this specification, the current revision of GSFC S-311-641 and QPL-24236..

PART NUMBER:

G311P641/05 A -30 B 099 -10 -05 -20 (S) / 1 2

(A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K)

(A) GSFC Prefix

(B) Configuration (See Figure 1)

(C) Low Temperature

The low temperature operating point (°F) shall be designated by 3 digits. For negative temperatures, the first digit shall be a minus (-).

(D) Contact Action

- A Open on rise, silver contacts
- B Close on rise, silver contacts
- C Open on rise, gold contacts (low level)
- D Close on rise, gold contacts (low level)

(E) High Temperature

The high temperature operating point (°F) shall be designated by 3 digits. For negative temperatures, the first digit shall be a minus (-).

(F) Open Temperature Tolerance

Use Table 1 for standard tolerance, Table 2 for special tolerance

(G) Close Temperature Tolerance

Use Table 1 for standard tolerance, Table 2 for special tolerance

(H) Differential

Use Table 1 for standard differential, Table 2 for special differential

(I) Special

Special lead attach. Consult factory for available wire types, sizes, and lengths. Omit if leads not required. See Table 4 for ordering code.

(J) (K) Special feature code for Configuration V. Consult factory for special configurations not shown.

REQUIREMENTS:

Dimensions and configuration: See Figure 1

Storage temperature range: -80°F to 550°F (-62.2°C to +287.8°C)

Operating temperature range: -65°F to 550°F (-53.9°C to +287.8°C)

Tolerances: See Tables 1 and 2

Contact ratings: See Table 3

Contact resistance: 0.025 ohms maximum per MIL-STD-202, Method 307

Dielectric Withstanding Voltage: 1250 VAC, rms, 60 Hz for 1 minute, terminal to case, per MIL-STD-202, Method 301

Vibration: 5-2000 Hz, 20 G, per MIL-STD-202, Method 204, Condition D (monitored)

5-1000 Hz, 100G, per MIL-STD-202, Method 204, Condition D (unmonitored)

1000-2000, 50G, per MIL-STD-202, Method 204, Condition D (unmonitored)

Shock: 100G, 6 milliseconds, per MIL-STD-202, Method 213

Hermeticity: 1×10^{-8} atm cc/sec maximum, per MIL-STD-202, Method 112, Condition C

Salt spray resistance: Per MIL-STD-202, Method 101, Condition B, 5% solution

Moisture resistance: Per MIL-STD-202, Method 106

Weight (avg): 4.8 grams basic unit; 5.9 grams with bracket

Finish: 0.0003 - 0.0004 inches Ni per AMS-QQN-290 over 0.0002 - 0.0003 inches Cu per MIL-C-14550

Wire leads: Wire lead material per Table 4.

Qualification: Qualification listing to MIL-PRF-24236/1 is required for each configuration.

Screening: Switches shall be subjected to 100% Group A screening inspection per S-311-641, Table I, Test Nos. 1-12, with the following details and exceptions:

- a. PIND per manufacturer's GSFC approved internal test procedures.
- b. Creepage testing shall be performed in accordance with MIL-PRF-24236, para. 4.6.4 for three (3) consecutive cycles.
- c. Switches shall be heated or cooled as required to cause thermal actuation. The rate of temperature change of the switch shall be the minimum practical to provide reliable creepage detection.
- d. Tested units shall meet the requirements in MIL-PRF-24236, para. 3.9, except contact transfer time shall not exceed five (5) milliseconds.

Table 1 Standard Tolerances

Operating Temperature Range (°F)	Nominal Differential (°F)	Open Temperature Tolerance (+/- °F)	Close Temperature Tolerance (+/- °F)
-65 to -1	30	10	8
0 to 200	20	5	5
201 to 300	30	8	6
301 to 450	40	12	12
451 to 550	70	25	25

Table 2 Special Tolerances

Operating Temperature Range (°F)	Available Differential Range (°F)			Open Temperature Tolerance (+/- °F)	Close Temperature Tolerance (+/- °F)
	Minimum Differential (°F)	Nominal Differential (°F)	Maximum Differential (°F)		
-65 to -1	25	30	80	8	6
0 to 200	9	20	80	3	3
201 to 300	20	30	80	7	5
301 to 450	30	40	80	10	10
451 to 550	60	70	80	22	22

Operating temperature: Temperature at which contacts close.

Differential: Subtract (for close on rise) or add (for open on rise) the differential from the closing temperature to determine the temperature at which the contacts will open.

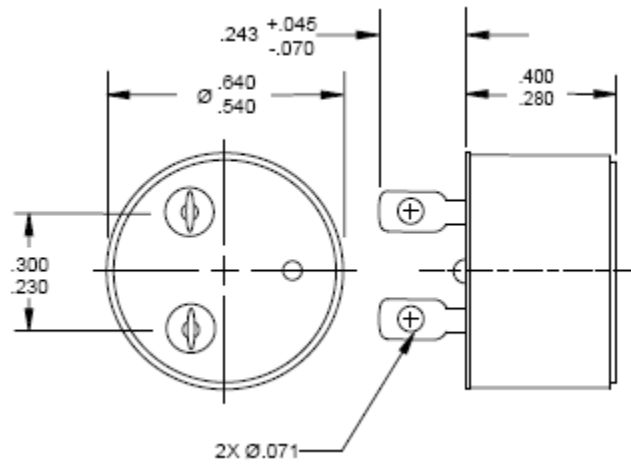
Table 3 Contact Ratings (Resistive)

Contacts	30VAC/DC	125 VAC	250 VAC	Life Cycles
Fine Silver	Amperes			
	5.0	2.0	1.0	100,000
	5.5	3.0	1.5	50,000
	6.0	4.0	2.0	25,000
	6.5	5.0	2.5	10,000
Gold Plated Fine Silver	7.0	6.0	3.0	5,000
Gold Plated Fine Silver	12 Vdc, 500 mA, rated to low levels as low as 30 mVdc, 10 mA	200mA	100mA	100,000

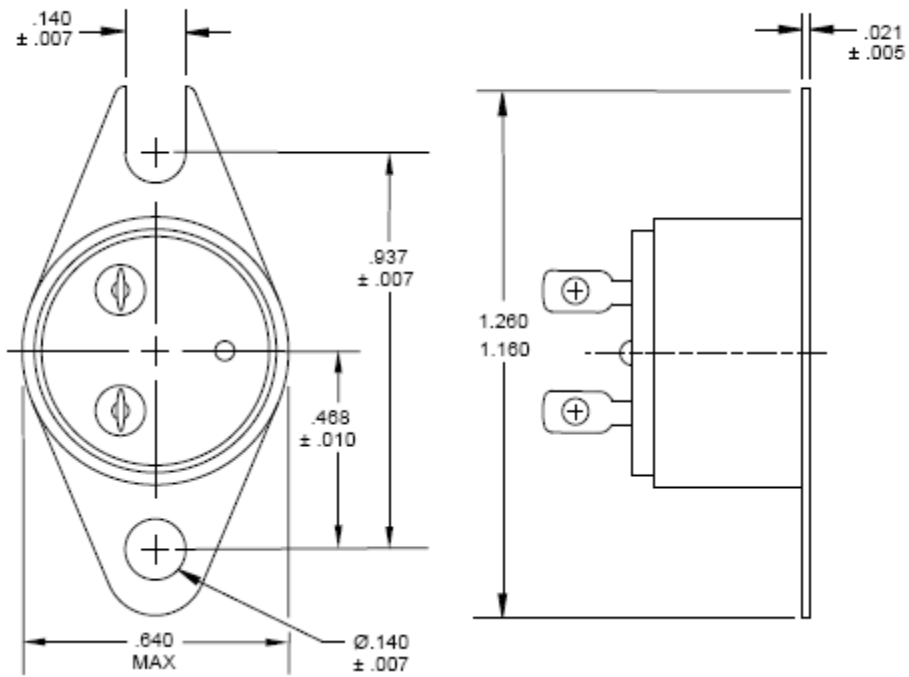
Note: Contact ratings are based on standard differential.

TABLE 4

ORDERING CODE I	Wire Type	Lead Length +/-10% Inch (mm)	Stycast Overmold (Dimensions per Figure 2)
A	M22759/11-22-9	59.0 (1500)	n/a
B	M22759/11-22-9	59.0 (1500)	STYCAST 2850FT
C	M22759/33-22-9	59.0 (1500)	n/a
D	M22759/33-22-9	59.0 (1500)	STYCAST 2850FT
E	M22759/43-22-9	59.0 (1500)	n/a
F	M22759/43-22-9	59.0 (1500)	STYCAST 2850FT

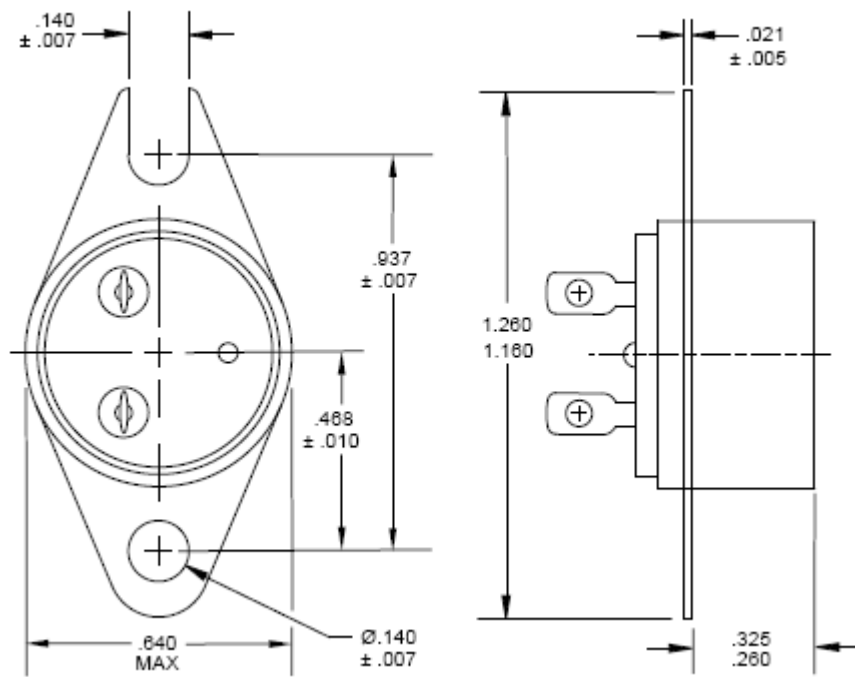


Configuration A

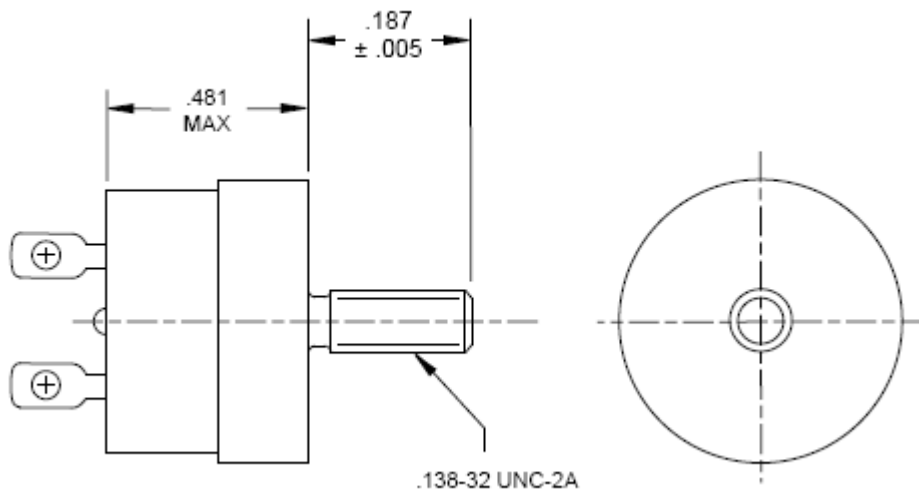


Configuration B

Figure 1. Dimensions.

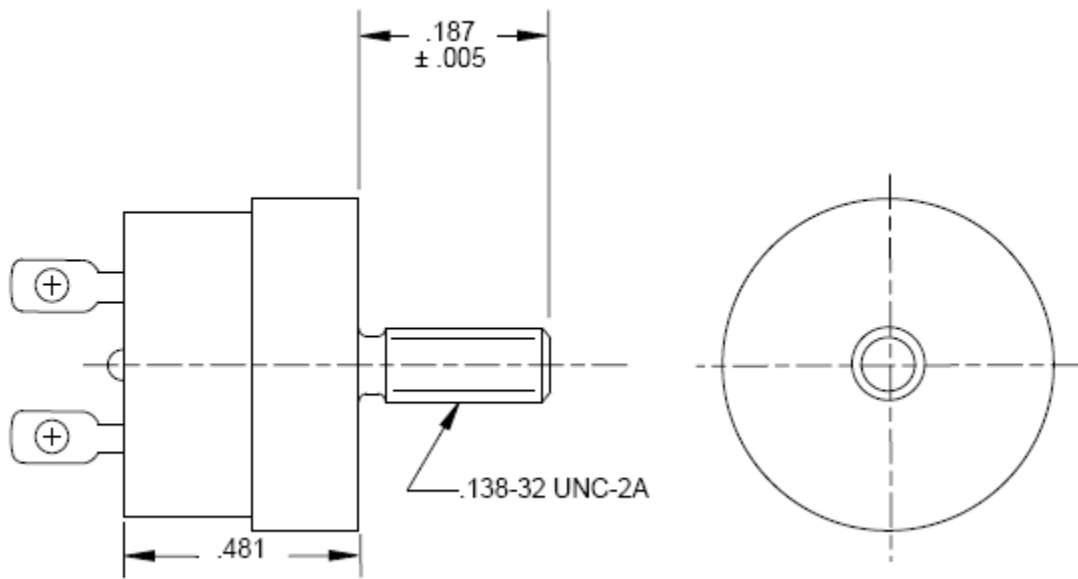


Configuration C

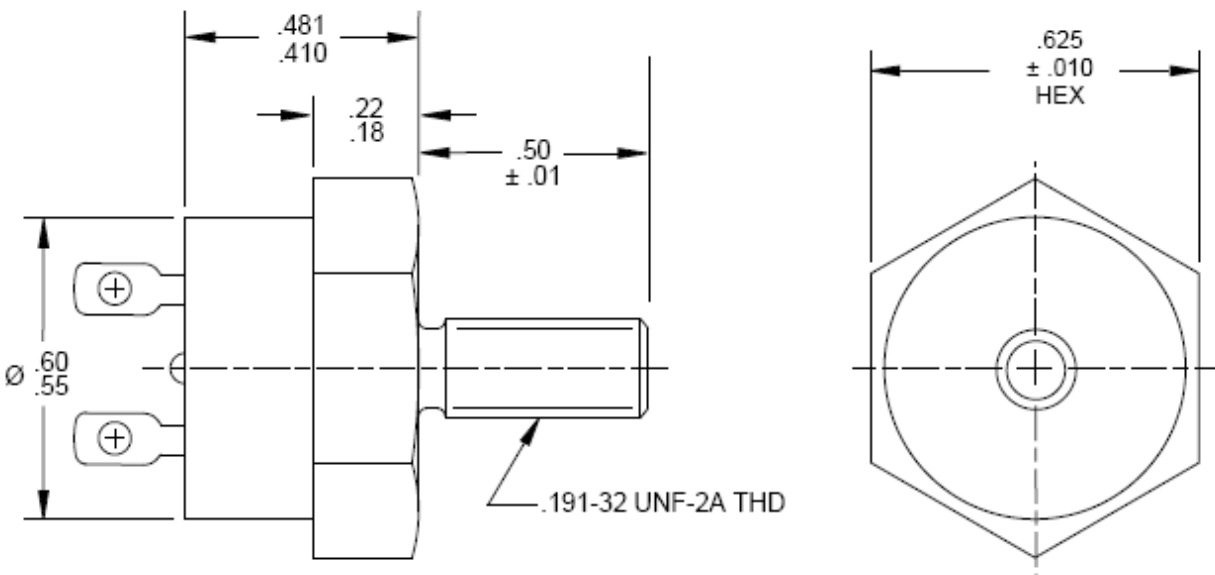


Configuration D

Figure 1. Dimensions (continued).

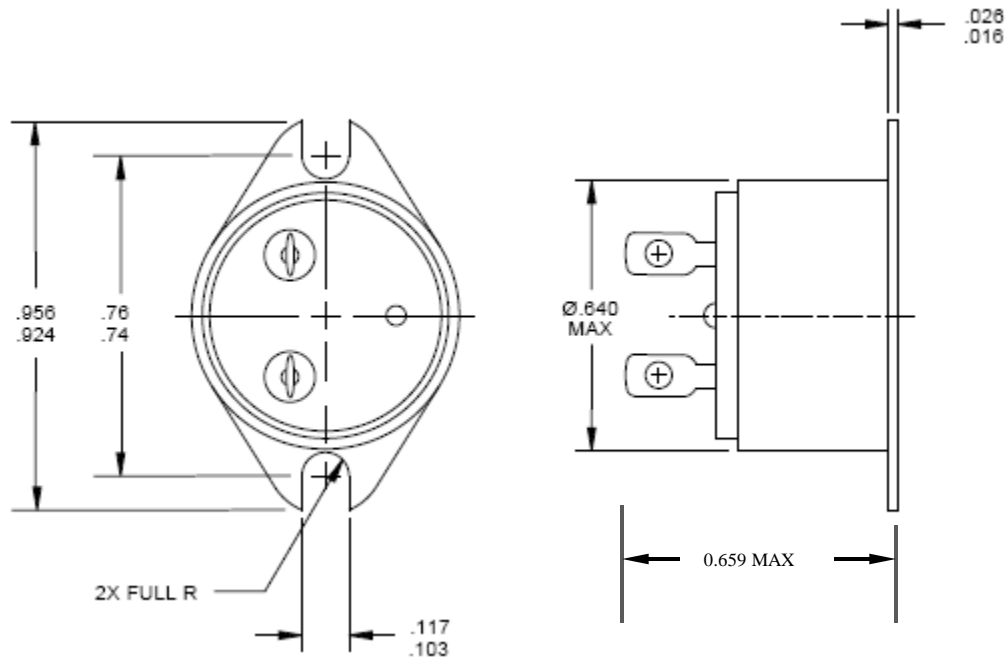


Configuration E

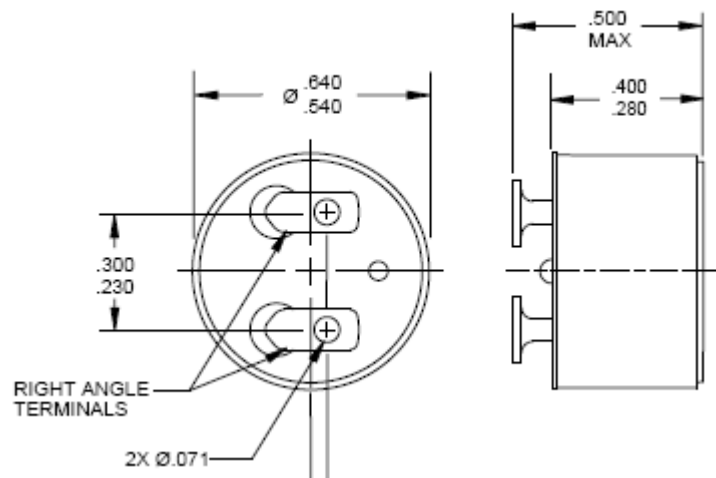


Configuration F

Figure 1. Dimensions (continued).

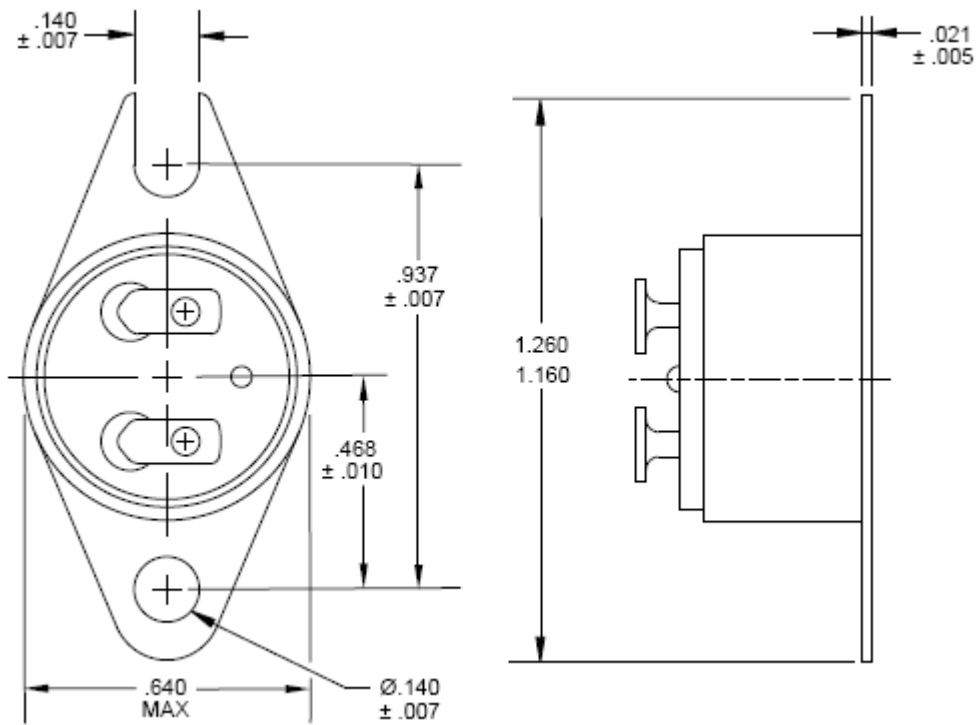


Configuration G

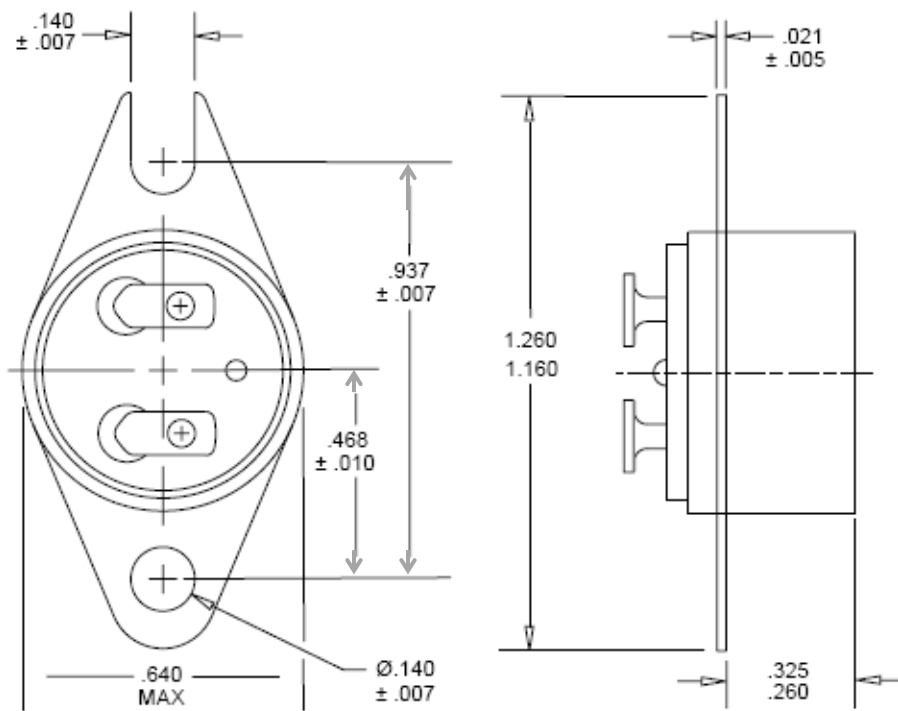


Configuration K

Figure 1. Dimensions (continued).



Configuration L



Configuration M

Figure 1. Dimensions (continued).

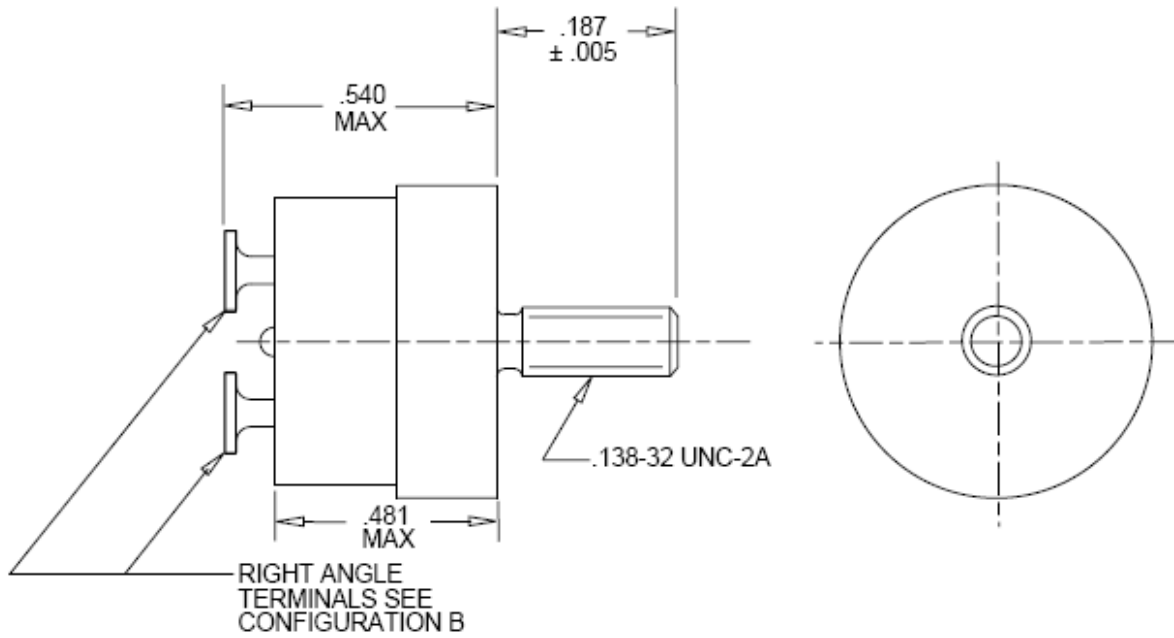
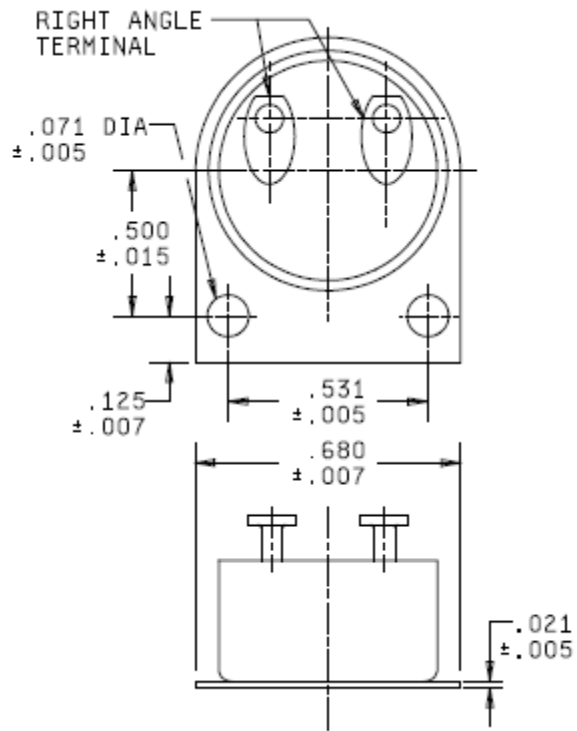
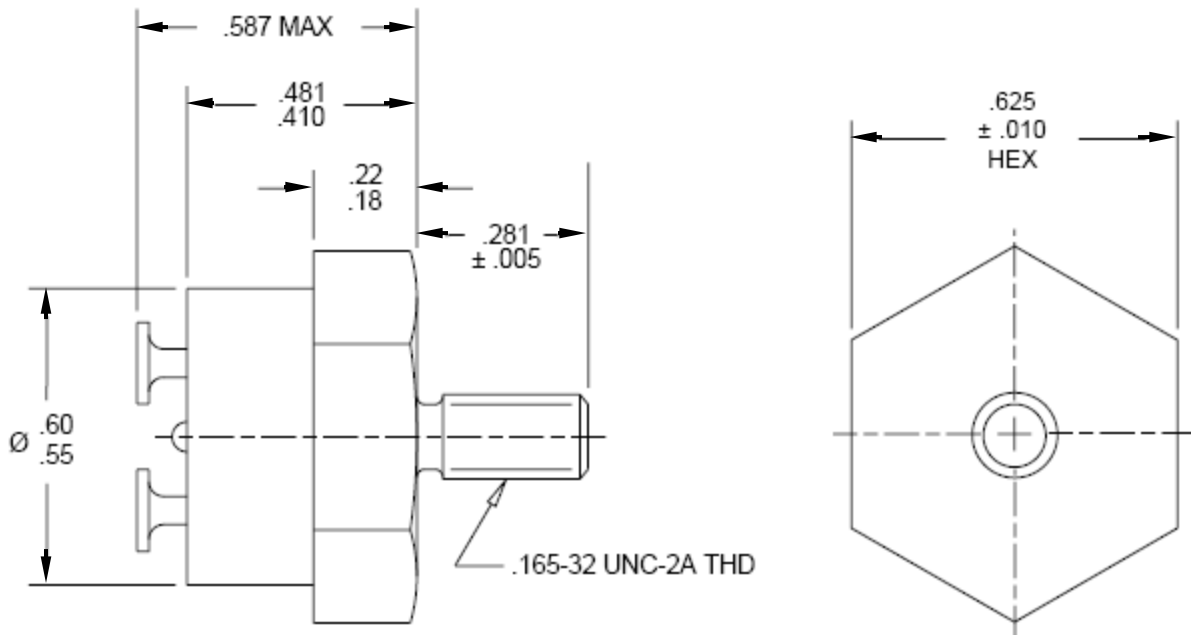
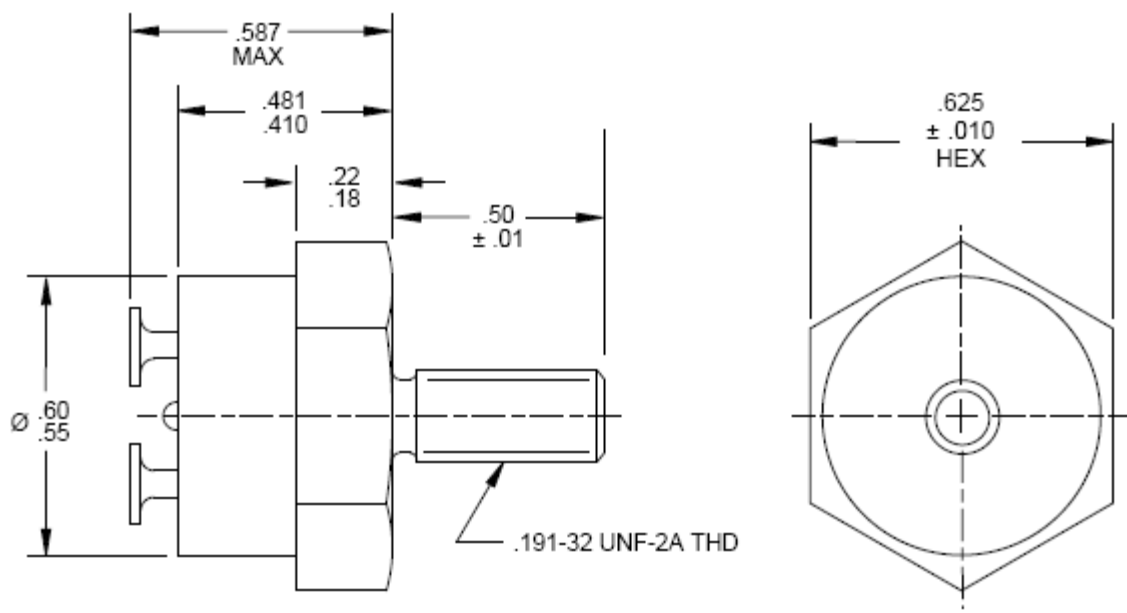


Figure 1. Dimensions (continued).

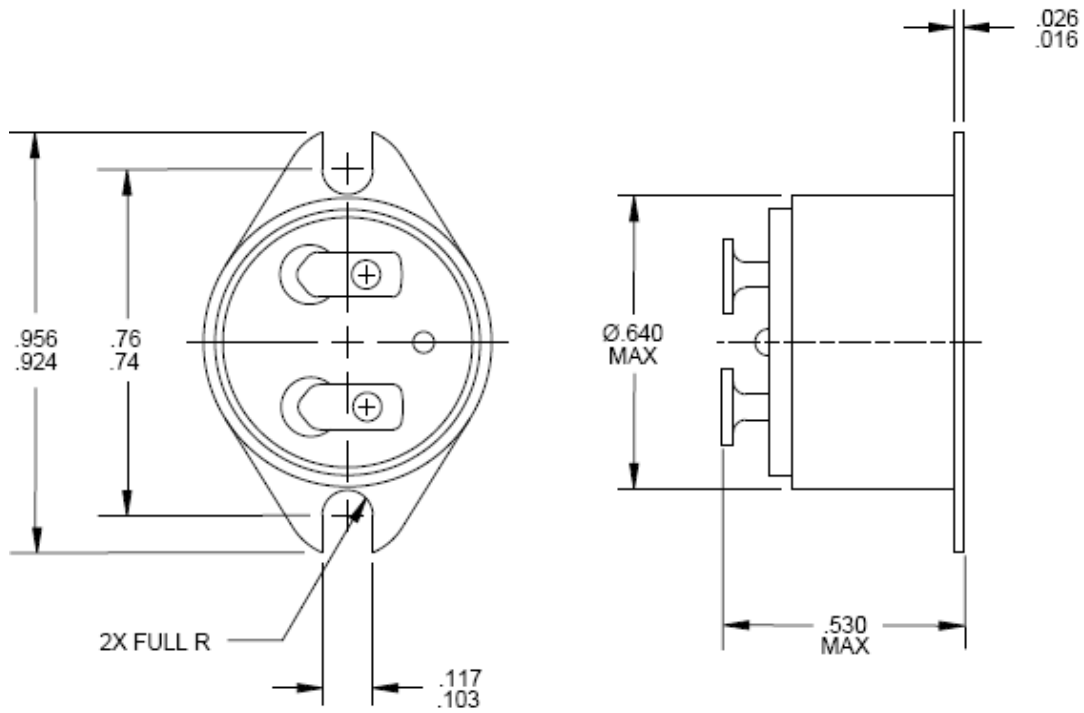


Configuration Q



Configuration R

Figure 1. Dimensions (continued).



Configuration S

Configuration V – Tube Mount Adapter

ORDERING CODE	TUBE MOUNT ADAPTER (FOR REFERENCE ONLY)
J	
1	.256 +/- .010 (6.50 +/- .25)
2	.381 +/- .010 (9.68 +/- .25)
ORDERING CODE	TUBE MOUNT ADAPTER MOUNTING ANGLE (+/-10°)
K	
1	0° (WIRE LEAD TERMINAL ORIENTATION PARALLEL TO THE TUBE DIRECTION)
2	45°
3	90°
4	135°

Figure 1. Dimensions (continued).

Option 1
1/4" DIAMETER TUBE MOUNT

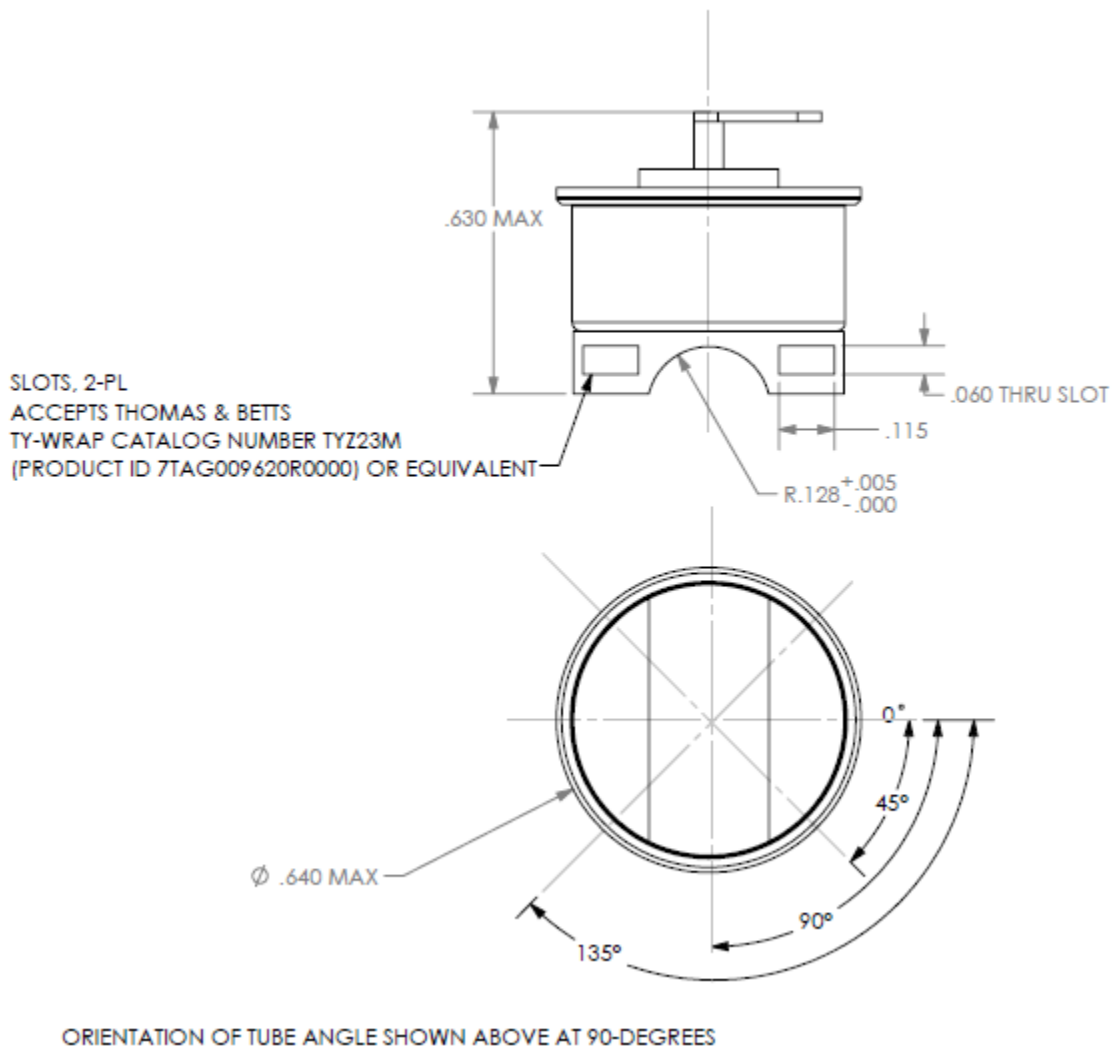
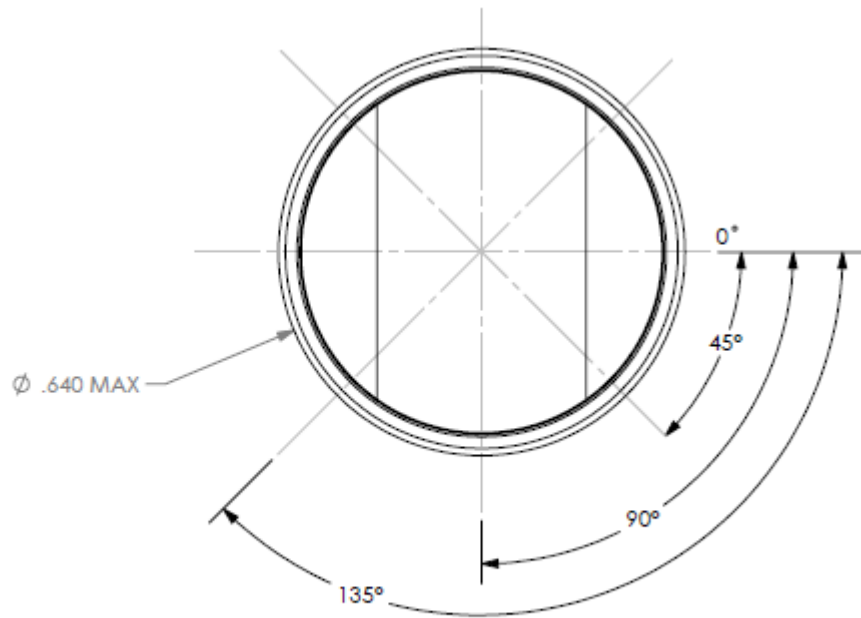
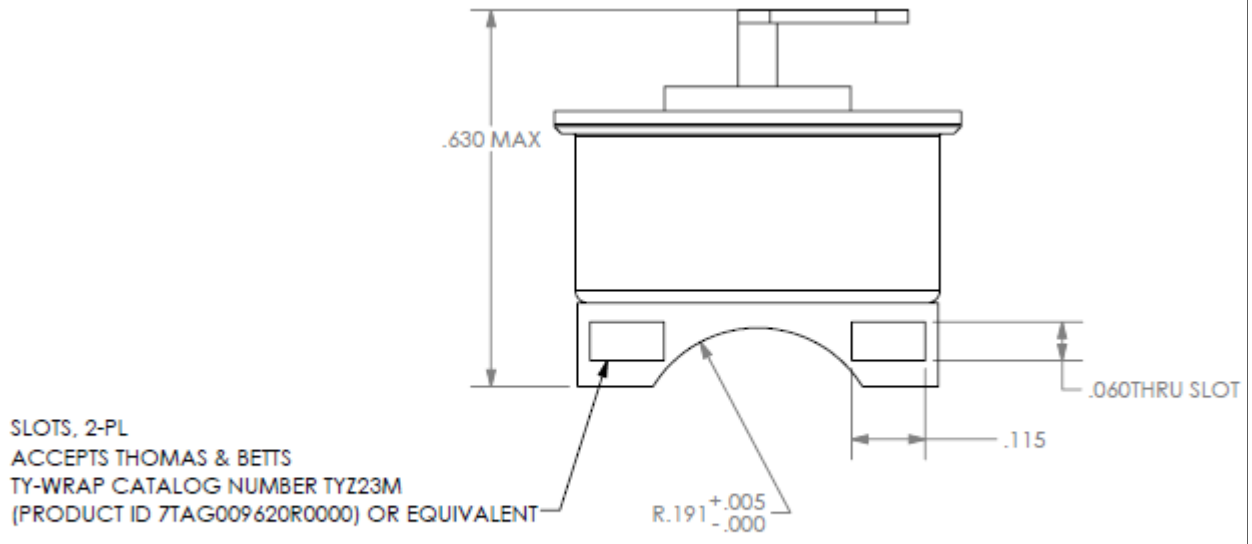


Figure 1. Dimensions (continued).

OPTION 2
 3/8" DIAMETER TUBE MOUNT



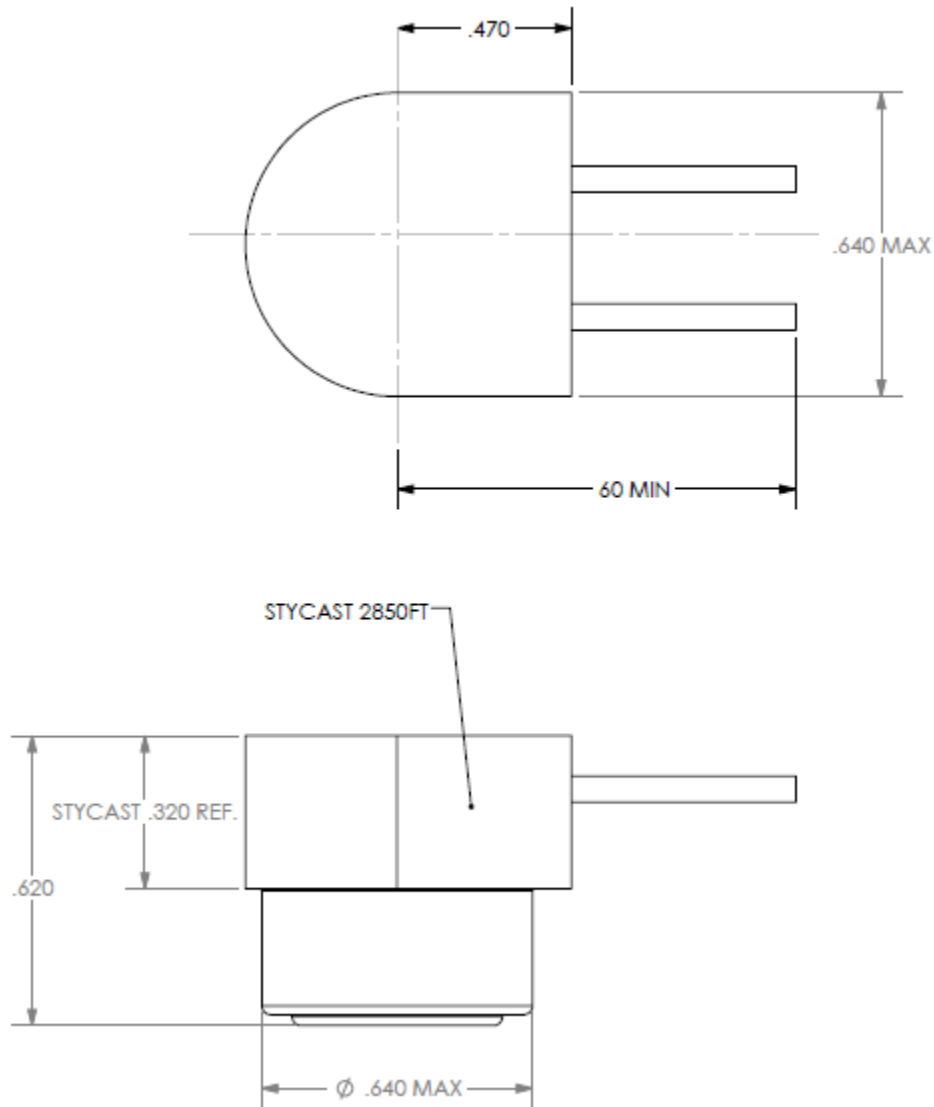
ORIENTATION OF TUBE ANGLE SHOWN ABOVE AT 90-DEGREES

Figure 1. Dimensions (continued).

NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerance is $\pm .015$.
3. Exact shape of switch and terminals are optional provided dimensions specified are not exceeded.
4. Configuration B, C, D, E, F and G use the basic switches of configuration A.
Configuration L, M, N, P, Q, R, S and V use the basic switches of configuration K.

FIGURE 2 – STYCAST OVER MOLD STRAIN RELIEF DIMENSIONS
(Available on Configurations K, L, M, N, P, Q, R, S, and V)



Approved source(s):

Manufacturer	Cage Code	Vendor Similar Part Number
Sensata Technologies	82647	M1/11041

Custodian: QPLD Administrator
Parts, Packaging & Assembly Technologies Office, Code 562
Goddard Space Flight Center
Greenbelt, MD 20771