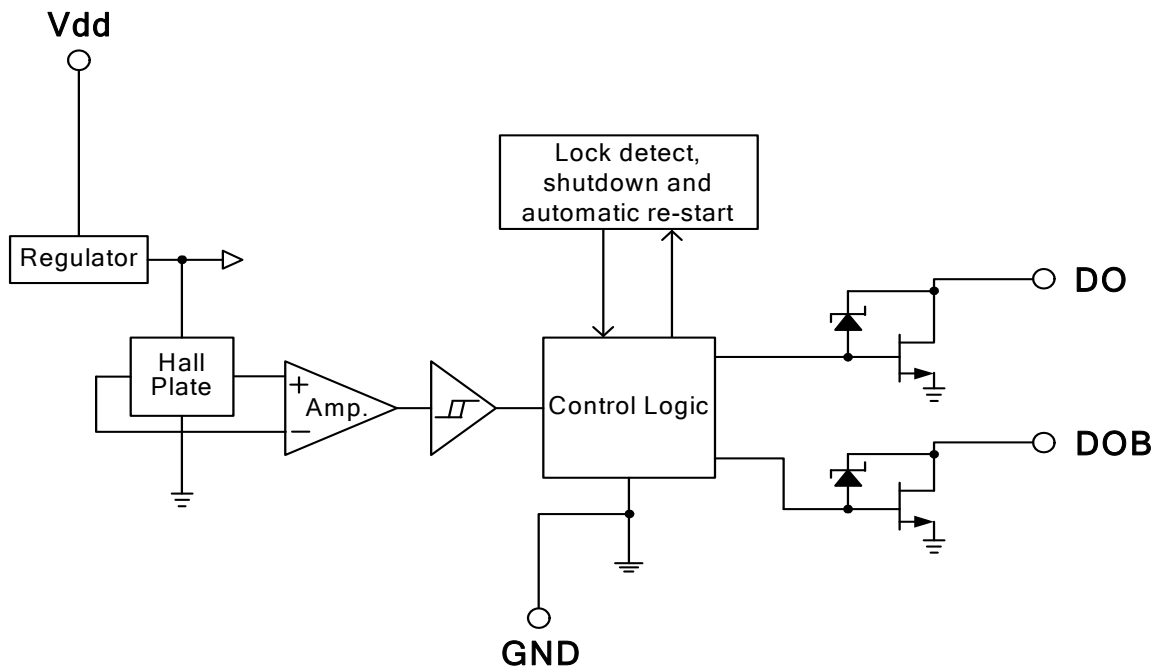


Pin Descriptions

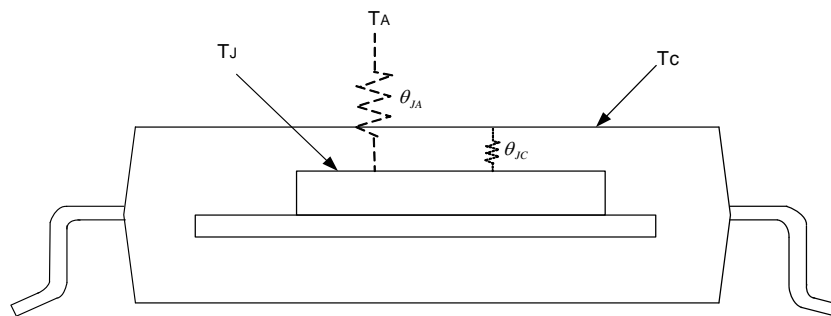
| Pin Name | Description |
|----------|---------------|
| Vdd | Input Power |
| DO | Output Pin |
| DOB | Output Pin |
| GND | Ground |
| NC | Not Connected |

Functional Block Diagram



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

| Symbol | Characteristics | | Rating | Unit | |
|-----------------|--|-----------------------|-----------|------|----|
| V _{dd} | Supply Voltage | | 24 | V | |
| I _O | Output Current | I _{O (AVE)} | SIP-4L | 500 | mA |
| | | | SOT89-5L | 500 | mA |
| | | I _{O (PEAK)} | | 700 | mA |
| P _D | Power Dissipation | SIP-4L | 550 | mW | |
| | | SOT89-5L | 800 | mW | |
| T _{ST} | Storage Temperature | | -55 ~ 150 | °C | |
| T _J | Maximum Junction Temperature | | 150 | °C | |
| θ _{JA} | Thermal Resistance Junction to Case (Note 2) | SIP-4L | 227 | °C/W | |
| | | SOT89-5L | 156 | °C/W | |



Notes: 2. θ_{JA} should be confirmed with heat sink thermal resistance. If there is no heat sink contact, θ_{JA} will almost be the same as θ_{JC}.

Recommended Operating Conditions

| Symbol | Characteristic | Conditions | Min | Max | Unit |
|-----------------|-------------------------------|------------|-----|-----|------|
| V _{dd} | Supply Voltage | Operating | 3.8 | 20 | V |
| T _A | Operating Ambient Temperature | Operating | -40 | 100 | °C |

Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$, $V_{DD} = 12\text{V}$, unless otherwise specified)

| Symbol | Characteristics | Conditions | Min | Typ. | Max | Unit |
|----------------|--------------------------------|------------------------|-----|-------|------|---------------|
| I_{DD} | Supply Current | Operating | - | 2.0 | 4.0 | mA |
| I_{OFF} | Output Leakage Current | $V_{OUT} = 24\text{V}$ | - | < 0.1 | 10 | μA |
| T_{RLP-ON} | Rotor Lock Protection On Time | | 0.4 | 0.5 | 0.6 | Sec |
| $T_{RLP-OFF}$ | Rotor Lock Protection Off Time | | 2.4 | 3 | 3.6 | Sec |
| $V_{OUT(SAT)}$ | Output Saturation Voltage | $I_O = 300\text{mA}$ | - | 375 | 500 | mV |
| | | $I_O = 500\text{mA}$ | - | 625 | 900 | |
| $R_{DS(ON)}$ | Output On Resistance | $I_O = 300\text{mA}$ | - | 1.25 | 1.67 | ohm |
| V_Z | Output Zener-Breakdown Voltage | | 35 | 42 | 60 | V |

Truth Table

| IN- | IN+ | CT | OUT1 | OUT2 | Mode |
|-----|-----|----|------|------|-----------------------------|
| H | L | L | H | L | Rotating |
| L | H | L | L | H | Rotating |
| - | - | H | off | off | Lockup protection activated |

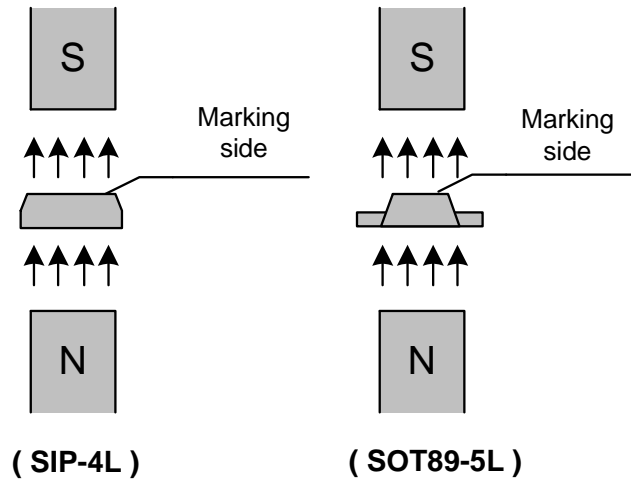
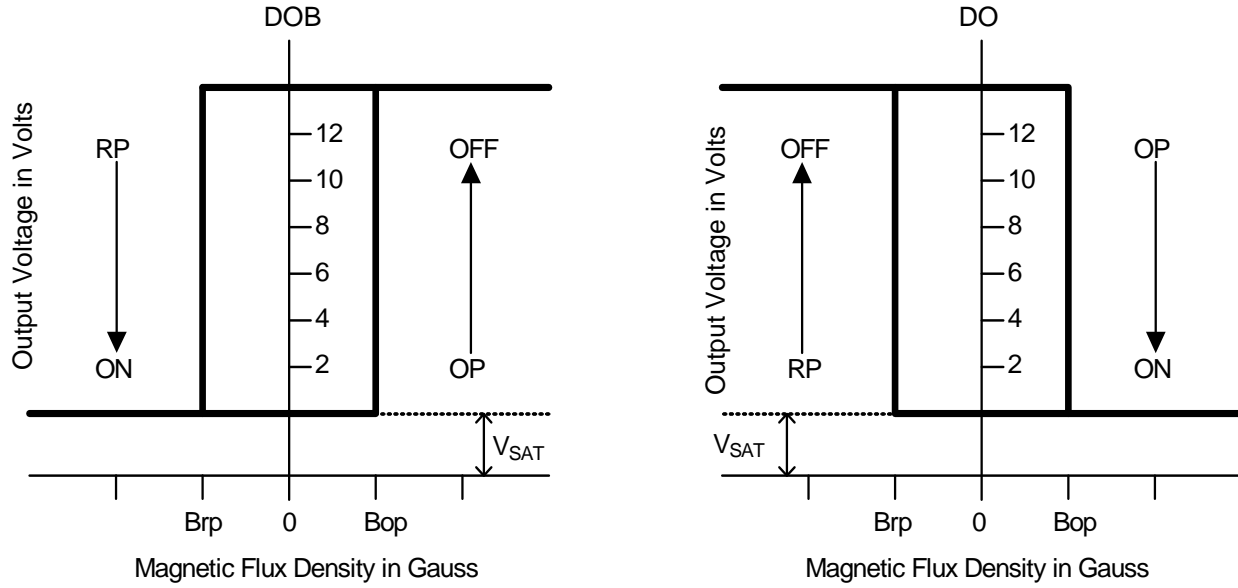
Magnetic Characteristics ($T_A = 25\text{ }^\circ\text{C}$, $V_{DD} = 12\text{V}$, unless otherwise specified, Note 3)

(1mT = 10 Gauss)

| Symbol | Characteristics | Min | Typ. | Max | Unit |
|--------|-----------------|-----|------|-----|-------|
| Bop | Operation Point | 10 | 30 | 60 | Gauss |
| Brp | Release Point | -60 | -30 | -10 | Gauss |
| Bhy | Hysteresis | - | 60 | - | Gauss |

Notes: 3. The magnetic characteristics may vary with supply voltage, operating temperature and after soldering.

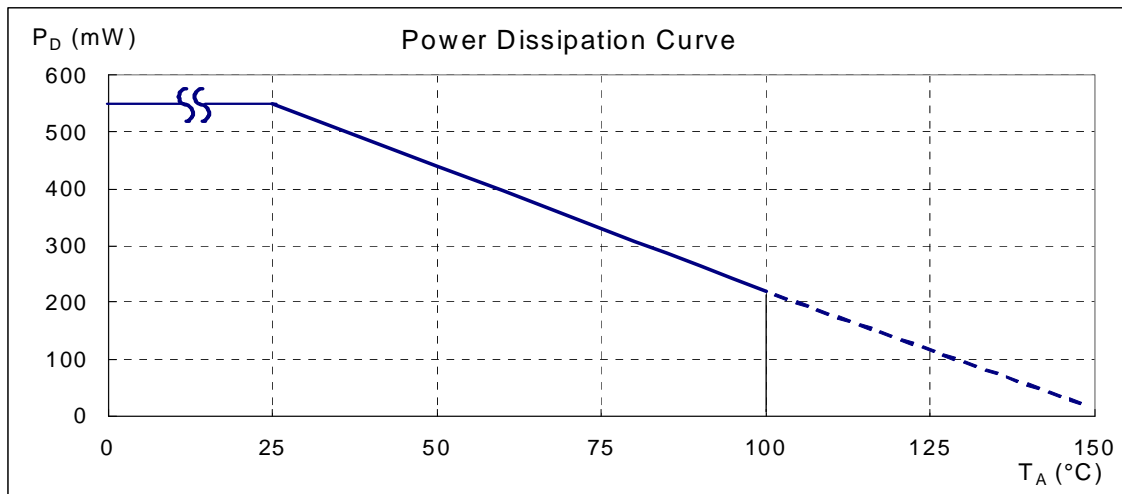
Operating Characteristics



Performance Characteristics

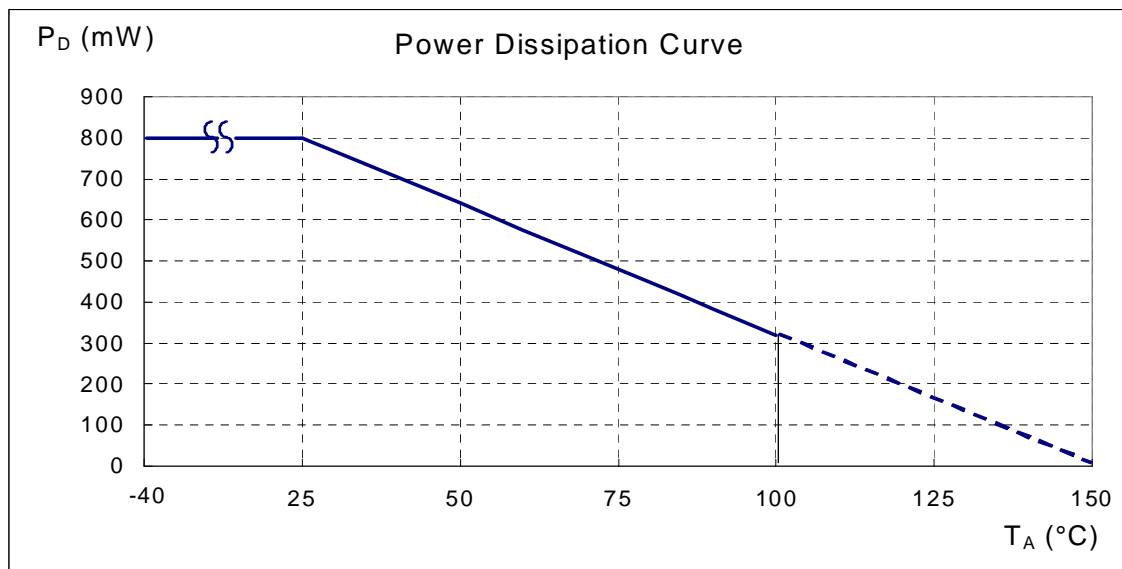
(1) SIP-4L

| | | | | | | | | | |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| T_A (°C) | 25 | 50 | 60 | 70 | 80 | 85 | 90 | 95 | 100 |
| P _D (mW) | 550 | 440 | 396 | 352 | 308 | 286 | 264 | 242 | 220 |
| T_A (°C) | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 150 |
| P _D (mW) | 198 | 176 | 154 | 132 | 110 | 88 | 66 | 44 | 0 |

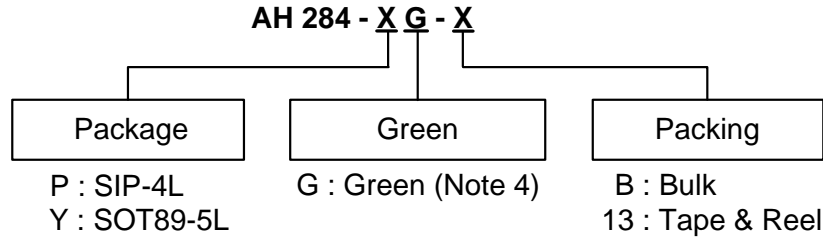


(2) SOT89-5L

| | | | | | | | | | | |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| T_A (°C) | 25 | 50 | 60 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| P _D (mW) | 800 | 640 | 576 | 512 | 480 | 448 | 416 | 384 | 352 | 320 |
| T_A (°C) | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 |
| P _D (mW) | 288 | 256 | 224 | 192 | 160 | 128 | 96 | 64 | 32 | 0 |



Ordering Information



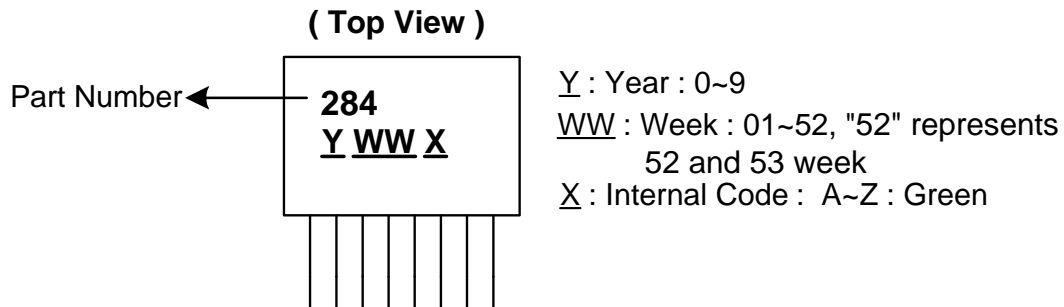
| Device | Package Code | Packaging (Note 5, 6) | Bulk | | 13" Tape and Reel | |
|-------------|--------------|-----------------------|----------|--------------------|-------------------|--------------------|
| | | | Quantity | Part Number Suffix | Quantity | Part Number Suffix |
| AH284-PG-B | P | SIP-4L | 1000 | -B | NA | NA |
| AH284-YG-13 | Y | SOT89-5L | NA | NA | 2500/Tape & Reel | -13 |



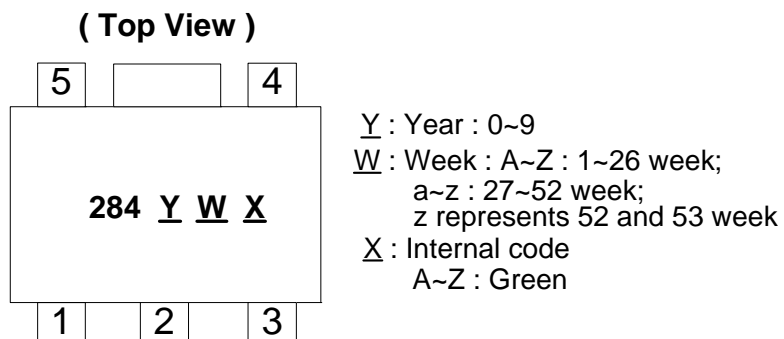
- Notes:
4. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.
 5. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 6. Reverse taping as shown on Diodes Inc. Surface Mount (SMD) Packaging document AP02007, which can be found on our website <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

(1) SIP-4L

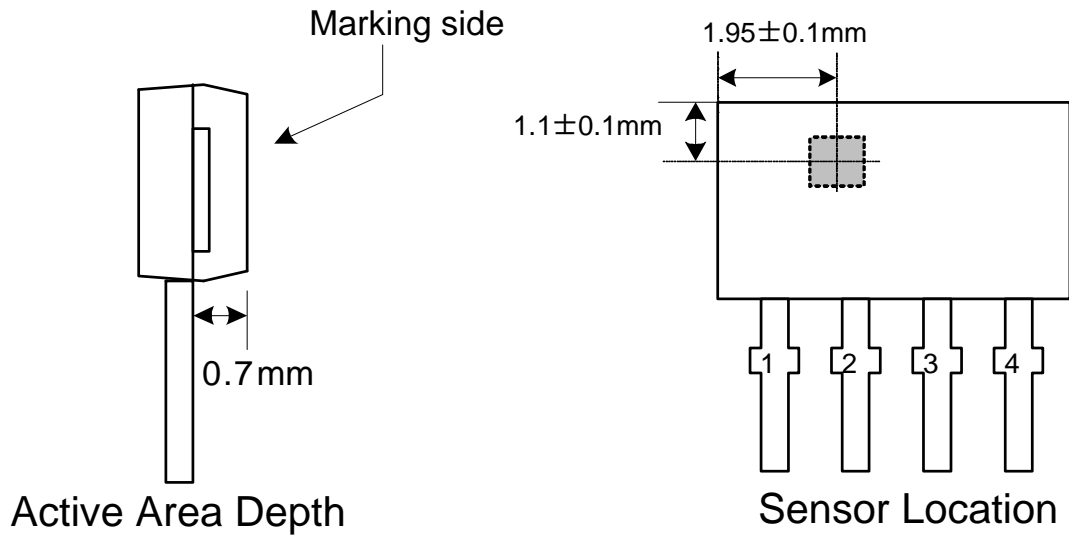


(2) SOT89-5L

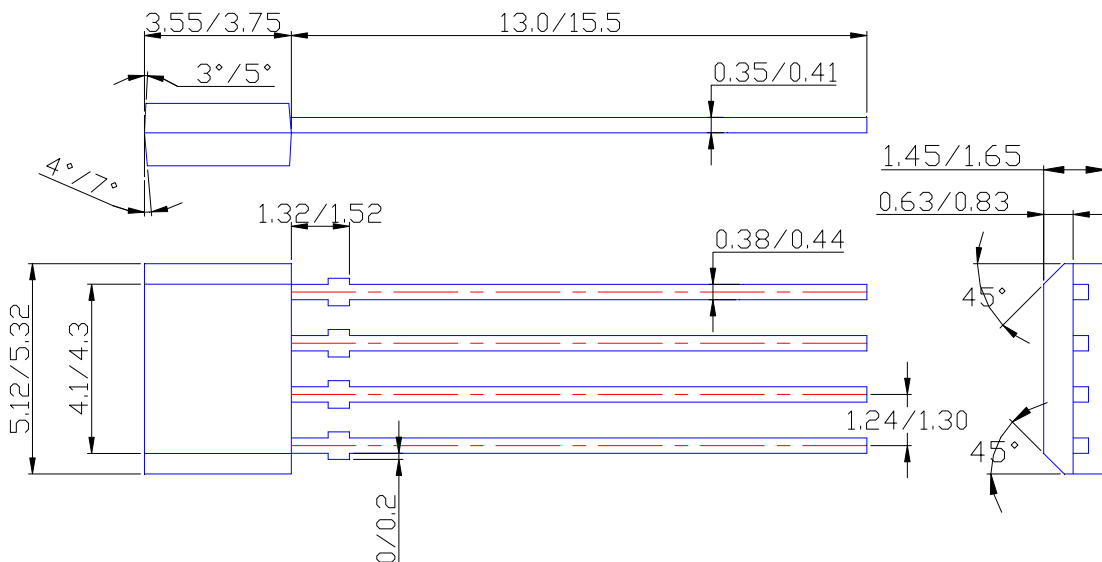


Package Outline Dimensions (All Dimensions in mm)

(1) Package type: SIP-4L

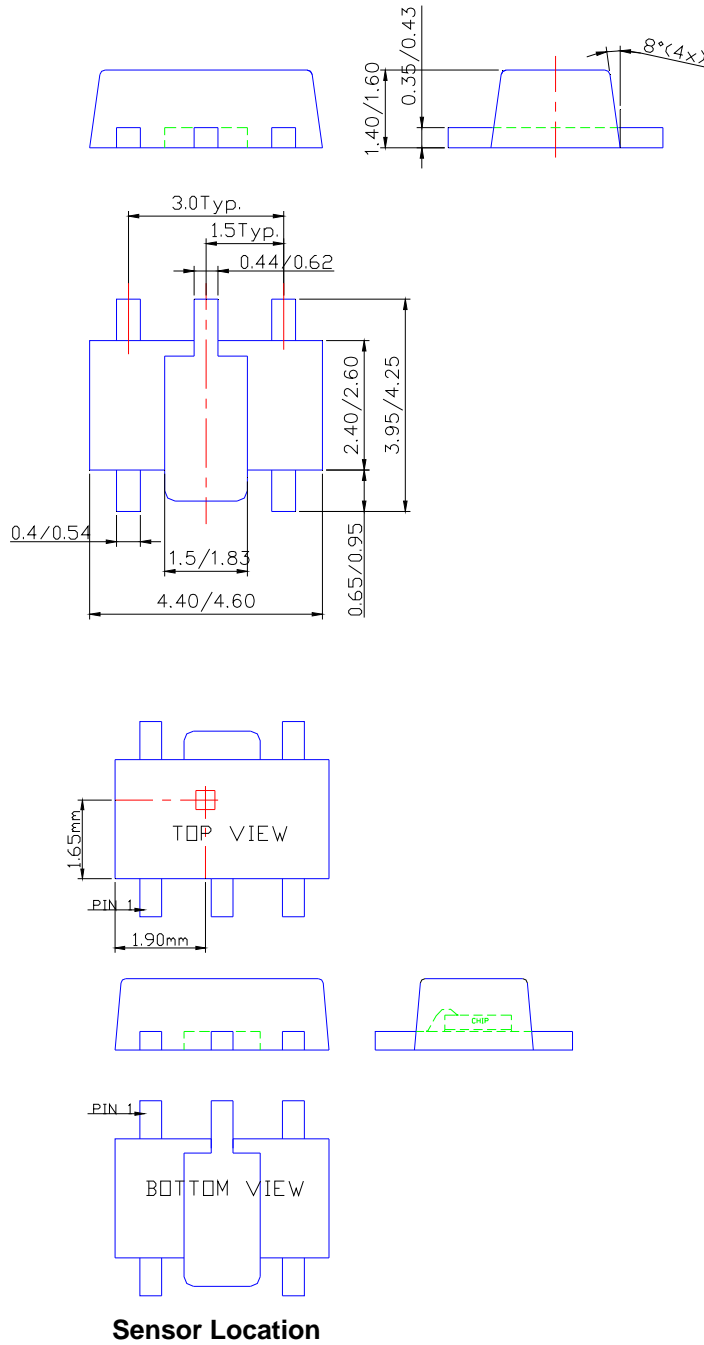


Package Dimension



Package Outline Dimensions (Continued)

(2) Package type: SOT89-5L



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