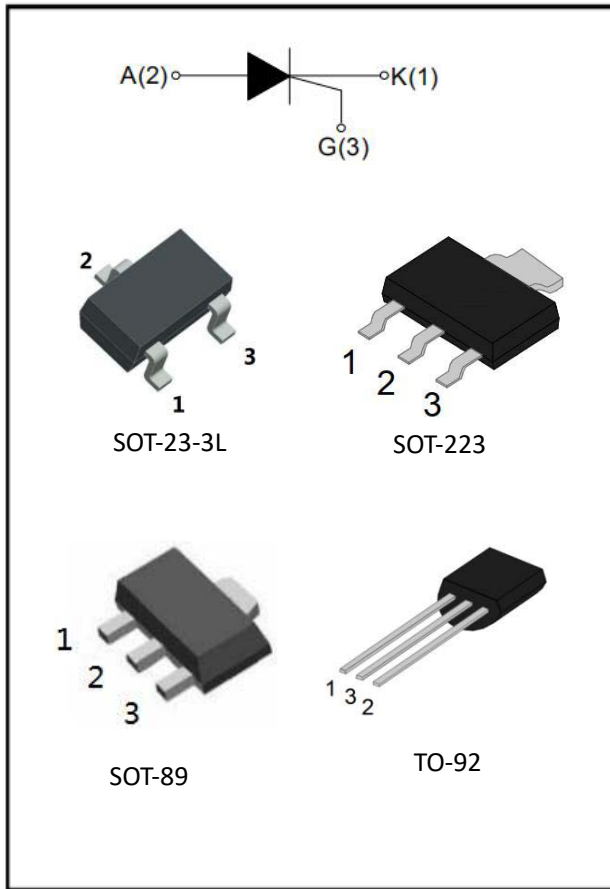


## 1A Sensitive SCRs



### Features

- On-state rms current,  $I_{T(RMS)}$  1 A
- Repetitive peak off-state voltage,  $V_{DRM}/V_{RRM}$  800 V
- Triggering gate current,  $I_{GT}$  200 $\mu$ A

### Applications

- Ground Fault Circuit Interrupters (GFCI)
- General purpose switching and phase control
- Ignition circuits, CDI
- Motor control - e.g. small kitchen appliances

### Mechanical Data

- Case Material: "Green" Molding Compound
- Package:

| DEVICE   | PACKAGE      |
|----------|--------------|
| YC0810S1 | SOT-23-3L    |
| YC0810S2 | TO-92SOT-223 |
| YC0810S3 | SOT-89       |
| YC0810T9 | TO-92        |
| YC0810S4 | SOT-223-2L   |

### Main Characteristics

| SYMBOL            | LIMITS | UNIT    |
|-------------------|--------|---------|
| $I_{T(RMS)}$      | 1      | A       |
| $V_{DRM}/V_{RRM}$ | 800    | V       |
| $I_{GT}$          | 200    | $\mu$ A |

### Maximum Ratings

| PARAMETER                                                                                    | SYMBOL       | LIMITS  | UNIT             |
|----------------------------------------------------------------------------------------------|--------------|---------|------------------|
| Storage junction temperature range                                                           | $T_{stg}$    | -40~150 | $^{\circ}$ C     |
| Operating junction temperature range                                                         | $T_j$        | -40~125 | $^{\circ}$ C     |
| Repetitive surge peak Off-state voltage ( $T_j=25^{\circ}$ C)                                | $V_{DRM}$    | 800     | V                |
| Repetitive peak reverse voltage ( $T_j=25^{\circ}$ C)                                        | $V_{RRM}$    | 800     | V                |
| RMS on-state current ( $TC=80^{\circ}$ C)                                                    | $I_{T(RMS)}$ | 1       | A                |
| Non-repetitive surge peak on-state current (half sine wave, $t_p=10ms$ , $T_j=25^{\circ}$ C) | $I_{TSM}$    | 8       | A                |
| $I^2t$ value for fusing ( $t_p=10ms$ )                                                       | $I^2t$       | 0.5     | A <sup>2</sup> s |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )                          | $di/dt$      | 50      | A/ $\mu$ s       |
| Peak gate current                                                                            | $I_{GM}$     | 0.2     | A                |
| Average gate power dissipation                                                               | $P_{G(AV)}$  | 0.1     | W                |
| Peak gate power                                                                              | $P_{GM}$     | 0.5     | W                |



## YC0810 Series

### ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                         | SYMBOL          | UNIT | TEST CONDITIONS                                                                               | MIN | TYP | MAX |
|-----------------------------------|-----------------|------|-----------------------------------------------------------------------------------------------|-----|-----|-----|
| Gate trigger current              | I <sub>GT</sub> | μA   | V <sub>D</sub> =12V, R <sub>L</sub> =33Ω                                                      |     | 20  | 200 |
| Gate trigger voltage              | V <sub>GT</sub> | V    | V <sub>D</sub> =12V, R <sub>L</sub> =33Ω                                                      |     | 0.5 | 1.0 |
| Non-triggering gate voltage       | V <sub>GD</sub> | V    | V <sub>D</sub> =V <sub>DRM</sub> T <sub>j</sub> =110°C R <sub>L</sub> =3.3kΩ                  | 0.2 |     |     |
| Holding current                   | I <sub>H</sub>  | mA   | I <sub>T</sub> =50mA                                                                          |     |     | 2   |
| Latching current                  | I <sub>L</sub>  | mA   | I <sub>G</sub> =1.2 I <sub>GT</sub>                                                           |     |     | 3   |
| Rate of rise of off-state voltage | dV/dt           | V/μs | V <sub>D</sub> =0.66×V <sub>DRM</sub> T <sub>j</sub> =110°C Gate open<br>R <sub>GK</sub> =1KΩ | 20  |     |     |

### ■Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER              | SYMBOL                               | UNIT | TEST CONDITIONS                                                                   | MAX |
|------------------------|--------------------------------------|------|-----------------------------------------------------------------------------------|-----|
| Peak on-state voltage  | V <sub>TM</sub>                      | V    | I <sub>TM</sub> =1.4A t <sub>p</sub> =380μS                                       | 1.5 |
| Peak off-state current | I <sub>DRM</sub><br>I <sub>RRM</sub> | μA   | V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> =25°C, R <sub>GK</sub> =1KΩ  | 5   |
| Peak reverse current   |                                      | mA   | V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> =125°C, R <sub>GK</sub> =1KΩ | 0.5 |

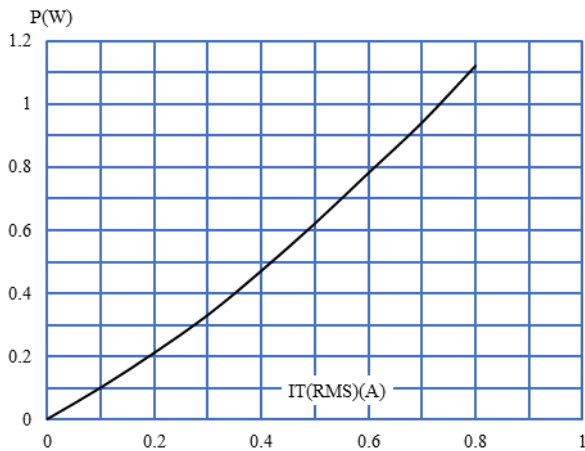
### ■Thermal Resistance (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                    |                  | SYMBOL            | UNIT | Pacakge      | Value |
|------------------------------|------------------|-------------------|------|--------------|-------|
| Thermal Resistance (Typical) | Junction to case | R <sub>θJ-C</sub> | °C/W | TO-92/SOT-23 | 50    |
|                              |                  |                   | °C/W | SOT-89       | 28    |
|                              |                  |                   | °C/W | SOT-223      | 18    |

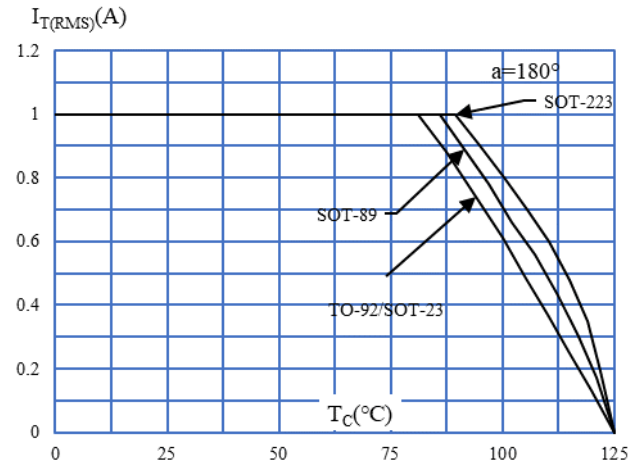


## ■ Characteristics (Typical)

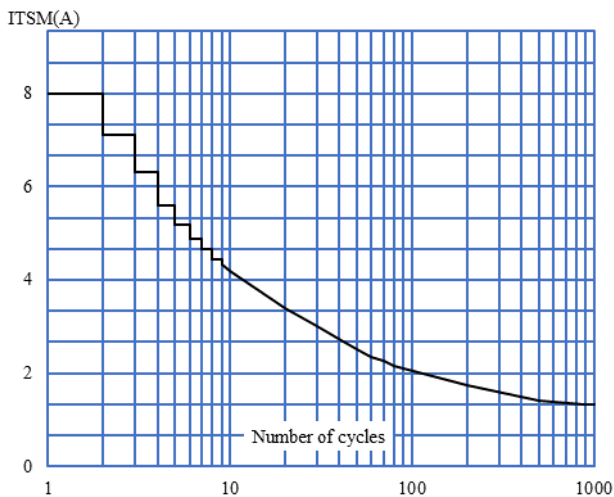
**FIG.1:** Maximum power dissipation versus RMS on-state current



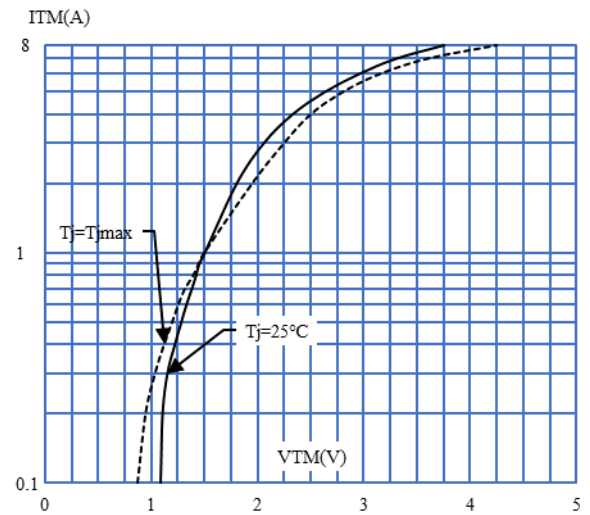
**FIG.2:** RMS on-state current versus case temperature



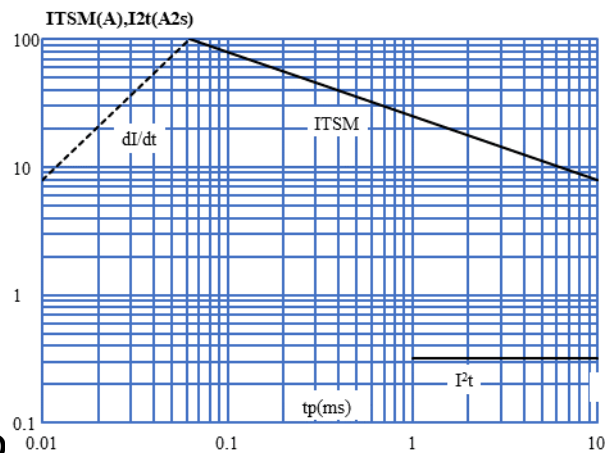
**FIG.3:** Surge peak on-state current versus number of cycles



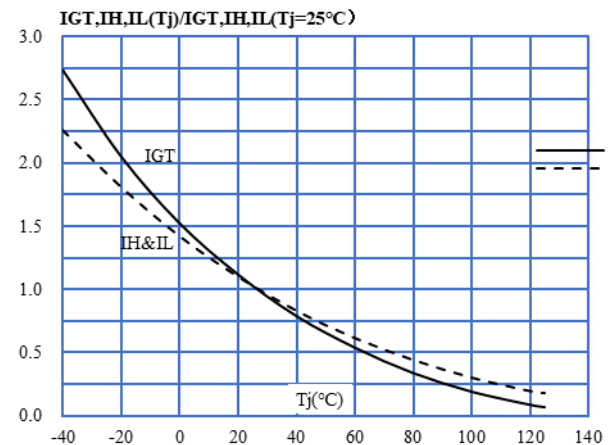
**FIG.4:** On-state characteristics (maximum values)



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20ms$ , and corresponding value of  $I_2 t$  ( $dI/dt < 50A/\mu s$ )



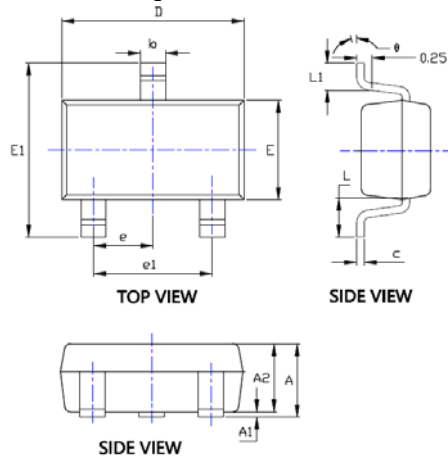
**FIG.6:** Relative variations of gate trigger current, holding current and latching





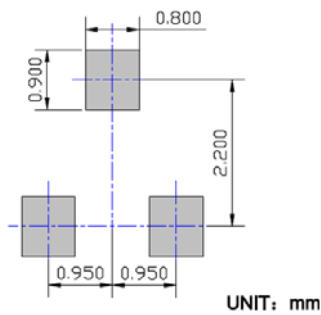
## YC0810 Series

### ➤ SOT-23-3L Package Outline Dimensions

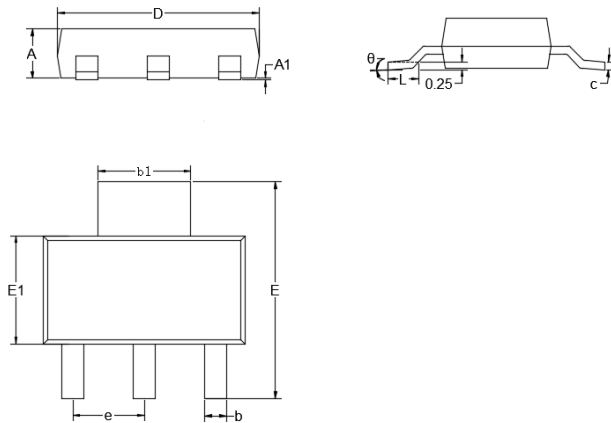


| SYMBOL | DIMENSIONS |       |            |       |
|--------|------------|-------|------------|-------|
|        | INCHES     |       | Millimeter |       |
|        | MIN.       | MAX.  | MIN.       | MAX.  |
| A      | 0.041      | 0.049 | 1.050      | 1.250 |
| A1     | 0.000      | 0.008 | 0.000      | 0.200 |
| A2     | 0.041      | 0.045 | 1.050      | 1.150 |
| b      | 0.012      | 0.020 | 0.300      | 0.500 |
| c      | 0.004      | 0.008 | 0.100      | 0.200 |
| D      | 0.111      | 0.119 | 2.820      | 3.020 |
| E      | 0.059      | 0.067 | 1.500      | 1.700 |
| E1     | 0.104      | 0.116 | 2.650      | 2.950 |
| e      | 0.037TYP   |       | 0.950TYP   |       |
| e1     | 0.071      | 0.079 | 1.800      | 2.000 |
| L      | 0.024REF   |       | 0.600REF   |       |
| L1     | 0.012      | 0.024 | 0.300      | 0.600 |
| θ      | 0°         | 8°    | 0°         | 8°    |

### SOT-23-3L Suggested Pad Layout

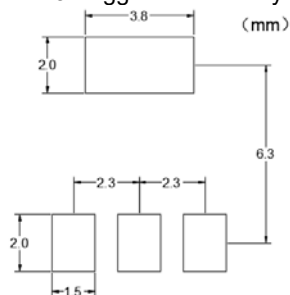


### ➤ SOT-223 Package Outline Dimensions



| DIM | DIMENSIONS |        |        |        |
|-----|------------|--------|--------|--------|
|     | INCHES     |        | MM     |        |
|     | MIN        | MAX    | MIN    | MAX    |
| A   | 0.0591     | 0.0670 | 1.5000 | 1.7000 |
| A1  | 0.0008     | 0.0039 | 0.0200 | 0.1000 |
| b   | 0.0259     | 0.0330 | 0.6600 | 0.8400 |
| b1  | 0.1140     | 0.1220 | 2.9000 | 3.1000 |
| c   | 0.0090     | 0.0138 | 0.2300 | 0.3500 |
| D   | 0.2480     | 0.2640 | 6.3000 | 6.7000 |
| E   | 0.2637     | 0.2874 | 6.7000 | 7.3000 |
| E1  | 0.1290     | 0.1460 | 3.3000 | 3.7000 |
| e   | 0.0866     | 0.0945 | 2.2000 | 2.4000 |
| L   | 0.0295     | 0.0492 | 0.7500 | 1.2500 |
| θ   | 0°         | 10°    | 0°     | 10°    |

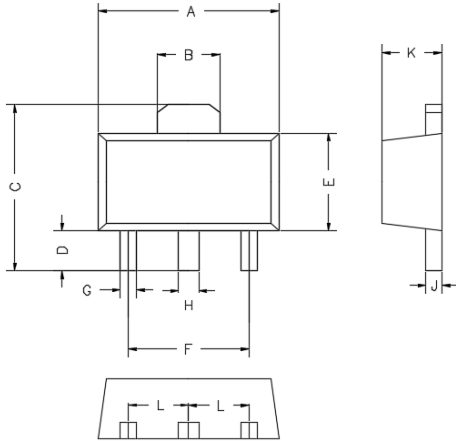
### SOT-223 Suggested Pad Layout





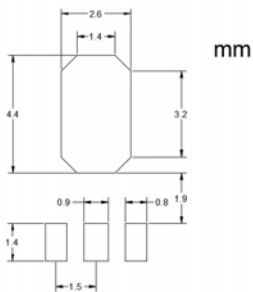
## YC0810 Series

### ➤ SOT-89 Package Outline Dimensions

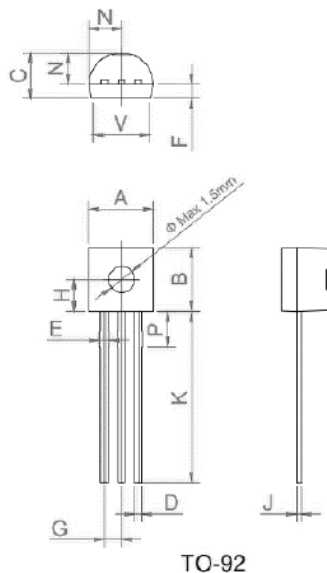


| DIMENSIONS |        |       |      |      |      |
|------------|--------|-------|------|------|------|
| DIM        | INCHES |       | MM   |      | NOTE |
|            | MIN    | MAX   | MIN  | MAX  |      |
| A          | 0.169  | 0.185 | 4.30 | 4.70 |      |
| B          | 0.061  |       | 1.55 |      | TYP  |
| C          | 0.154  | 0.171 | 3.91 | 4.35 |      |
| D          | 0.031  | 0.047 | 0.80 | 1.20 |      |
| E          | 0.089  | 0.104 | 2.25 | 2.65 |      |
| F          | 0.118  |       | 3.00 |      | TYP  |
| G          | 0.013  | 0.020 | 0.33 | 0.52 |      |
| H          | 0.016  | 0.023 | 0.40 | 0.58 |      |
| J          | 0.014  | 0.017 | 0.35 | 0.44 |      |
| K          | 0.055  | 0.063 | 1.40 | 1.60 |      |
| L          | 0.059  |       | 1.50 |      | TYP  |

### SOT-89 Suggested Pad Layout



### ➤ TO-92 Package Outline Dimensions

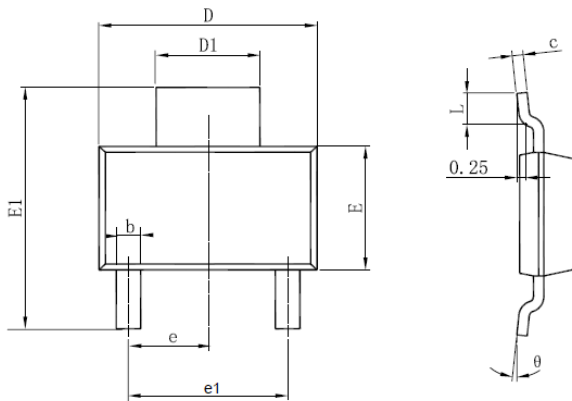


| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 4.45        | 4.6  | 5.2   | 0.175  | 0.181 | 0.205 |
| B    | 4.32        | 4.6  | 5.33  | 0.17   | 0.181 | 0.21  |
| C    | 3.18        | 3.55 | 4.19  | 0.125  | 0.14  | 0.165 |
| D    | 0.407       |      | 0.533 | 0.016  |       | 0.021 |
| E    | 0.5         |      | 0.7   | 0.020  |       | 0.028 |
| F    | -           | 1.1  | -     | -      | 0.043 | -     |
| G    | -           | 1.27 | -     | -      | 0.05  | -     |
| H    | -           | 2.3  | -     | -      | 0.091 | -     |
| J    | 0.36        | 0.38 | 0.5   | 0.014  | 0.015 | 0.02  |
| K    | 12.7        |      | 15    | 0.5    |       | 0.591 |
| N    | 2.04        | 2.3  | 2.66  | 0.08   | 0.091 | 0.105 |
| P    | 1.86        |      | 2.06  | 0.073  |       | 0.081 |
| V    |             |      | 4.3   |        |       | 0.169 |



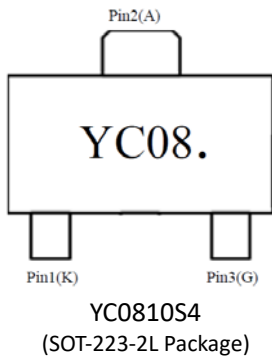
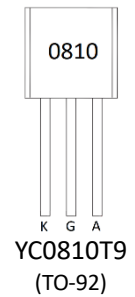
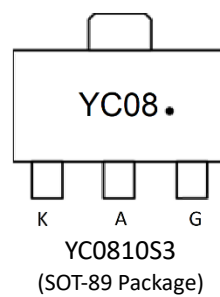
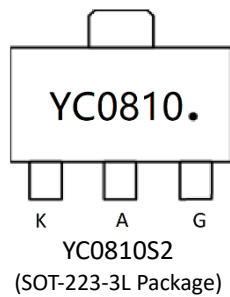
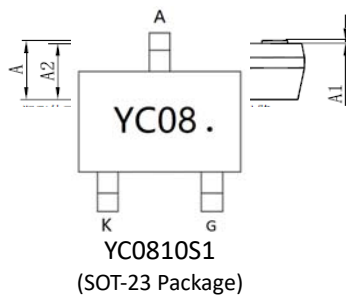
## YC0810 Series

### ➤ SOT-223-2L Package Outline Dimensions



| Ref. | Dimensions   |        |        |             |      |      |
|------|--------------|--------|--------|-------------|------|------|
|      | Inches       |        |        | Millimeters |      |      |
|      | Min.         | Typ.   | Max.   | Min.        | Typ. | Max. |
| A    |              |        | 0.0709 | /           | /    | 1.80 |
| A1   | 0.00079      |        | 0.0039 | 0.02        | /    | 0.10 |
| A2   | 0.0591       | 0.063  | 0.0667 | 1.50        | 1.60 | 1.70 |
| b    | 0.026        | 0.028  | 0.0331 | 0.66        | 0.71 | 0.84 |
| c    | 0.0091       | 0.0118 | 0.0138 | 0.23        | 0.30 | 0.35 |
| D    | 0.248        | 0.256  | 0.264  | 6.30        | 6.50 | 6.70 |
| D1   | 0.114        | 0.118  | 0.122  | 2.90        | 3.00 | 3.10 |
| E    | 0.13         | 0.138  | 0.146  | 3.30        | 3.50 | 3.70 |
| E1   | 0.264        | 0.276  | 0.287  | 6.70        | 7.00 | 7.30 |
| e    | 0.0906 BASIC |        |        | 2.30 BASIC  |      |      |
| e1   | 0.181 BASIC  |        |        | 4.60 BASIC  |      |      |
| L    | 0.0295       | /      | /      | 0.75        | /    | /    |
| θ    | 0°           | /      | 10°    | 0°          | /    | 10°  |

### Marking Information





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