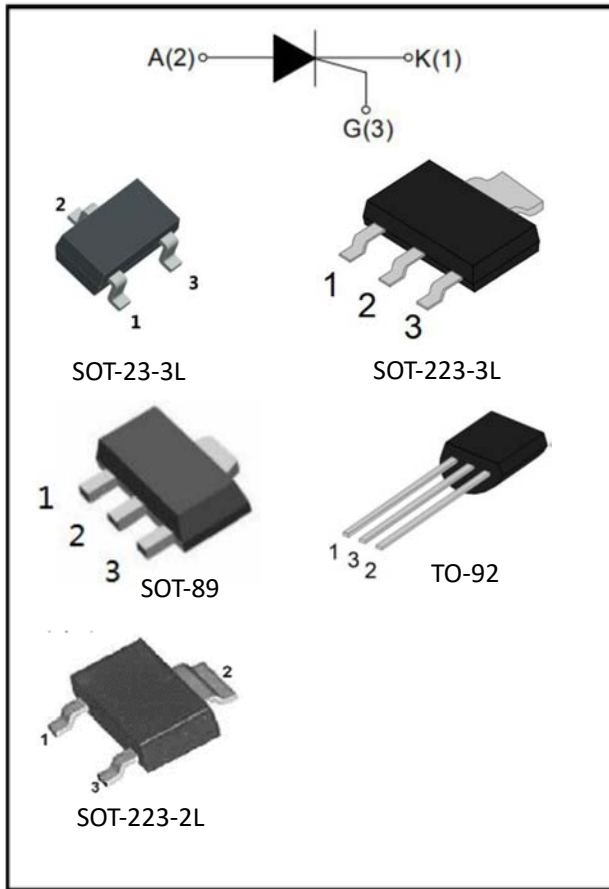


1A Sensitive SCRs



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 μ 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 | SOT-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 | μ A |

Maximum Ratings

| PARAMETER | SYMBOL | LIMITS | UNIT |
|---|---------------------|---------|------------------|
| Storage junction temperature range | T _{stg} | -40~150 | °C |
| Operating junction temperature range | T _j | -40~125 | °C |
| Repetitive surge peak Off-state voltage (T _j =25°C) | V _{DRM} | 800 | V |
| Repetitive peak reverse voltage (T _j =25°C) | V _{RRM} | 800 | V |
| RMS on-state current (T _C =80°C) | I _{T(RMS)} | 1 | A |
| Non-repetitive surge peak on-state current (half sine wave, t _p =10ms, T _j =25°C) | I _{TSM} | 8 | A |
| I ² t value for fusing (t _p =10ms) | I ² t | 0.5 | A ² s |
| Critical rate of rise of on-state current (I _G =2×I _{GT}) | di/dt | 50 | A/ μ 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_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | MIN | TYP | MAX |
|-----------------------------------|-----------------|------|---|-----|-----|-----|
| Gate trigger current | I _{GT} | μA | V _D =12V, R _L =33Ω | | 20 | 200 |
| Gate trigger voltage | V _{GT} | V | V _D =12V, R _L =33Ω | | 0.5 | 1.0 |
| Non-triggering gate voltage | V _{GD} | V | V _D =V _{DRM} T _j =110°C R _L =3.3kΩ | 0.2 | | |
| Holding current | I _H | mA | I _T =50mA | | | 2 |
| Latching current | I _L | mA | I _G =1.2 I _{GT} | | | 3 |
| Rate of rise of off-state voltage | dV/dt | V/μs | V _D =0.66×V _{DRM} T _j =110°C Gate open R _{GK} =1KΩ | 20 | | |

■Thermal Characteristics (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | MAX |
|------------------------|-------------------|------|---|-----|
| Peak on-state voltage | V _{TM} | V | I _{TM} =1.4A t _p =380μS | 1.5 |
| Peak off-state current | I _{DRM} | μA | V _{DRM} = V _R RM, T _j =25°C, R _{GK} =1KΩ | 5 |
| Peak reverse current | I _R RM | mA | V _{DRM} = V _R RM, T _j =125°C, R _{GK} =1KΩ | 0.5 |

■Thermal Resistance (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Pacakge | Value | |
|---------------------------------|------------------|-------------------|---------|--------------|----|
| Thermal Resistance (Typical) | Junction to case | R _{θj-c} | °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

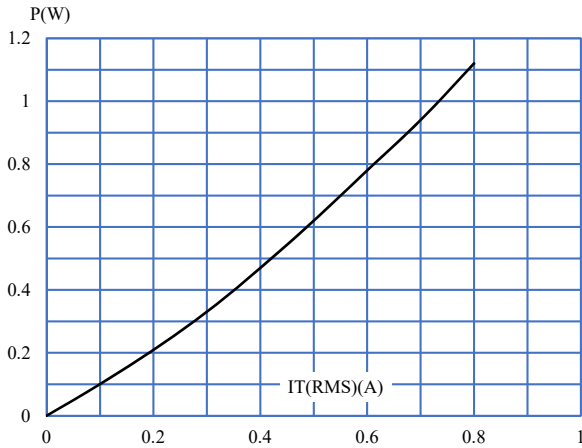


FIG.2: RMS on-state current versus case temperature

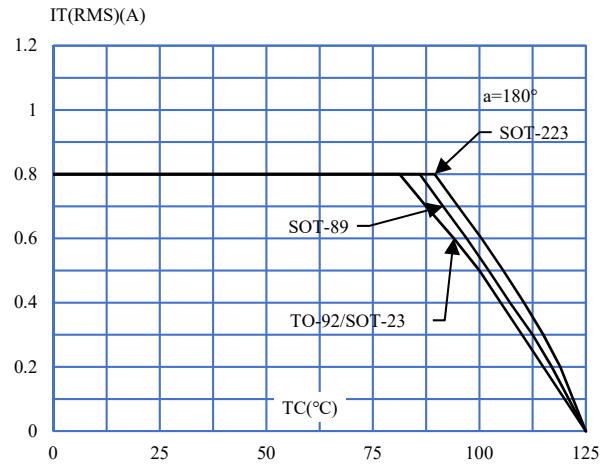


FIG.3: Surge peak on-state current versus number of cycles

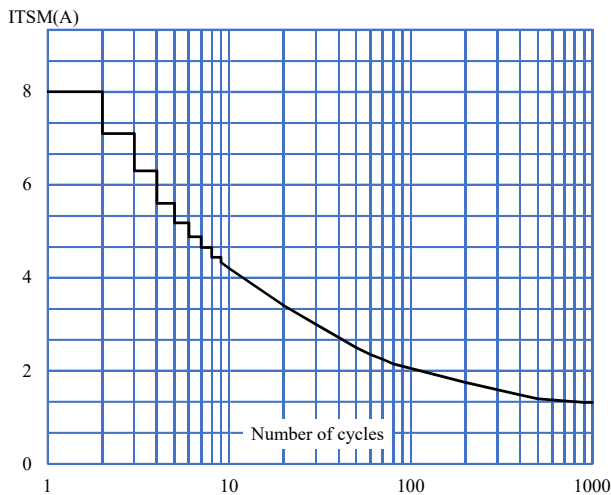


FIG.4: On-state characteristics (maximum values)

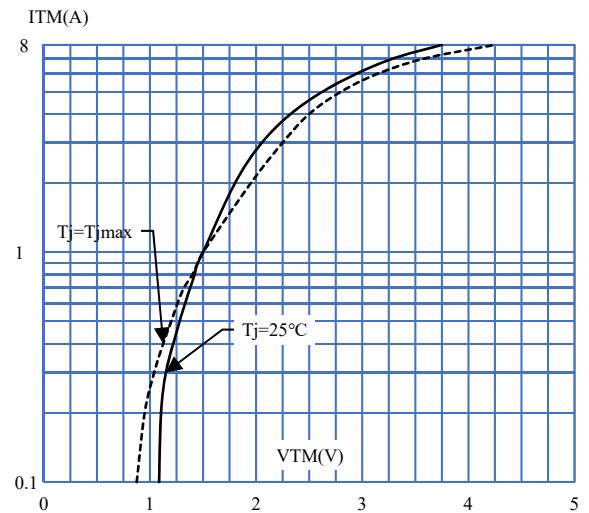


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($dI/dt < 50\text{A}/\mu\text{s}$)

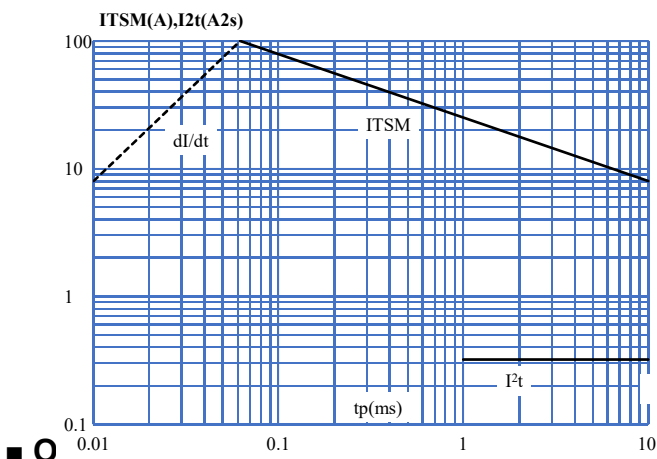
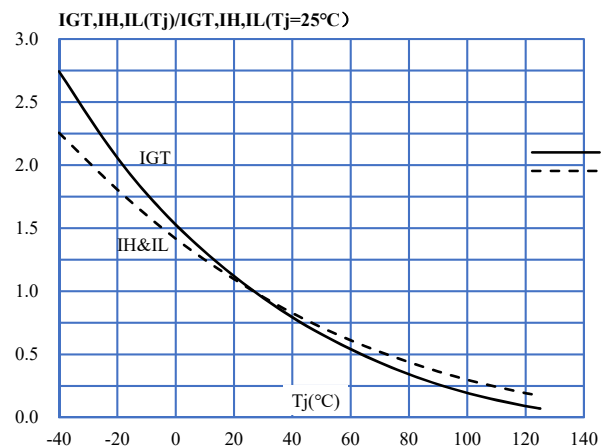


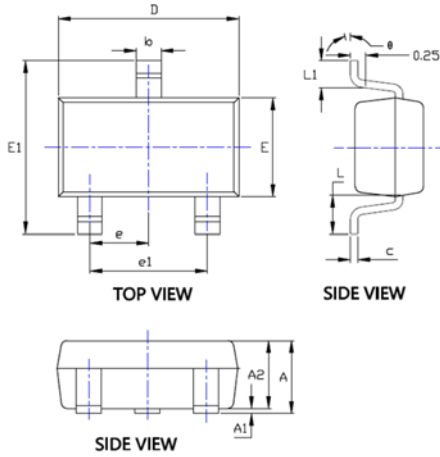
FIG.6: Relative variations of gate trigger current, holding current and latching





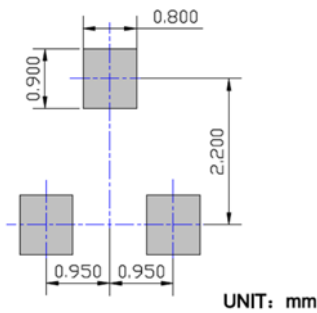
YC0810 Series

➤ SOT-23-3L Package Outline Dimensions

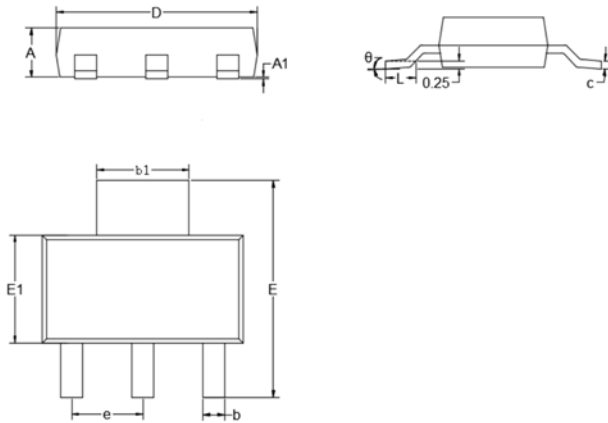


| SYMBOL | DIMENSIONS | | | |
|--------|------------|-------|------------|-------|
| | INCHES | | Millimeter | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.041 | 0.049 | 1.050 | 1.250 |
| A1 | 0.000 | 0.008 | 0.000 | 0.200 |
| A2 | 0.041 | 0.045 | 1.050 | 1.150 |
| b | 0.012 | 0.020 | 0.300 | 0.500 |
| 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 |
| ∅ | 0° | 8° | 0° | 8° |

SOT-23-3L Suggested Pad Layout

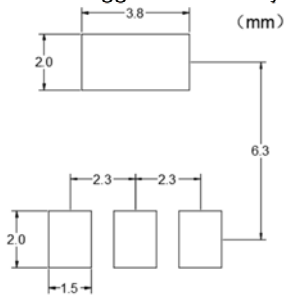


➤ SOT-223 Package Outline Dimensions



| 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° |

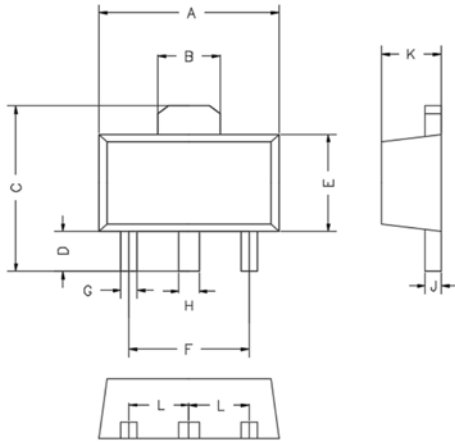
SOT-223 Suggested Pad Layout



➤ SOT-89 Package Outline Dimensions

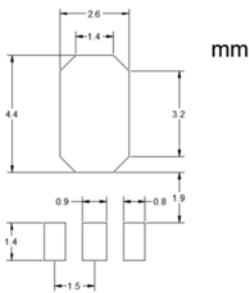


YC0810 Series

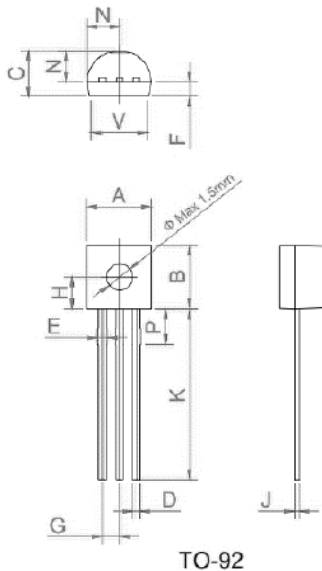


| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|------|------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.169 | 0.185 | 4.30 | 4.70 | |
| B | 0.061 | | 1.55 | | TYP |
| C | 0.154 | 0.171 | 3.91 | 4.35 | |
| D | 0.031 | 0.047 | 0.80 | 1.20 | |
| E | 0.089 | 0.104 | 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

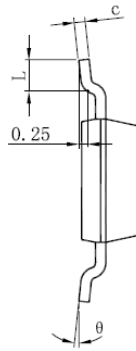
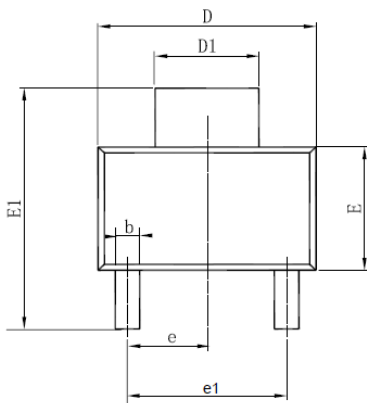


| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.45 | 4.6 | 5.2 | 0.175 | 0.181 | 0.205 |
| B | 4.32 | 4.6 | 5.33 | 0.17 | 0.181 | 0.21 |
| C | 3.18 | 3.55 | 4.19 | 0.125 | 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 |

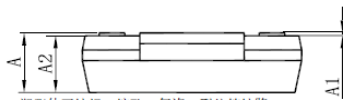
SOT-223-2L Package Outline Dimensions



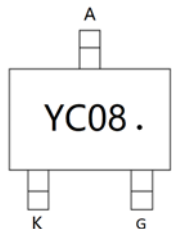
YC0810 Series



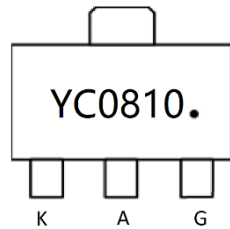
| Ref. | Dimensions | | | | | |
|------|--------------|--------|--------|-------------|------|------|
| | Inches | | | Millimeters | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 0.0709 | / | / | 1.80 |
| A1 | 0.00079 | | 0.0039 | 0.02 | / | 0.10 |
| A2 | 0.0591 | 0.063 | 0.0667 | 1.50 | 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° |



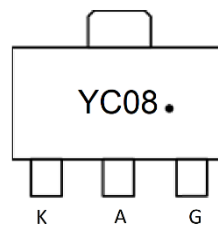
■ Marking Information



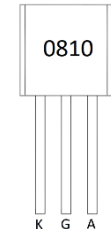
YC0810S1
(SOT-23 Package)



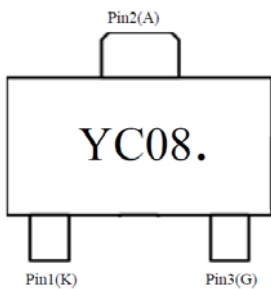
YC0810S2
(SOT-223-3L Package)



YC0810S3
(SOT-89 Package)



YC0810T9
(TO-92)



YC0810S4
(SOT-223-2L Package)

Disclaimer



YC0810 Series

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