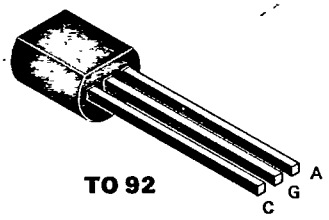
TAG SEMICONDUCTORS LTD

# E0102YA – E0102AA FAST SCR'S

**0.8 A 30–100 V <200 µA**

The E0102 series silicon controlled rectifiers are high performance epitaxial PNPN devices. These parts are intended for low voltage, high speed applications




**TO 92**

## Absolute Maximum Ratings

$T_A = 25\,°C$ unless otherwise noted

| Parameter | Part Nr. | Symbol | Min. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Repetitive Peak Off State Voltage | **E0102YA** | $V_{DRM}$ $V_{RRM}$ | 30 | | V | $T_j = -40\,°C$ to $125\,°C$, $R_{GK} = 1\,K\Omega$ |
| | **E0102FA** | | 60 | | V | |
| | **E0102AA** | | 100 | | V | |
| On-State Current | | $I_{T(RMS)}$ | 0.8 | | A | All Conduction Angles $T_C = 40\,°C$ |
| Average On-State Current | | $I_{T(AV)}$ | 0.5 | | A | $T_C = 40\,°C$, Half Cycle, $\Theta = 180\,°C$ |
| Nonrept. On-State Current | | $I_{TSM}$ | 8 | | A | Half Cycle, 60 Hz |
| Nonrept. On-State Current | | $I_{TSM}$ | 7 | | A | Half Cycle, 50 Hz |
| Fusing Current | | $I^2t$ | 0.24 | | $A^2s$ | t = 10 ms, Half Cycle |
| Peak Reverse Gate Voltage | | $V_{GRM}$ | 8 | | V | $I_{GR} = 10\,\mu A$ |
| Peak Gate Current | | $I_{GM}$ | 1 | | A | 10µs max. |
| Peak Gate Dissipation | | $P_{GM}$ | 2 | | W | 10µs max. |
| Gate Dissipation | | $P_{G(AV)}$ | 0.1 | | W | 20 ms max. |
| Operating Temperature | | $T_j$ | −40 | 125 | °C | |
| Storage Temperature | | $T_{stg}$ | −40 | 125 | °C | |
| Soldering Temperature | | $T_{sld}$ | | 250 | °C | 1.6 mm from case, 10 s max. |

## Electrical Characteristics

$T_A = 25\,°C$ unless otherwise noted

| Parameter | Symbol | Min. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|
| Off-State Leakage Current | $I_{DRM}/I_{RRM}$ | | 50 | µA | $T_j = 125\,°C$, @ $V_{DRM} + V_{RRM}$, $R_{GK} = 1\,K\Omega$ |
| Off-State Leakage Current | $I_{DRM}/I_{RRM}$ | | 1 | µA | $T_j = 25\,°C$, @ $V_{DRM} + V_{RRM}$, $R_{GK} = 1\,K\Omega$ |
| On-State Voltage | $V_T$ | | 1.7 | V | at $I_T = 1.0\,A$, $T_j = 25\,°C$ |
| On-State Threshold Voltage | $V_{T(TO)}$ | | 0.95 | V | $T_j = 125\,°C$ |
| On-State Slope Resistance | $r_T$ | | 600 | mΩ | $T_j = 125\,°C$ |
| Gate Trigger Current | $I_{GT}$ | | 200 | µA | $V_D = 7\,V$ |
| Gate Trigger Voltage | $V_{GT}$ | | 0.8 | V | $V_D = 7\,V$ |
| Holding Current | $I_H$ | | 5 | mA | $R_{GK} = 1\,K\Omega$ |
| Latching Current | $I_L$ | | 6 | mA | $R_{GK} = 1\,K\Omega$ |
| Critical Rate of Voltage Rise | dv/dt | 20 | | V/µs | $V_D = .67 \times V_{DRM}$ $R_{GK} = 1\,K\Omega$ $T_j = 125\,°C$ |
| Critical Rate of Current Rise | di/dt | 100 | | A/µs | $I_G = 10\,mA$ $di_G/dt = 1\,A/\mu s$ $T_j = 125\,°C$ |
| Gate Controlled Delay Time | $t_{gd}$ | | 50 | ns | $I_G = 10\,mA$ $di_G/dt = 1\,A/\mu s$ |
| Commutated Turn-Off Time | $t_q$ | | 10 | µs | $T_C = 85\,°C$ $V_D = .67 \times V_{DRM}$ $V_R = 35\,V$ $I_T = I_{T(AV)}$ |
| Thermal Resistance junc. to case | $R_{\Theta jc}$ | | 90 | K/W | |
| Thermal Resistance junc. to amb. | $R_{\Theta ja}$ | | 180 | K/W | |

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