

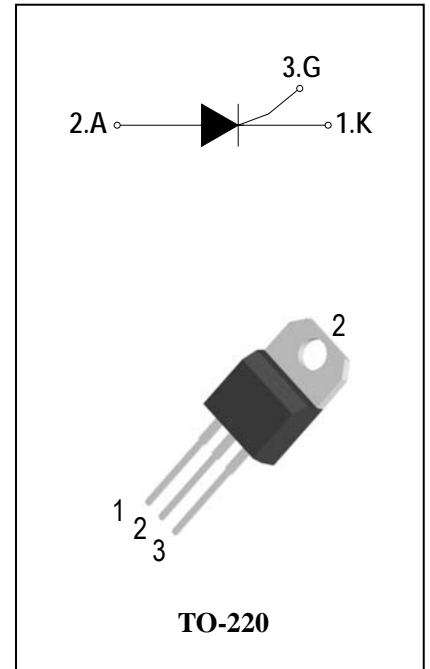
SCRs

General Description

The 40A SCR series of silicon controlled rectifiers, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.

Features

- ◆ Repetitive Peak Off-State Voltage : 1000V and 1200V
- ◆ R.M.S On-State Current ($I_{T(RMS)}=40\text{ A}$)
- ◆ These are Pb-Free Devices



Absolute Maximum Ratings

| Symbol | Items | Conditions | | Rated | Unit |
|--------------|--|--|-----------|------------|----------------------|
| V_{DRM} | Repetitive Peak Off-State Voltage | $T_j=25^\circ\text{C}$ | ADS40A100 | 1000 | V |
| V_{RRM} | Repetitive peak reverse voltage | | ADS40A120 | 1200 | V |
| $I_{T(AV)}$ | Average On-State Current | Half Sine Wave , $T_c = 90^\circ\text{C}$ | | 25 | A |
| $I_{T(RMS)}$ | R.M.S On-State Current | Half Sine Wave , $T_c = 90^\circ\text{C}$ | | 40 | A |
| I_{TSM} | Surge On-State Current | 1/2 Cycle, Sine Wave Non-Repetitive, $t_p=10\text{ms}(50\text{Hz})T_j = 25^\circ\text{C}$ | | 460 | A |
| I^2t | I^2t for Fusing | $T_j = 25^\circ\text{C}, t_p = 10\text{ms}$ | | 1060 | A^2S |
| P_{GM} | Forward Peak Gate Power Dissipation | $T_j = 125^\circ\text{C}, \text{Pulse Width} \leq 20\mu\text{s}$ | | 5 | W |
| $P_{G(AV)}$ | Forward Average Gate Power Dissipation | $T_j = 25^\circ\text{C}, t_p = 10\text{ms}$ | | 1 | W |
| I_{GM} | Peak Gate Current | $T_j = 125^\circ\text{C}, \text{Pulse Width} \leq 20\mu\text{s}$ | | 4 | A |
| T_j | Operating Junction Temperature | | | - 40 ~ 125 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | | | - 40 ~ 150 | $^\circ\text{C}$ |



Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Items | Conditions | | ADS40A100/120 | | Unit |
|--------------------------------------|---|---|------|---------------|-------|--------------------|
| | | | | S | Blank | |
| I_{DRM} I_{RRM} | Peak Forward Reverse Blocking Current | $V_{\text{DRM}} = V_{\text{RRM}}$ $T_j = 25^\circ\text{C}$ | Max. | 10 | | uA |
| | | $V_{\text{DRM}} = V_{\text{RRM}}$ $T_j = 125^\circ\text{C}$ | | 4 | | mA |
| V_{TM} | Peak On-State Voltage | $I_{\text{TM}} = 80\text{A}$, $t_p = 380 \mu\text{s}$ | Max. | 1.6 | | V |
| V_{GD} | Non-Trigger Gate Voltage | $V_D = V_{\text{DRM}}$ $R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$ | Min. | 0.2 | | V |
| V_{GT} | Gate Trigger Voltage | $V_D = 12\text{V}$, $R_L = 33\Omega$ | Max. | 1.3 | | V |
| I_{GT} | Gate Trigger Current | | Max. | 15 | 30 | mA |
| I_{H} | Holding Current | $I_T = 0.5\text{A}$ | Max. | 30 | 40 | mA |
| I_{L} | Latching Current | $I_G = 1.2 I_{\text{GT}}$ | Max. | 50 | 50 | mA |
| dV/dt | Critical Rate of Rise of Off-State Voltage | $V_D = 2/3 V_{\text{DRM}}$ gate open $T_j = 125^\circ\text{C}$ | Min. | 1000 | 1500 | V/ μs |
| $R_{\text{th(j-c)}}$ | Junction to case (AC) | | Max. | 0.8 | | $^\circ\text{C/W}$ |
| $R_{\text{th(j-a)}}$ | Junction to ambient | | Max. | 60 | | $^\circ\text{C/W}$ |

FIG.1: Maximum average power dissipation (Single phase half wave)

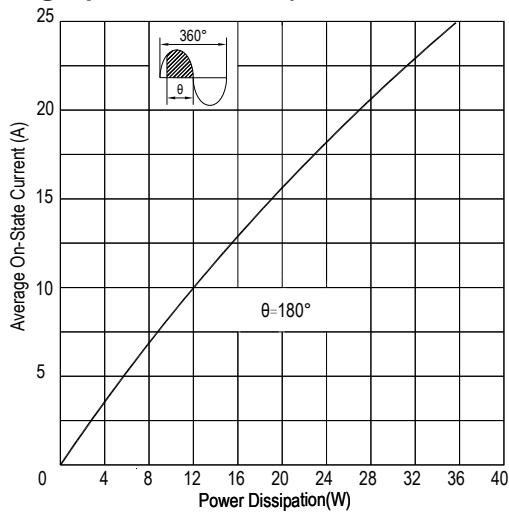


FIG.2: Average on-state current VS Allowable case Temperature(Single phase half wave)

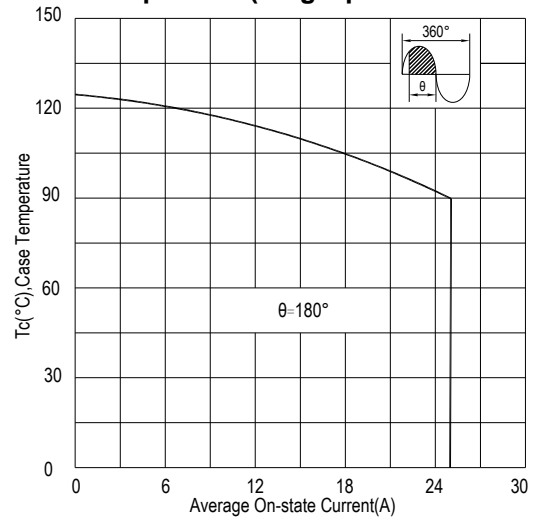


FIG.3: Gate trigger current VS Junction temperature

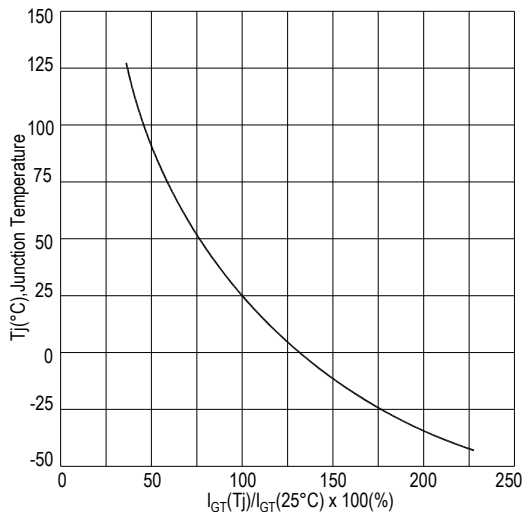


FIG.4: Rated surge on-state current (Non-Repetitive)

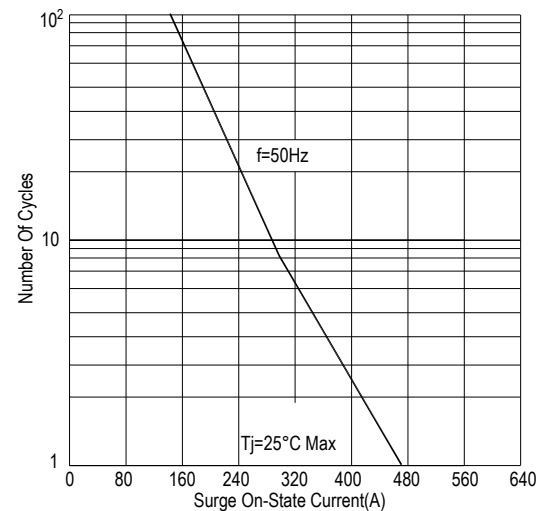


FIG.5: On-state characteristics(Max)

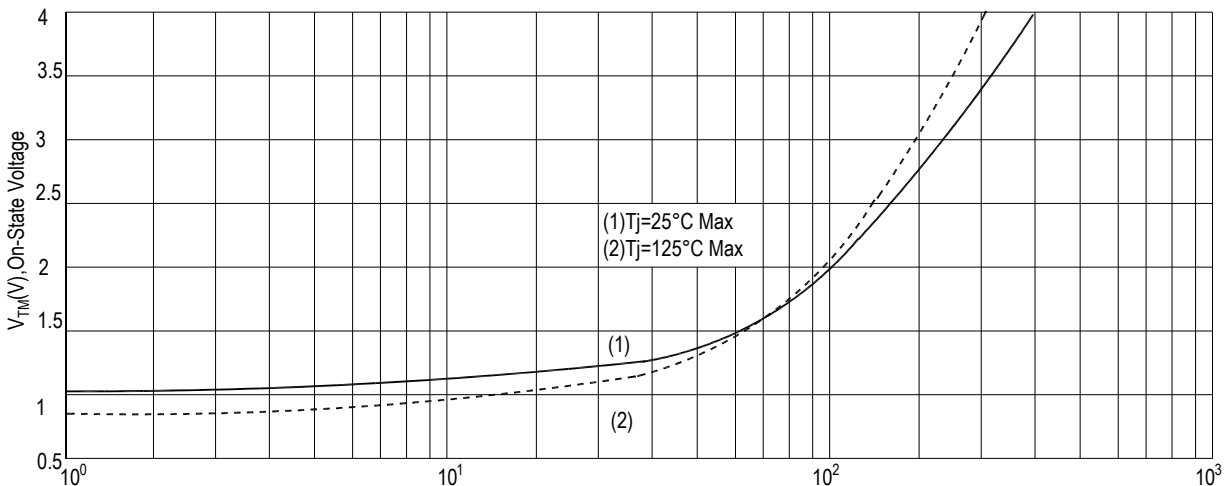


FIG.6: Holding current and Latching current VS Junction temperature

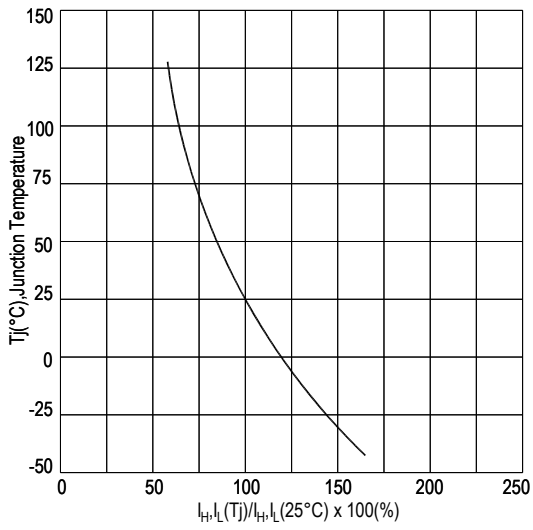
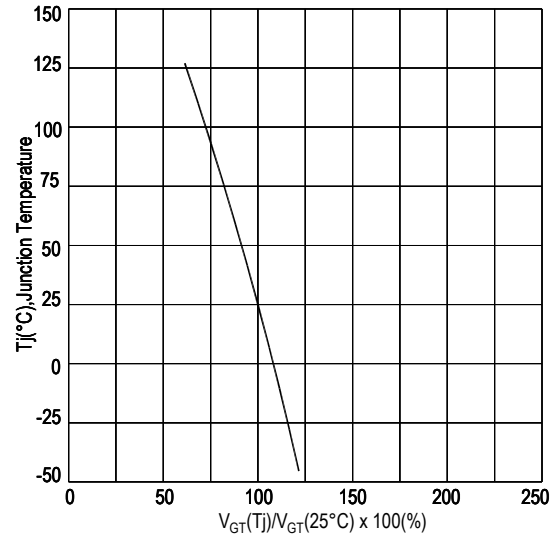
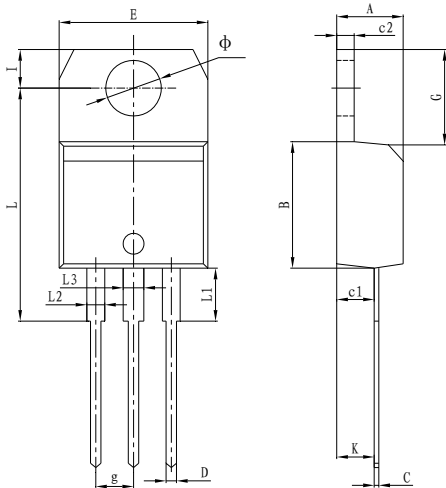


FIG.7: Gate trigger voltage VS Junction temperature



PACKAGE MECHANICAL DATA

TO-220 Package Dimension



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | Min | Max | Min | Max |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| B | 9.00 | 9.30 | 0.354 | 0.366 |
| C | 0.40 | 0.60 | 0.015 | 0.023 |
| c1 | 2.00 | 2.60 | 0.078 | 0.102 |
| c2 | 1.23 | 1.32 | 0.048 | 0.051 |
| D | 0.70 | 1.00 | 0.027 | 0.039 |
| E | 10.00 | 10.40 | 0.393 | 0.409 |
| g | 2.40 | 2.70 | 0.094 | 0.106 |
| G | 6.20 | 6.80 | 0.244 | 0.267 |
| I | 2.65 | 2.95 | 0.104 | 0.116 |
| L | 15.80 | 16.80 | 0.622 | 0.661 |
| L1 | 3.75 | | 0.147 | |
| L2 | 1.14 | 1.70 | 0.044 | 0.066 |
| L3 | 1.14 | 1.70 | 0.044 | 0.066 |
| φ | 3.60 | 3.90 | 0.141 | 0.153 |
| K | 2.60TYP | | 0.102TYP | |

Making Diagram

ADV XXXX
 ADS40A120
 XXXH ○ XX

ADV:Logo
 ADS40A120:Part number
 X:Internal control code
 H:Halogen Free

AD S 40 A 120 # T(S)(W)

| | | | |
|------------------------------|--|----------------|-----------------------------|
| ADVANCED | Internal control code | Current:40=40A | Voltage:100=1000V 120=1200V |
| SCR Series | Sensitivity and type: T=0.2mA S=15mA Blank=30mA W=80mA | | |
| Package explain:Blank=TO-220 | | | |

Ordering information

| Part number | Package | Marking | Packing | Quantity |
|-------------|---------|------------|---------|----------|
| ADS40A100# | TO-220 | ADS40A100# | Tube | 50pcs |
| ADS40A120# | TO-220 | ADS40A120# | Tube | 50pcs |

Note:# = Gate Trigger Current Sensitivity and type

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