

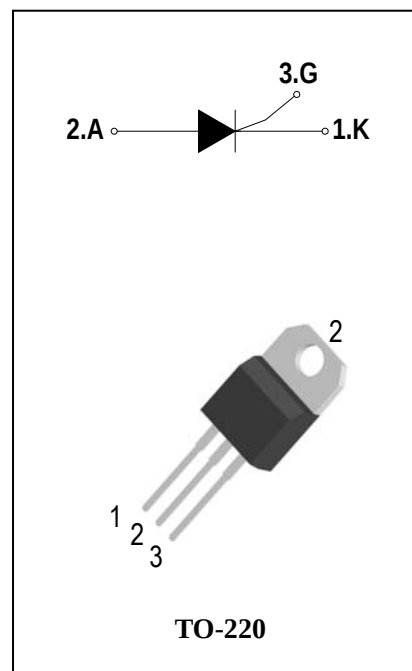
## SCRs

### General Description

Available either in sensitive or standard gate triggering levels, the 12A SCR series is suitable to fit all modes of control found in applications such as overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, in-rush current limiting circuits, capacitive discharge ignition, voltage regulation circuits...

### Features

- ◆ Repetitive Peak Off-State Voltage : 600V and 800V
- ◆ R.M.S On-State Current (  $I_{T(RMS)}$  ) = 12 A )
- ◆ These are Pb-Free Devices



### Absolute Maximum Ratings

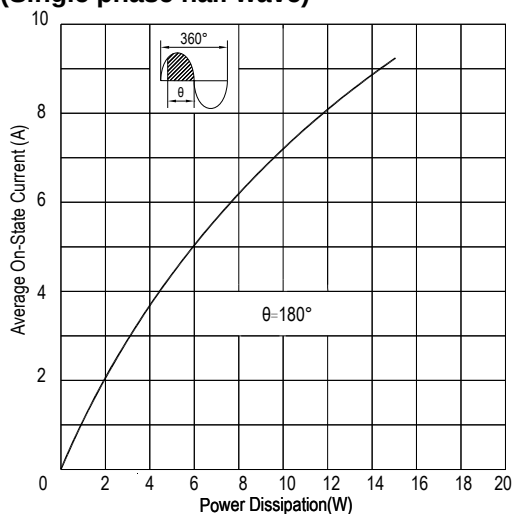
| Symbol       | Items                                  | Conditions                                                                                      |          | Ratings    | Unit                 |
|--------------|----------------------------------------|-------------------------------------------------------------------------------------------------|----------|------------|----------------------|
| $V_{DRM}$    | Repetitive Peak Off-State Voltage      | $T_j = 25^\circ\text{C}$                                                                        | ADS12A60 | 600        | V                    |
| $V_{RRM}$    | Repetitive peak reverse voltage        |                                                                                                 | ADS12A80 | 800        | V                    |
| $I_{T(AV)}$  | Average On-State Current               | Half Sine Wave , $T_c = 110^\circ\text{C}$                                                      |          | 8          | A                    |
| $I_{T(RMS)}$ | R.M.S On-State Current                 | Half Sine Wave , $T_c = 110^\circ\text{C}$                                                      |          | 12         | A                    |
| $I_{TSM}$    | Surge On-State Current                 | 1/2 Cycle, Sine Wave Non-Repetitive,<br>$t_p = 10\text{ms}(50\text{Hz}) T_j = 25^\circ\text{C}$ |          | 140        | A                    |
| $I^2t$       | $I^2t$ for Fusing                      | $T_j = 25^\circ\text{C}, t_p = 10\text{ms}$                                                     |          | 98         | $\text{A}^2\text{S}$ |
| $P_{GM}$     | Forward Peak Gate Power Dissipation    | $T_j = 125^\circ\text{C}$ , 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                      | $T_j = 125^\circ\text{C}$ , 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 | $^\circ\text{C}$     |



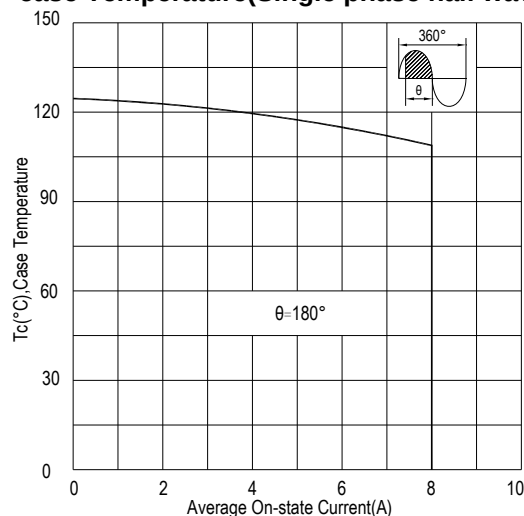
**Electrical Characteristics** (  $T_j = 25^\circ\text{C}$  unless otherwise specified )

| Symbol               | Items                                      | Conditions                                                                                                      |      | ADS12A60/80 |     |       | Unit                      |
|----------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------|-------------|-----|-------|---------------------------|
|                      |                                            |                                                                                                                 |      | T           | S   | Blank |                           |
| $I_{\text{DRM}}$     | Peak Forward Reverse                       | $V_{\text{DRM}} = V_{\text{RRM}}, R_{\text{GK}} = 1\text{K}\Omega$<br>$T_j = 25^\circ\text{C}$                  | Max. | 5           |     |       | $\mu\text{A}$             |
| $I_{\text{RRM}}$     | Blocking Current                           | $V_{\text{DRM}} = V_{\text{RRM}}, R_{\text{GK}} = 1\text{K}\Omega$<br>$T_j = 125^\circ\text{C}$                 |      | 2           |     |       | mA                        |
| $V_{\text{TM}}$      | Peak On-State Voltage                      | $I_{\text{TM}} = 24\text{A}, t_p = 380\ \mu\text{s}$                                                            | Max. | 1.55        |     |       | V                         |
| $V_{\text{GD}}$      | Non-Trigger Gate Voltage                   | $V_D = V_{\text{DRM}}, R_L = 3.3\ \text{k}\Omega$<br>$R_{\text{GK}} = 1\text{K}\Omega, T_j = 125^\circ\text{C}$ | Min. | 0.2         |     |       | V                         |
| $V_{\text{GT}}$      | Gate Trigger Voltage                       | $V_D = 12\text{V}, R_L = 33\Omega$                                                                              | Max. | 1.5         |     |       | V                         |
| $I_{\text{GT}}$      | Gate Trigger Current                       |                                                                                                                 | Max. | 0.2         | 15  | 30    | mA                        |
| $I_{\text{H}}$       | Holding Current                            | $I_T = 0.5\text{A}, R_{\text{GK}} = 1\text{K}\Omega$                                                            | Max. | 5           | 30  | 40    | mA                        |
| $I_{\text{L}}$       | Latching Current                           | $I_G = 1.2 I_{\text{GT}}, R_{\text{GK}} = 1\text{K}\Omega$                                                      | Max. | 7           | 50  | 60    | mA                        |
| $dV/dt$              | Critical Rate of Rise of Off-State Voltage | $V_D = 2/3 V_{\text{DRM}}$ gate open<br>$R_{\text{GK}} = 1\text{K}\Omega, T_j = 125^\circ\text{C}$              | Min. | 200         | 500 | 600   | $\text{V}/\mu\text{s}$    |
| $R_{\text{th(j-c)}}$ | Junction to case (AC)                      |                                                                                                                 | Max. | 1.3         |     |       | $^\circ\text{C}/\text{W}$ |
| $R_{\text{th(j-a)}}$ | Junction to ambient                        |                                                                                                                 | Max. | 60          |     |       | $^\circ\text{C}/\text{W}$ |

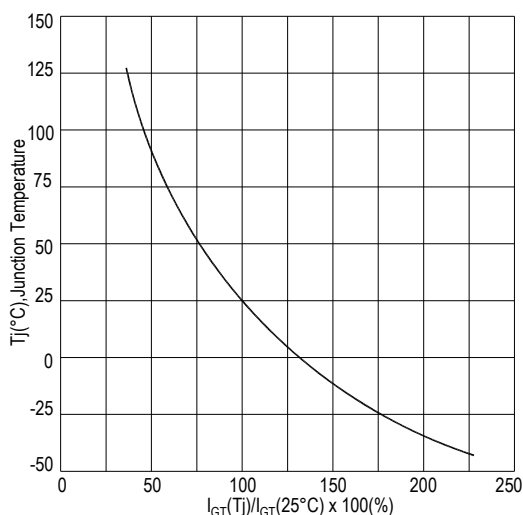
**FIG.1: Maximum average power dissipation (Single phase half wave)**



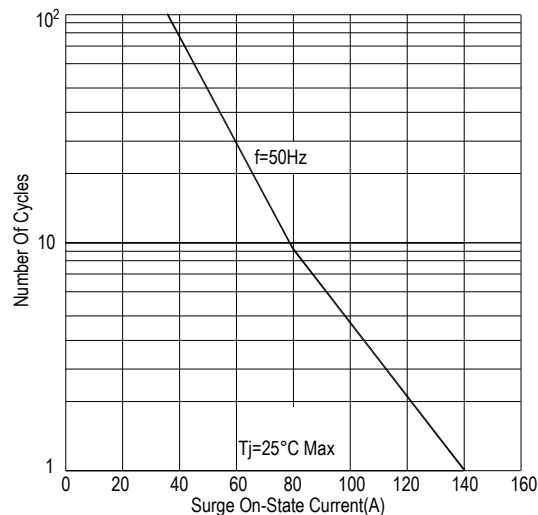
**FIG.2: Average on-state current VS Allowable case Temperature (Single phase half wave)**



**FIG.3: Gate trigger current VS Junction temperature**



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



**FIG.5: On-state characteristics(Max)**

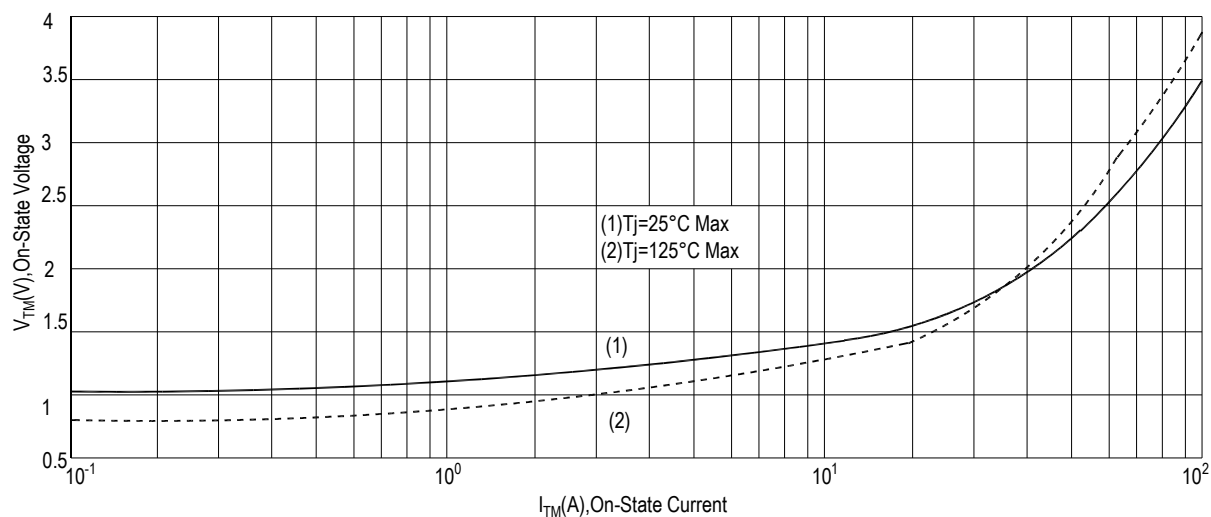


FIG.6:Holding current and Latching current VS Junction temperature

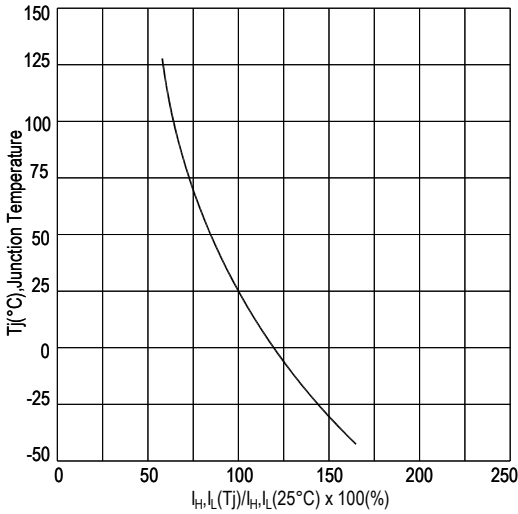


FIG.7: Gate trigger voltage VS Junction temperature

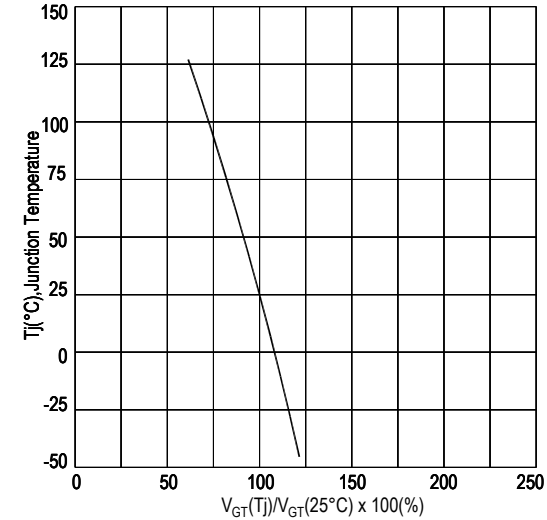


FIG.8: Gate trigger current VS Junction temperature for type T gate triggering

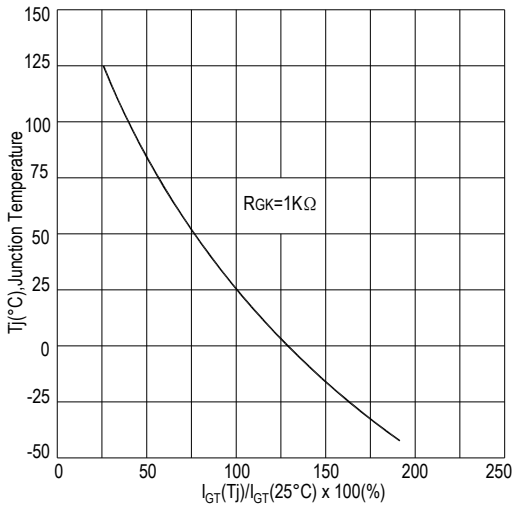
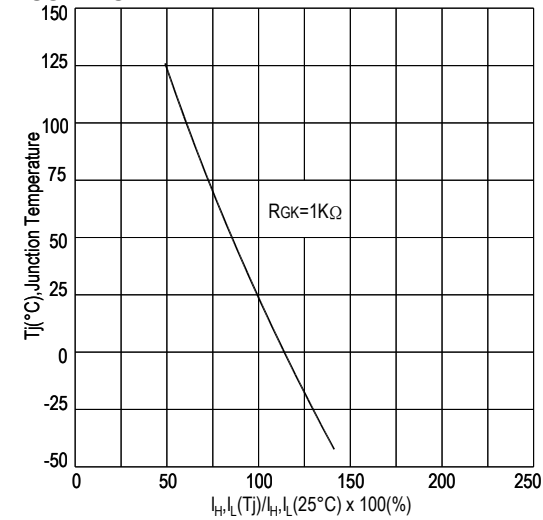
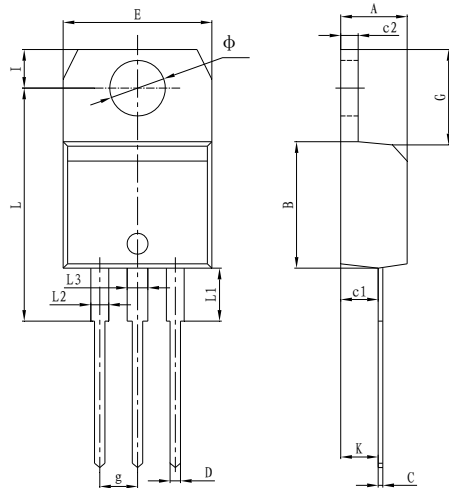


FIG.8:Holding current and Latching current VS Junction temperature for type T gate triggering



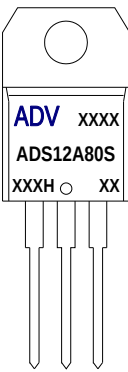
### PACKAGE MECHANICAL DATA

#### TO-220 Package Dimension



| Symbol | Dimensions<br>In Millimeters |       | Dimensions<br>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:Logo**  
**ADS12A80S:Part number**  
**X:Internal control code**  
**H:Halogen Free**

AD S 12 A 80 # T(S)(W)

|                         |  |                              |
|-------------------------|--|------------------------------|
| ADVANCED                |  | Sensitivity and type:        |
| Internal control code   |  | T=0.2mA                      |
| Current:12=12A          |  | S=15mA                       |
| SCR Series              |  | Blank=30mA                   |
| Voltage:60=600V 80=800V |  | W=80mA                       |
|                         |  | Package explain:Blank=TO-220 |

#### Ordering information

| Part number | Package | Marking   | Packing | Quantity |
|-------------|---------|-----------|---------|----------|
| ADS12A60#   | TO-220  | ADS12A60# | Tube    | 50pcs    |
| ADS12A80#   | TO-220  | ADS12A80# | Tube    | 50pcs    |

Note:# = Gate Trigger Current Sensitivity and type

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