

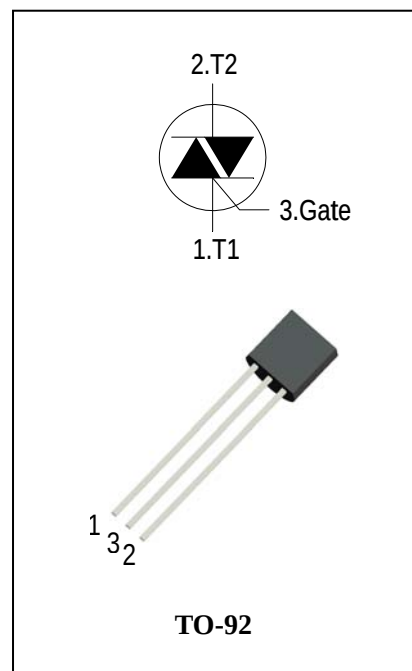
3 Quadrants Triacs

General Description

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay also designed for use in MPU interface, TTL logic.

Features

- ◆ Repetitive Peak Off-State Voltage: 600V and 800V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 1\text{ A}$)
- ◆ High Commutation $dv/dt \geq 500\text{V}/\mu\text{s}$
- ◆ These Devices are Pb-Free and are RoHS Compliant



Absolute Maximum Ratings

Symbol	Items	Conditions		Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage	$T_j = 25^{\circ}\text{C}$	ADS1C60	600	V
V_{RRM}			ADS1C80	800	V
$I_{\text{T(RMS)}}$	R.M.S On-State Current	$T_{\text{C}} = 54^{\circ}\text{C}$		1	A
I_{TSM}	Surge On-State Current	$t_p=20\text{ms}(50\text{Hz})/t_p=16.7\text{ms}(60\text{Hz})$		10/11	A
I^2t	I^2t for fusing	$t_p=10\text{ms}$		1.12	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 125^{\circ}\text{C}$ $I_G = 2 \times I_{\text{GT}} , t_r \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu\text{s } T_j = 125^{\circ}\text{C}$		1	A
$P_{\text{G(AV)}}$	Average Gate Power Dissipation($T_j=125^{\circ}\text{C}$)			0.2	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu\text{s}, T_j=125^{\circ}\text{C}$)			1	W
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		ADS1C60/80	Unit
I_{DRM} I_{RRM}	Peak Forward Reverse Blocking Current		$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 25^{\circ}\text{C}$	Max.	10	uA
			$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 125^{\circ}\text{C}$		0.5	mA
V_{TM}	Peak On-State Voltage		$I_{\text{TM}} = 1.4\text{A}, t_{\text{p}} = 380\text{ }\mu\text{s}$	Max.	1.6	V
V_{GD}	Q1-Q2-Q3	Non—Trigger Gate Voltage	$V_{\text{D}} = V_{\text{DRM}}\quad R_{\text{L}} = 3.3\text{ k}\Omega$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	0.2	V
V_{GT}	Q1-Q2-Q3	Gate Trigger Voltage	$V_{\text{D}} = 12\text{V}\text{ , } R_{\text{L}} = 33\Omega$	Max.	1.5	V
I_{GT}	Q1-Q2-Q3	Gate Trigger Current		Max.	10	mA
I_{H}	Q1-Q2-Q3	Holding Current	$I_{\text{T}} = 0.1\text{A}$	Max.	10	mA
I_{L}	Q1-Q3	Latching Current	$I_{\text{G}} = 1.2\text{ }I_{\text{GT}}$	Max.	15	mA
	Q2				25	
dV/dt	Critical Rate of Rise of Off-State Voltage		$V_{\text{D}} = 2/3V_{\text{DRM}}\quad \text{gate open}$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	500	V/μs
(dV/dt)c	Rate of Change of Commutating Current,		$(\text{dI}/\text{d}t)\text{c}=-0.4\text{A}/\text{ms}$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	10	V/μs
$R_{\text{th(j-c)}}$	Junction to case (AC)			Max.	60	°C/W
$R_{\text{th(j-a)}}$	Junction to ambient			Max.	150	°C/W

FIG.1: Triac quadrant are defined and the gate trigger test circuit

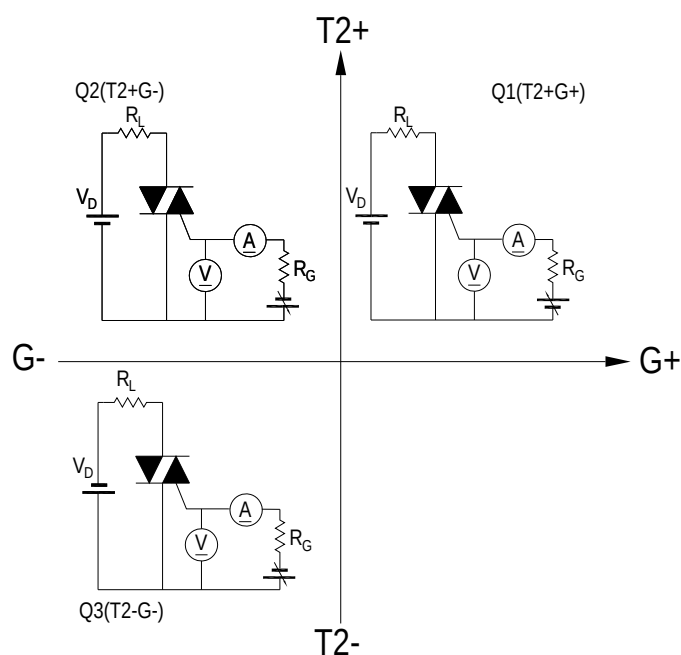


FIG.2: Maximum on-state power dissipation

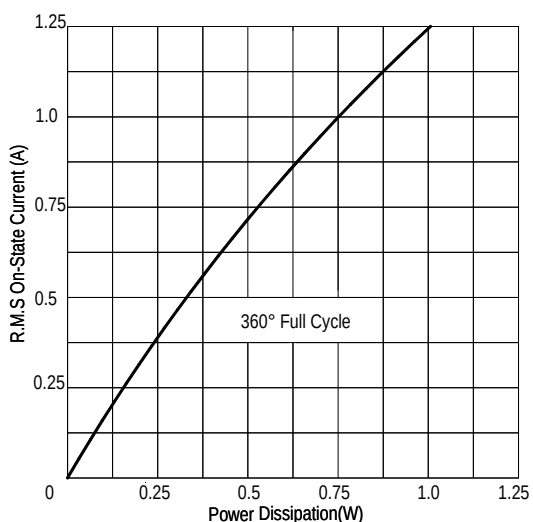


FIG.3: Typical RMS on-state current VS Allowable case Temperature

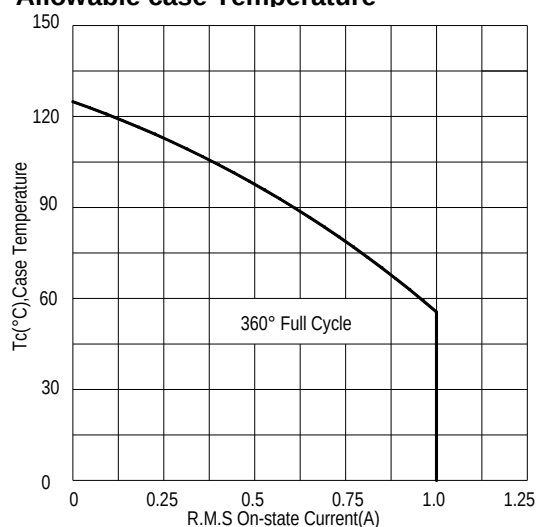


FIG.4: Gate trigger current VS Junction temperature

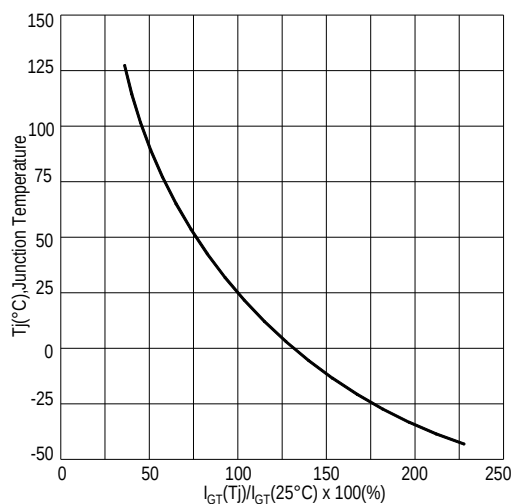


FIG.5: Rated surge on-state current (Non-Repetitive)

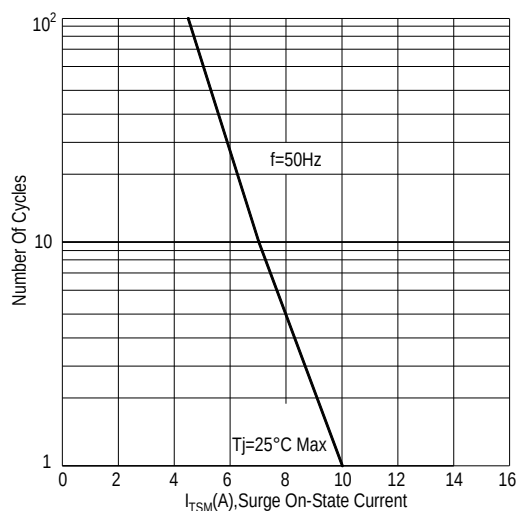


FIG.6: On-state characteristics(Max)

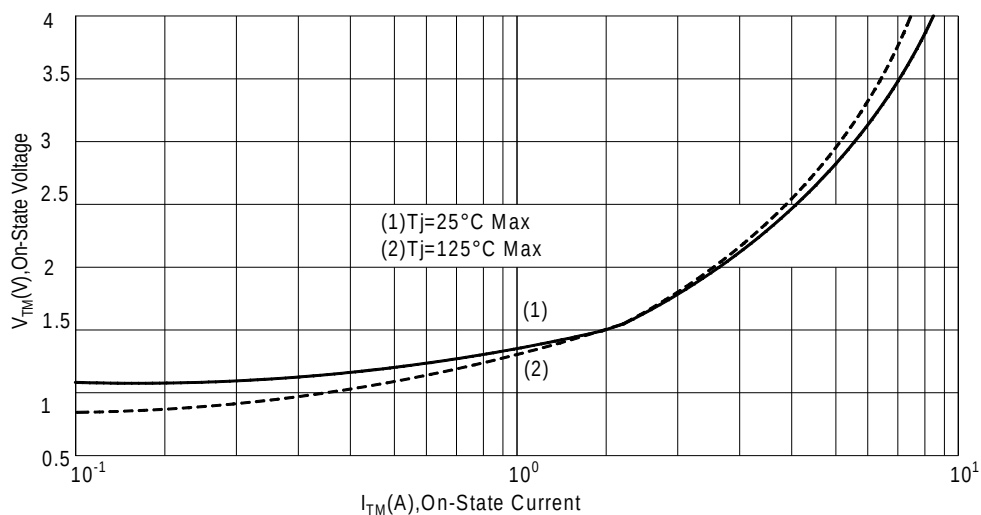


FIG.7:Holding current and Latching current VS Junction temperature

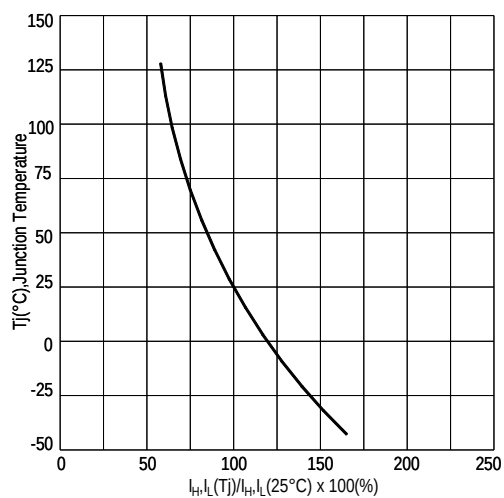
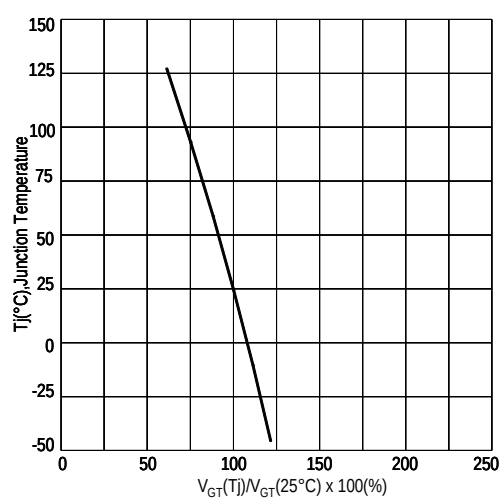
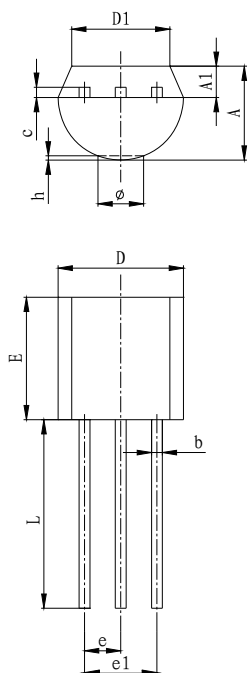


FIG.8: Gate trigger voltage VS Junction temperature



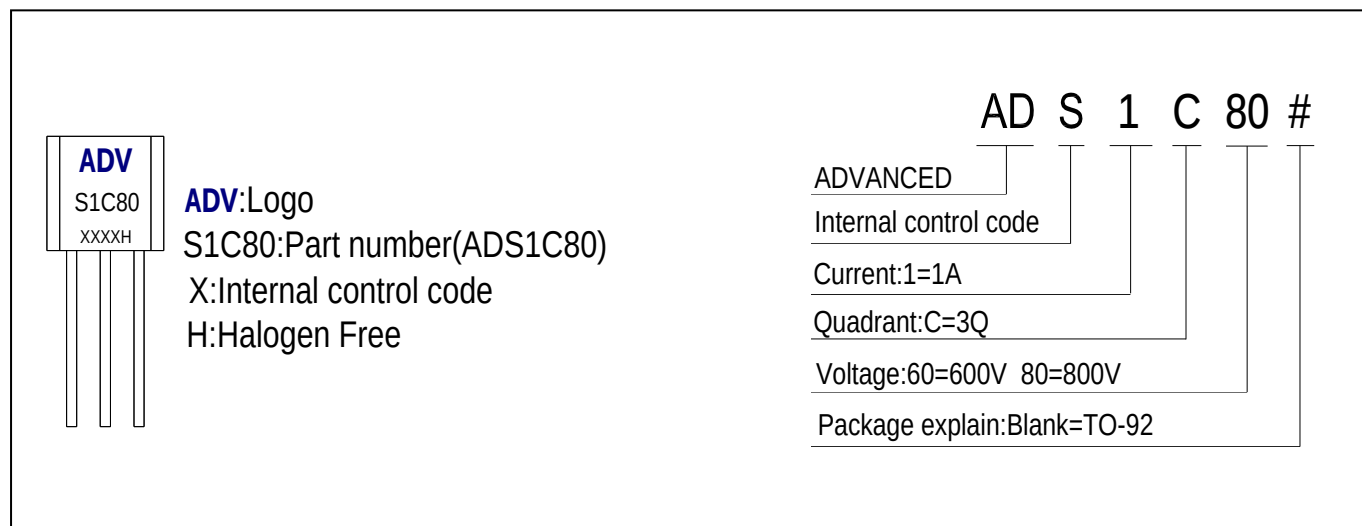
PACKAGE MECHANICAL DATA

TO-92 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.180	4.190	0.125	0.165
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	5.200	0.173	0.205
D1	3.430		0.135	
E	4.300	5.330	0.169	0.210
e	1.270 TYP		0.050 TYP	
e1	2.420	2.660	0.095	0.105
L	12.70	-	0.500	-
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

Making Diagram



Ordering information

Part number	Package	Marking	Packing	Quantity
ADS1C60	TO-92	S1C60	Vinyl sack	1000pcs
ADS1C80	TO-92	S1C80	Vinyl sack	1000pcs

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