



## UCR05AS-8

Preliminary

SCR

### SENSITIVE GATE SILICON CONTROLLED RECTIFIERS

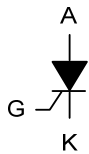
#### DESCRIPTION

The UTC **UCR05AS-8** is a Silicon Controlled Rectifier (SCR) optimized for high-speed and low-voltage operations. designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing.

#### FEATURES

- \*  $I_{T(AV)}$ : 0.5A
- \*  $V_{DRM}$ : 400V
- \*  $I_{GT}$ : 100 $\mu$ A
- \* Non-Insulated Type
- \* Planar Passivation Type
- \* Surface Mounted type

#### SYMBOL

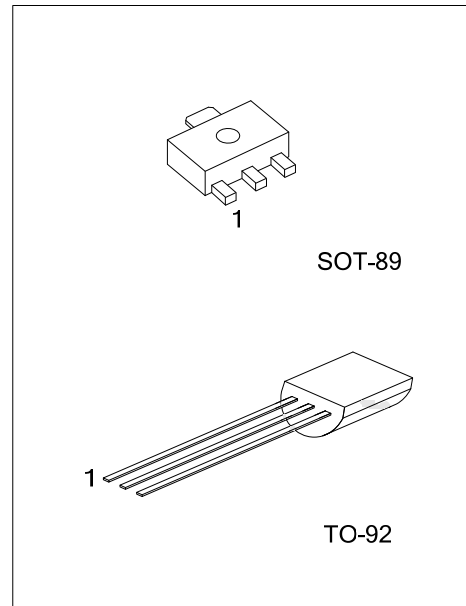


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UCR05ASL-8-x-AB3-R	UCR05ASG-8-x-AB3-R	SOT-89	G	A	K	Tape Reel
UCR05ASL-8-x-T92-R	UCR05ASG-8-x-T92-R	TO-92	K	G	A	Tape Reel
UCR05ASL-8-x-T92-B	UCR05ASG-8-x-T92-B	TO-92	K	G	A	Tape Box
UCR05ASL-8-x-T92-K	UCR05ASG-8-x-T92-K	TO-92	K	G	A	Bulk

Note: Pin Assignment: G: Gate A: Anode K: Cathode

UCR05ASG-8-x-AB3-R	(1)Packing Type (2)Package Type (3)Rank (4) $V_{DRM}$ , $V_{RRM}$ (5)Green Package	(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AB3: SOT-89, T92: TO-92 (3) refer to CLASSIFICATION OF $I_{GT}$ (4) 8: 400V (5) G: Halogen Free and Lead Free
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### ■ MARKING

SOT-89	TO-92
<p>Date Code ←</p> <p>UCR05AS</p> <p>→ L: Lead Free G: Halogen Free</p>	<p>UTC</p> <p>UCR05AS</p> <p>→ L: Lead Free G: Halogen Free Date Code</p> <p>1</p>

■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Repetitive Peak Reverse Voltage	$V_{RRM}$	400	V
Non-Repetitive Peak Reverse Voltage	$V_{RSM}$	500	V
Repetitive Peak OFF-State Voltage (Note 2)	$V_{DRM}$	400	V
DC Reverse Voltage	$V_{R\_DC}$	320	V
DC OFF-State Voltage(Note 2)	$V_{D\_DC}$	320	V
RMS On-State Current (All Conduction Angles)	$I_{T(RMS)}$	0.79	A
Average On-State Current (Commercial frequency, sine half wave $180^{\circ}$ conduction, $T_A=57^{\circ}\text{C}$ )	$I_{T(AV)}$	0.5	A
Surge On-State Current (60Hz sine half wave 1 full cycle, peak value, non-repetitive)	$I_{TSM}$	10	A
$I^2t$ For Fusing ( $t=10\text{ms}$ ) (Value corresponding to 1 cycle of half wave 60Hz, surge on-state current)	$I^2t$	0.4	$\text{A}^2\text{S}$
Peak Gate Power Dissipation	$P_{GM}$	0.1	W
Average Gate Power Dissipation	$P_{G(AV)}$	0.01	W
Peak Gate Forward Voltage	$V_{FGM}$	6	V
Peak Gate Reverse Voltage	$V_{RGM}$	6	V
Peak Gate Forward Current	$I_{FGM}$	0.1	A
Power Dissipation	SOT-89	$P_D$	1.78
	TO-92		0.8
Junction Temperature	$T_J$	$-40 \sim +125$	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	$-40 \sim +125$	$^{\circ}\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. With gate to cathode resistance  $R_{GK}=1\text{k}\Omega$ .

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-89	$\theta_{JA}$	70
	TO-92		150

Note : Soldering with ceramic plate (25 mm × 25 mm × 0.7 mm).

■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TSET CONDITIONS	MIN	TYP	MAX	UNIT
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM}$ applied, $R_{GK}=1\text{k}\Omega$ , $T_J=125^{\circ}\text{C}$			0.1	mA
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}$ applied, $R_{GK}=1\text{k}\Omega$ , $T_J=125^{\circ}\text{C}$			0.1	mA
On-State Voltage	$V_{TM}$	$I_{TM}=1.5\text{A}$ , instantaneous value			1.9	V
Gate Trigger Voltage	$V_{GT}$	$V_D=6\text{V}$ , $I_T=0.1\text{A}$ , $T_J=25^{\circ}\text{C}$			0.8	V
Gate Trigger Current	$I_{GT}$	$V_D=6\text{V}$ , $I_T=0.1\text{A}$ , $T_J=25^{\circ}\text{C}$	20		100	$\mu\text{A}$
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=1/2 V_{DRM}$ , $R_{GK}=1\text{k}\Omega$ , $T_J=125^{\circ}\text{C}$	0.2			V
Holding Current	$I_H$	$V_D=12\text{V}$ , $R_{GK}=1\text{k}\Omega$			3	mA

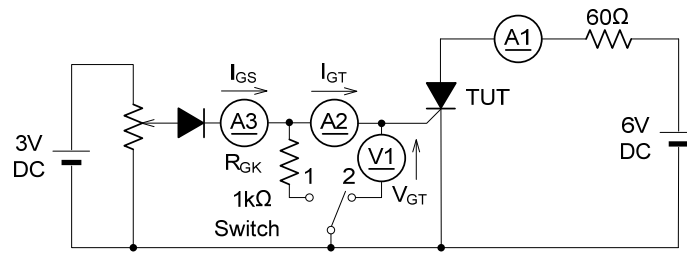
■ CLASSIFICATION OF  $I_{GT}$ 

If special values of  $I_{GT}$  are required, choose item E from those listed in the table below if possible.

RANK	B	E
RANGE ( $\mu A$ )	20-50	20-400

Note: The above values do not include the current flowing through the 1 k $\Omega$  resistance between the gate and cathode.

■  $I_{GT}$ ,  $V_{GT}$  MEASUREMENT CIRCUIT



Switch 1:  $I_{GT}$  measurement.

Switch 2:  $V_{GT}$  measurement

(Inner resistance of voltage meter is about 1kΩ.)

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