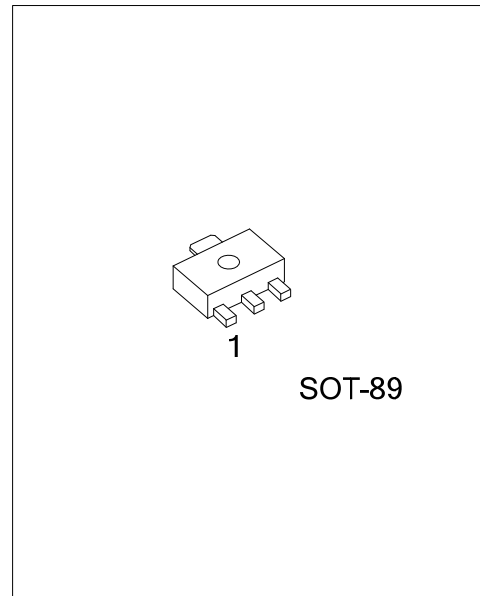




# SENSITIVE GATE SILICON CONTROLLED RECTIFIERS REVERSE BLOCKING THYRISTORS



### DESCRIPTION

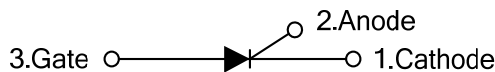
The UTC **MCK100** is a sensitive gate silicon controlled rectifiers reverse blocking thyristor. It provides the customers with high surge current capability, high blocking voltage to 600 V and high switching speed.

The UTC **MCK100** is suitable for sensing and detection circuits and high volume line – powered consumers applications.

### FEATURES

- \* High Surge Current Capability
- \* High Blocking Voltage to 600 V
- \* On-State Current Rating of 0.8 A RMS @ T<sub>C</sub>=80°C
- \* High Switching Speed (20 V/μs Minimum @ T<sub>C</sub>=110°C)
- \* Reliability and Uniformity

### SYMBOL



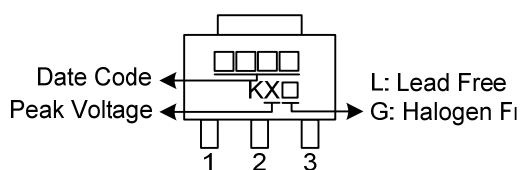
### ORDERING INFORMATION

Ordering Number		Package	Pin assignment			Packing
Lead Free	Halogen Free		1	2	3	
MCK100L-x-xx-AB3-R	MCK100G-x-xx-AB3-R	SOT-89	K	A	G	Tape Reel

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

MCK100G-x-xx-AB3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AB3: SOT-89
	(3)Rank	(3) xx: refer to Classification of I <sub>GT</sub>
	(4)Peak Voltage	(4) 3: 100V, 4: 200V, 6: 400V, 8: 600V
	(5)Green Package	(5) G: Halogen Free and Lead Free, L: Lead Free

### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Peak Repetitive Off-State Voltage(Note 2) ( $T_J=-40 \sim 110^\circ\text{C}$ , Sine Wave, 50 ~ 60Hz, Gate Open)	MCK100-3	100	V
	MCK100-4	200	
	MCK100-6	400	
	MCK100-8	600	
Peak Gate Voltage – Reverse( $T_A=25^\circ\text{C}$ , Pulse Width $\leq 1.0\mu\text{s}$ )	$V_{GRM}$	5.0	V
On-Sate RMS Current ( $T_C=80^\circ\text{C}$ ) 180°C Condition Angles	$I_{T(RMS)}$	0.8	A
Peak Non-Repetitive Surge Current (1/2 cycle, Sine Wave, 60Hz, $T_J=25^\circ\text{C}$ )	$I_{TSM}$	10	A
Peak Gate Current-Forward ( $T_A=25^\circ\text{C}$ , Pulse Width $\leq 1.0\mu\text{s}$ )	$I_{GM}$	1.0	A
Circuit Fusing Considerations ( $t=8.3 \text{ ms}$ )	$I^2t$	0.415	$\text{A}^2\text{s}$
Forward Peak Gate Power ( $T_A=25^\circ\text{C}$ , Pulse Width $\leq 1.0\mu\text{s}$ )	$P_{GM}$	2	W
Forward Average Gate Power ( $T_A=25^\circ\text{C}$ , $t=8.3\text{ms}$ )	$P_{G(AV)}$	0.1	W
Operating Junction Temperature @ Rated $V_{RRM}$ and $V_{DRM}$	$T_J$	-40 ~ +125	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

- 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.  $V_{DRM}$  and  $V_{RRM}$  for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	200	$^\circ\text{C/W}$
Junction to Case	$\theta_{JC}$	75	$^\circ\text{C/W}$

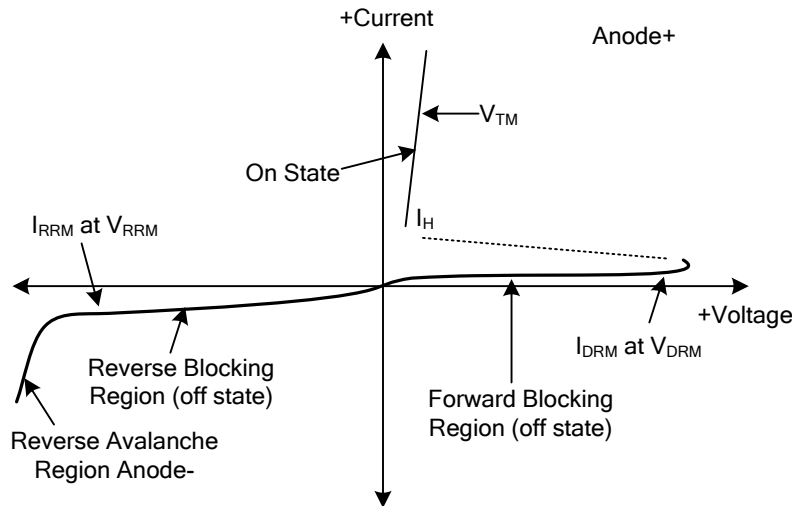
■ ELECTRICAL CHARACTERISTICS( $T_J=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>							
Peak Repetitive Forward or Reverse Blocking Current (Note 1)	$T_C=25^\circ\text{C}$	$I_{DRM}$	$V_D=\text{Rated } V_{DRM} \text{ and } V_{RRM},$ $R_{GK}=1\text{k}\Omega$		10	$\mu\text{A}$	
	$T_C=110^\circ\text{C}$	$I_{RRM}$			100		
<b>ON CHARACTERISTICS</b>							
Peak Forward On-State Voltage (Note 3)	$V_{TM}$	$I_{TM}=1\text{A Peak @ } T_A=25^\circ\text{C}$			1.7	V	
Gate Trigger Current (Continuous dc) (Note2)	$I_{GT}$	$V_{AK}=7.0\text{V}, R_L=100\Omega, T_C=25^\circ\text{C}$		40	200	$\mu\text{A}$	
Holding Current (Note 3)	$T_C=25^\circ\text{C}$	$I_H$	$V_{AK}=7\text{V},$ initiating current=20mA		0.5	5.0	mA
	$T_C=-40^\circ\text{C}$				10		
Latch Current	$T_C=25^\circ\text{C}$	$I_L$	$V_{AK}=7\text{V}, I_G=200\mu\text{A}$		0.6	10	mA
	$T_C=-40^\circ\text{C}$				15		
Gate Trigger Current (continuous dc) (Note 2)	$T_C=25^\circ\text{C}$	$V_{GT}$	$V_{AK}=7\text{V}, R_L=100\Omega$		0.62	0.8	V
	$T_C=-40^\circ\text{C}$				1.2		
<b>DYNAMIC CHARACTERISTICS</b>							
Critical Rate of Rise of Off-State Voltage	$dV/dt$	$V_D=\text{Rated } V_{DRM},$ Exponential Waveform, $R_{GK}=1000\Omega,$ $T_J=110^\circ\text{C}$	20	35		$\text{V}/\mu\text{s}$	
Critical Rate of Rise of On-State Current	$di/dt$	$I_{PK}=20\text{A}, P_W=10\mu\text{s},$ $diG/dt=1\text{A}/\mu\text{s}, I_{gt}=20\text{mA}$			50	$\text{A}/\mu\text{s}$	

- Notes: 1.  $R_{GK}=1000\Omega$  included in measurement.  
2. Does not include  $R_{GK}$  in measurement.  
3. Indicates Pulse Test Width $\leq 1.0\text{ms}$ , duty cycle  $\leq 1\%$

■ VOLTAGE CURRENT CHARACTERISTIC OF SCR

SYMBOL	PARAMETER
$V_{DRM}$	Peak Repetitive Off Stat Forward Voltage
$I_{DRM}$	Peak Forward Blocking Current
$V_{RRM}$	Peak Repetitive Off State Reverse Voltage
$I_{RRM}$	Peak Reverse Blocking Current
$V_{TM}$	Peak On State Voltage
$I_H$	Holding Current



■ CLASSIFICATION OF  $I_{GT}$

RANK	B	C	AA	AB	AC	AD
RANGE	48 ~ 105	95 ~ 200	8 ~ 16	14 ~ 21	19 ~ 25	23 ~ 52

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.