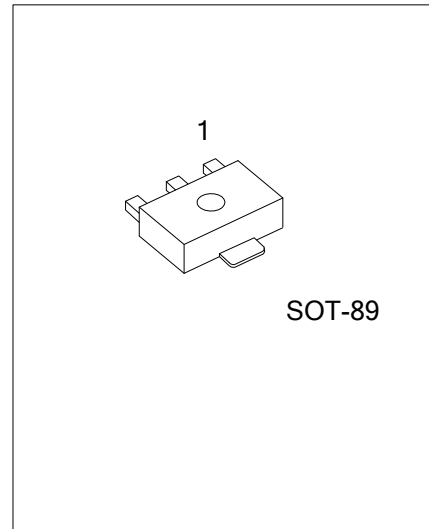




### SENSITIVE GATE SILICON CONTROLLED RECTIFIERS REVERSE BLOCKING THYRISTORS



#### 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 @  $T_C=80^\circ\text{C}$
- \* High Switching Speed (20 V/ $\mu\text{s}$  Minimum @  $T_C=110^\circ\text{C}$ )
- \* Reliability and Uniformity

#### SYMBOL



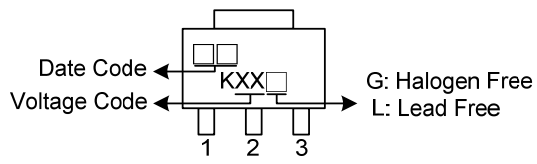
#### ORDERING INFORMATION

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	G	A	Tape Reel

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

MCK100L-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 $I_{GT}$
	(4)Peak Voltage	(4) 3: 100V, 4: 200V, 6: 400V, 8: 600V
	(5)Lead Free	(5) G: Halogen 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-State RMS Current ( $T_C=80^\circ\text{C}$ ) 180° 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 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=8.3ms)	$P_{G(AV)}$	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	$^\circ\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	75	$^\circ\text{C}/\text{W}$

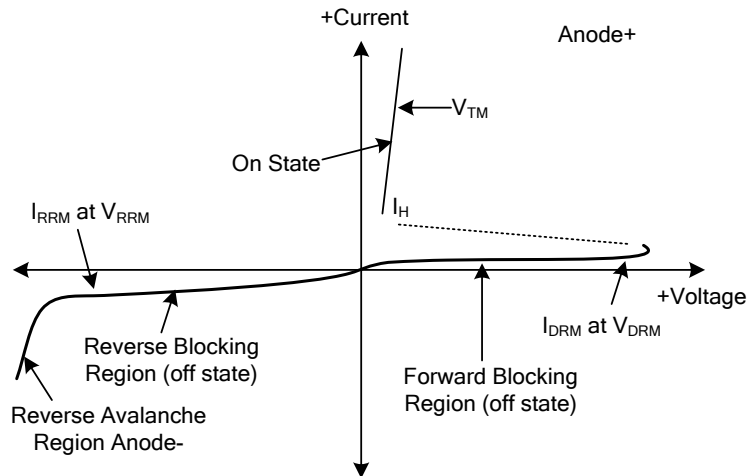
■ ELECTRICAL CHARACTERISTICS( $T_J=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Peak Repetitive Forward or Reverse Blocking Current (Note 1)	$I_{DRM}$ $I_{RRM}$	$V_D=\text{Rated } V_{DRM} \text{ and } V_{RRM},$ $R_{GK}=1\text{k}\Omega$			10 100	$\mu\text{A}$
<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)	$I_H$	$V_{AK}=7\text{V}$ , initiating current=20mA		0.5	5.0	mA
			$T_C=25^\circ\text{C}$			
Latch Current	$I_L$	$V_{AK}=7\text{V}, I_G=200\mu\text{A}$		0.6	10	mA
			$T_C=25^\circ\text{C}$			
Gate Trigger Current (continuous dc) (Note 2)	$V_{GT}$	$V_{AK}=7\text{V}, R_L=100\Omega$		0.62	0.8	V
			$T_C=25^\circ\text{C}$			
<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		V/ $\mu\text{s}$
Critical Rate of Rise of On-State Current	di/dt	$I_{PK}=20\text{A}, P_W=10\mu\text{s},$ $di/dt=1\text{A}/\mu\text{s}, I_{gt}=20\text{mA}$			50	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

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