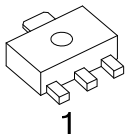
SENSITIVE GATE SILICON CONTROLLED RECTIFIERS REVERSE BLOCKING THYRISTORS



SOT-89

■ DESCRIPTION

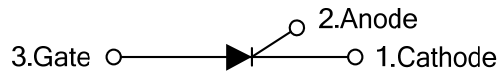
The UTC **MCK100** is a sensitive gate silicon controlled rectifiers reverse blocking thyristor. It provides the customers with high surge current capability, high blocking voltage to 600 V and high switching speed.

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°C
* High Switching Speed (20 V/μs Minimum @ T_C=110°C)
* Reliability and Uniformity

■ SYMBOL



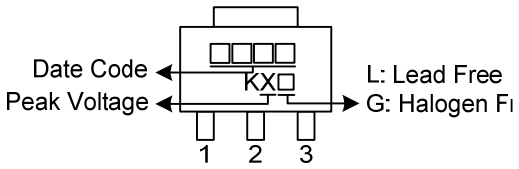
■ ORDERING INFORMATION

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 (2)Package Type (3)Rank (4)Peak Voltage (5)Green Package	(1) R: Tape Reel (2) AB3: SOT-89 (3) xx: refer to Classification of I_{GT} (4) 3: 100V, 4: 200V, 6: 400V, 8: 600V (5) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Peak Repetitive Off-State Voltage(Note 2) (T_J=-40 ~ 110°C, Sine Wave, 50 ~ 60Hz, Gate Open)	MCK100-3	V_{DRM} V_{RRM}	100	V
	MCK100-4		200	
	MCK100-6		400	
	MCK100-8		600	
Peak Gate Voltage – Reverse(T_A=25°C, Pulse Width≤1.0μs)		V_{GRM}	5.0	V
On-Sate RMS Current (T_C=80°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°C)		I_{TSM}	10	A
Peak Gate Current-Forward (T_A=25°C, Pulse Width≤1.0μs)		I_{GM}	1.0	A
Circuit Fusing Considerations (t=8.3 ms)		I^2t	0.415	A^2s
Forward Peak Gate Power (T_A=25°C, Pulse Width ≤1.0μs)		P_{GM}	2	W
Forward Average Gate Power (T_A=25°C, t=8.3ms)		$P_{G(AV)}$	0.1	W
Operating Junction Temperature @ Rated V_{RRM} and V_{DRM}		T_J	-40 ~ +125	°C
Storage Temperature		T_{STG}	-40 ~ +150	°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	θ_{JA}	200	°C/W
Junction to Case	θ_{JC}	75	°C/W

■ ELECTRICAL CHARACTERISTICS(T_J=25°C, unless otherwise specified)

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

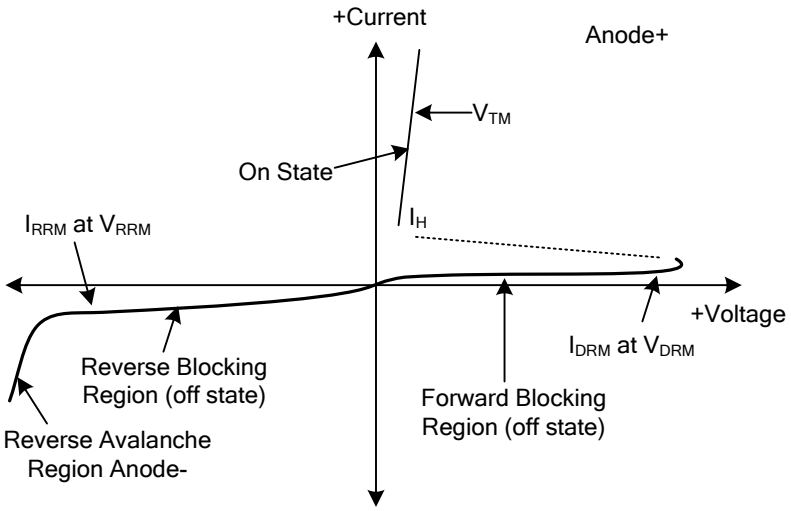
Notes: 1. R_{GK}=1000Ω included in measurement.

2. Does not include R_{GK} in measurement.

3. Indicates Pulse Test Width≤1.0ms, duty cycle ≤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