



MCK100

Preliminary

SCR

SENSITIVE GATE SILICON CONTROLLED RECTIFIERS REVERSE BLOCKING THYRISTORS

DESCRIPTION

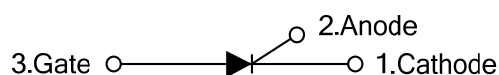
The UTC **MCK100** is a sensitive gate silicon controlled rectifiers reverse blocking thyristor. It provides the customers with high surge current capability, high blocking voltage to 600 V and high switching speed.

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/ μs Minimum @ $T_C=110^{\circ}\text{C}$)
- * Reliability and Uniformity

SYMBOL



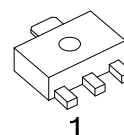
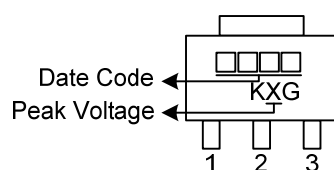
ORDERING INFORMATION

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

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

<p>MCK100G-x-xx-AB3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Peak Voltage (5)Green Package</p>	<p>(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</p>
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MARKING



SOT-89

■ 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 $^{\circ}\text{C}$ 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	A^2s
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	θ_{JA}	200	$^{\circ}\text{C/W}$
Junction to Case	θ_{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
OFF CHARACTERISTICS							
Peak Repetitive Forward or Reverse Blocking Current (Note 1)	T _C =25°C	I _{DRM}	V _D =Rated V _{DRM} and V _{RRM} ,			10	μA
	T _C =110°C	I _{RRM}	R _{GK} =1kΩ			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

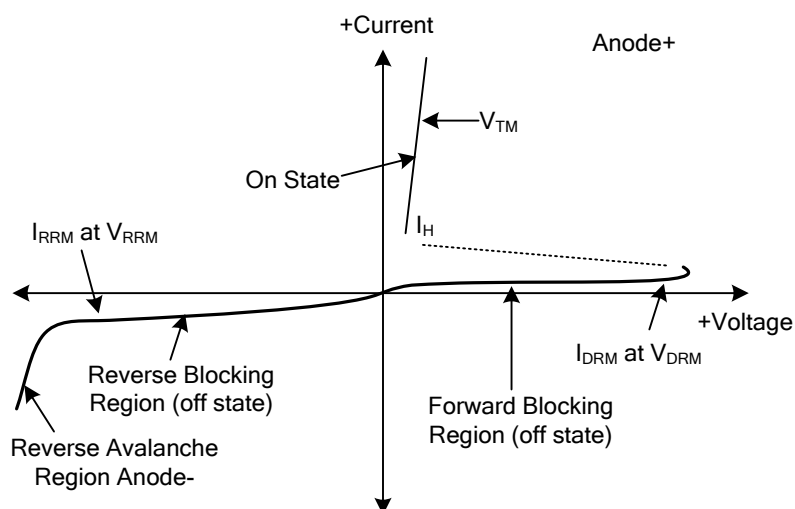
Notes: 1. $R_{GK}=1000\Omega$ included in measurement.

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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