



MCK100

Preliminary

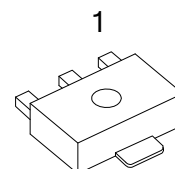
SCR

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



SOT-89

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



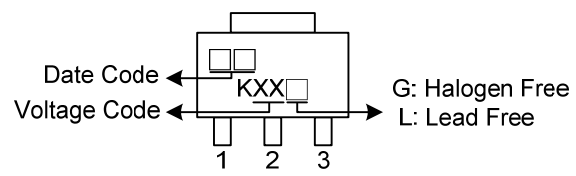
ORDERING INFORMATION

Ordering Number		Package	Pin assignment			Packing
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 MCK100-4 MCK100-6 MCK100-8	V_{DRM} V_{RRM}	V
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° Condition Angles	$I_{\text{T(RMS)}}$	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 ($T_A=25^{\circ}\text{C}$, $t=8.3\text{ms}$)	$P_{\text{G(AV)}}$	0.1	W
Operating Junction Temperature @ Rated V_{RRM} and V_{DRM}	T_J	$-40 \sim 125$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-40 \sim 150$	$^{\circ}\text{C}$

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	$^{\circ}\text{C/W}$

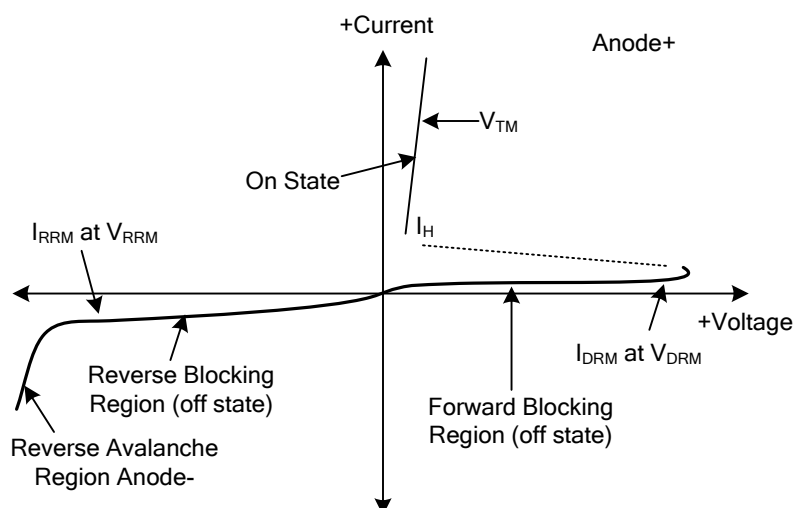
■ ELECTRICAL CHARACTERISTICS($T_J=25^{\circ}\text{C}$, unless otherwise specified)

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

- Notes: 1. $R_{\text{GK}}=1000\Omega$ 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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