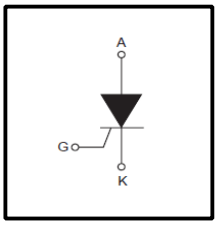
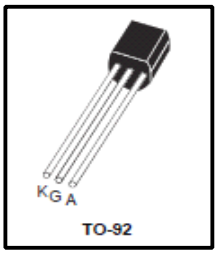
MCR100-6

Sensitive Gate Silicon Controlled Rectifiers





Features

- Sensitive gate trigger current: I_{GT}=200uA maximum
- Low on-state voltage: V_{TM}=1.2(typ.)@ I_{TM}
- Low reverse and forward blocking current: I_{DRM}/I_{PRM}=100uA@TC=125℃
- Low holding current: I_H=5mA maximum

General Description

Sensitive triggering SCR is suitable for the application where gate current limited such as microcontrollers, logic integrated circuits, small motor control, gate driver for large SCR, sensing and detecting circuits.
General purpose switching and phase control applications

Absolute Maximum Ratings (Tj=25℃ unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DRM}/V_{RRM}	Repetitive peak off-state voltage	Note(1)	400	V
$I_{T(RMS)}$	RMS on-state current (180° conduction angles)	TI=85℃	0.8	A
$I_{T(AV)}$	Average on-state current (80° conduction angles)	TI=85℃	0.5	A
I_{TSM}	Non repetitive surge peak on-state current	tp = 8.3 ms	9	A
		tp = 10 ms	8	
I^2t	I^2t Value for fusing	tp = 8.3 ms	0.41	A^2s
P_{GM}	Peak gate power		2	W
dI/dt	Critical rate of rise of on-state current I_{TM} = 2A; I_G = 10mA; dI_G/dt = 100mA/μs	T_J=125℃	50	A/μs
$P_{G(AV)}$	Average gate power dissipation	T_J=125℃	0.1	W
I_{FGM}	Peak gate current	T_J=125℃	1	A
V_{RGM}	Peak gate voltage	T_J=125℃	5	V
$T_{J,}$	Junction temperature		-40~125	℃
T_{stg}	Storage temperature		-40~150	℃

Note1: Although not recommended, off-state voltages up to 800 V may be applied without damage, but the thyristor may switch to the on-state.The rate of rise of current should not exceed 15 A/μs.

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal resistance, Junction-to-Case	-	-	60	℃/W
R_{QJA}	Thermal resistance, Junction-to-Ambient	-	-	150	℃/W

Electrical Characteristics (T_J = 25°C, R_{GK} = 1 kΩ unless otherwise specified)

Symbol	Characteristics		Min	Typ.	Max	Unit
I_{DRM}/I_{RRM}	off-state leakage current (V_{AK}= V_{DRM}/V_{RRM})	Tc=25℃	-	-	1	μA
		Tc=125℃			100	
V_{TM}	Forward "On" voltage (I_{TM} = 1A tp = 380μs) (Note2.1)		-	1.2	1.7	V
I_{GT}	Gate trigger current (continuous dc) (V_{AK} = 7 Vdc, RL = 100 Ω) (Note2.2)		15	-	200	μA
V_{GT}	Gate Trigger Voltage (Continuous dc) (V_{AK} = 7 Vdc, RL = 100 Ω) (Note2.2)		-	-	0.8	V
V_{GD}	Gate threshold Voltage (Note2.1)		0.2	-	-	V
dv/dt	Voltage Rate of Rise Off-State Voltage	T_J=125℃	500	800	-	V/μs
	(V_D=0.67V_{DRM} ;exponential waveform)	Gate open circuit		25		
I_H	Holding Current (VD = 12 V; IGT = 0.5 mA)		-	2	5	mA
I_L	latching current (VD = 12 V; IGT = 0.5 mA)		-	2	6	mA
R_d	Dynamic resistance	T_J=125℃	-	-	245	mΩ

Note 2.1 Pulse width≤1.0ms,duty cycle≤1%
2.2 R_{GK} current is not included in measurement.

Fig 1. Gate Characteristics

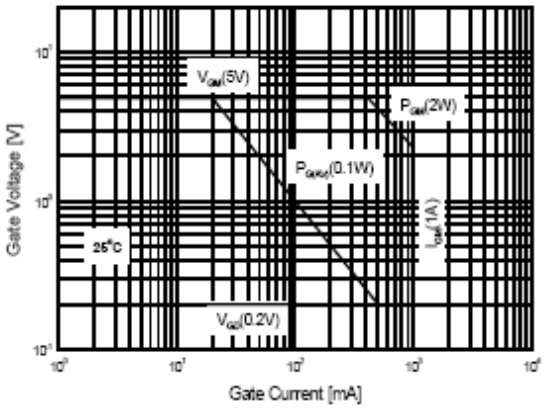


Fig 2. Maximum Case Temperature

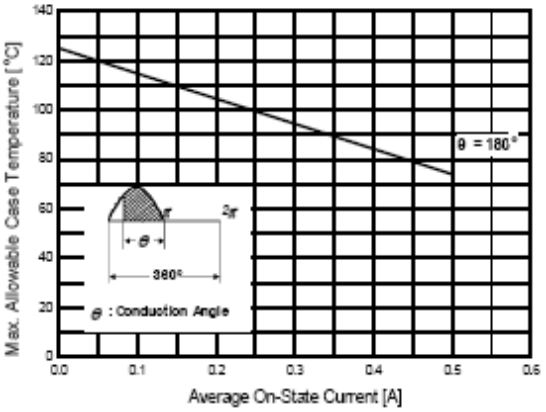


Fig 3. Typical Forward Voltage

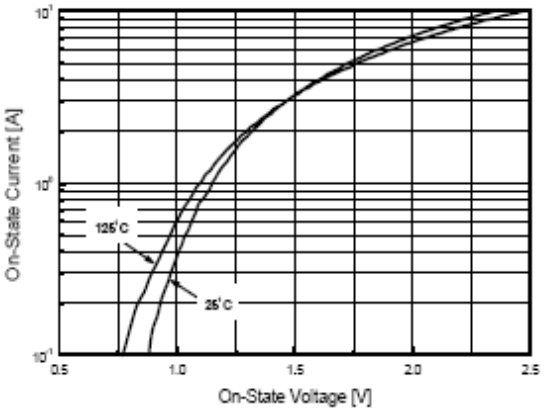


Fig 4. Thermal Response

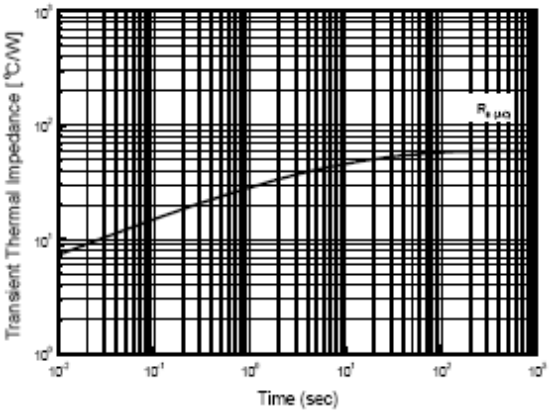


Fig 5. Typical Gate Trigger Voltage vs. Junction Temperature

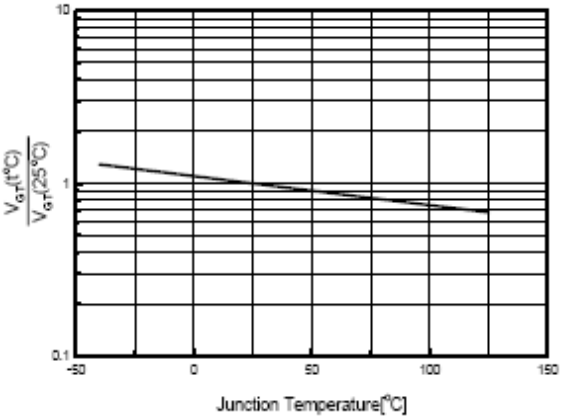


Fig 6. Typical Gate Trigger Current vs. Junction Temperature

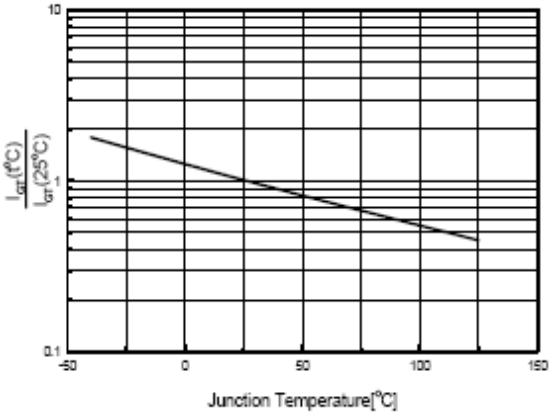


Fig 7. Typical Holding Current

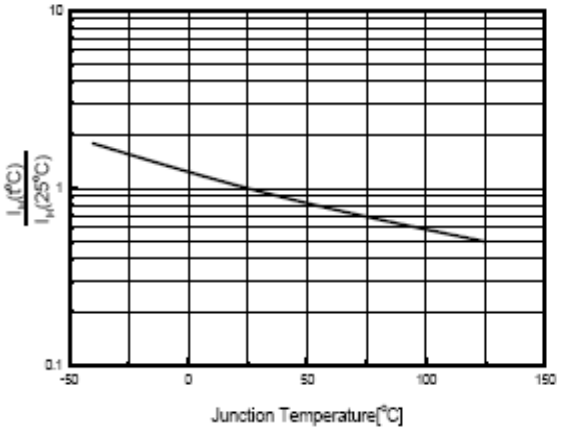
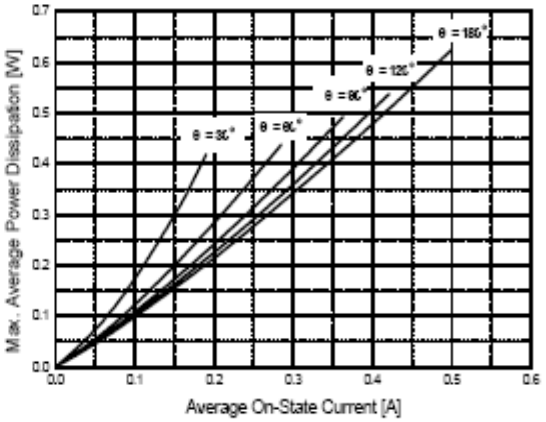


Fig 8. Power Dissipation



TO-92 Package Dimension

Unit:mm