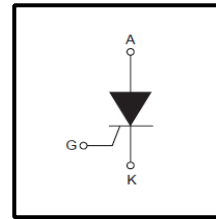


**Sensitive Gate  
Silicon Controlled Rectifiers**

**Features**

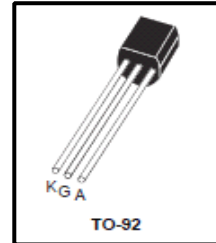
- Sensitive gate trigger current:  $I_{GT}=200\mu A$  maximum
- Low on-state voltage:  $V_{TM}=1.2(\text{typ.})@ I_{TM}$
- Low reverse and forward blocking current:  
 $I_{DRM}/I_{PRM}=100\mu A@TC=125^{\circ}C$
- Low holding current:  $I_H=5mA$  maximum



**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** ( $T_j=25^{\circ}C$  unless otherwise specified)

Symbol	Parameter	Value	Units
$V_{DRM}/V_{RRM}$	Repetitive peak off-state voltage	Note(1)	600 V
$I_{T(RMS)}$	RMS on-state current (180° conduction angles)	$T_I=85^{\circ}C$	0.8 A
$I_{T(AV)}$	Average on-state current (80° conduction angles )	$T_I=85^{\circ}C$	0.5 A
$I_{TSM}$	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	9 A
		$t_p = 10 \text{ ms}$	8 A
$I^2t$	$I^2t$ Value for fusing	$t_p = 8.3 \text{ ms}$	0.41 $A^2s$
$P_{GM}$	Peak gate power		0.1 W
$di/dt$	Critical rate of rise of on-state current $I_{TM} = 2A; I_G = 10mA; di_G/dt = 100mA/\mu s$	$T_J=125^{\circ}C$	50 $A/\mu s$
$P_{G(AV)}$	Average gate power dissipation	$T_A=25^{\circ}C$	0.01 W
$I_{FGM}$	Peak gate current	$T_A=25^{\circ}C$	1 A
$V_{RGM}$	Peak gate voltage	$T_A=25^{\circ}C$	5 V
$T_J$	Junction temperature		-40~125 $^{\circ}C$
$T_{stg}$	Storage temperature		-40~150 $^{\circ}C$

**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  $A/\mu s$ .

**Thermal Characteristics**

Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{QJC}$	Thermal resistance, Junction-to-Case	-	-	75	$^{\circ}C/W$
$R_{QJA}$	Thermal resistance, Junction-to-Ambient	-	-	200	$^{\circ}C/W$

**Ordering Information**

Order codes	Package	Marking	Halogen Free	Packaging
MCR100-8	TO126	100-8	NO	Tube
MCR100-8-T	TO126	100-8	NO	Reel

**Electrical Characteristics** ( $T_J = 25^\circ\text{C}$ ,  $R_{GK} = 1\text{ k}\Omega$  unless otherwise specified)

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

Note 2.1 Pulse width $\leq$ 1.0ms,duty cycles $\leq$ 1%

2.2  $R_{GK}$  current is not included in measurement.

Fig 1. Gate Characteristics

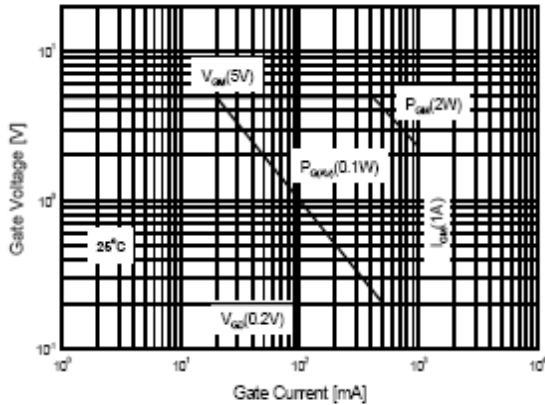


Fig 2. Maximum Case Temperature

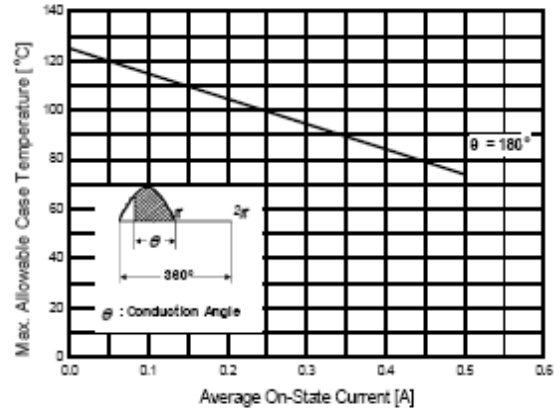


Fig 3. Typical Forward Voltage

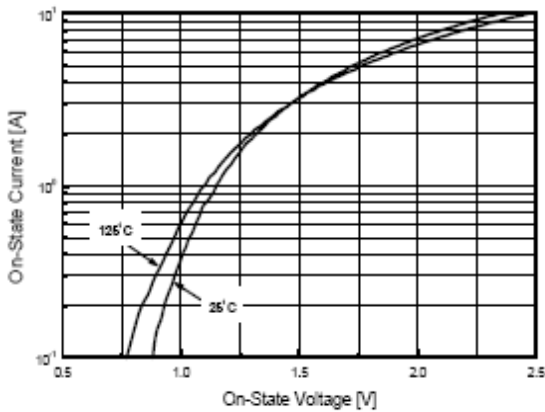


Fig 4. Thermal Response

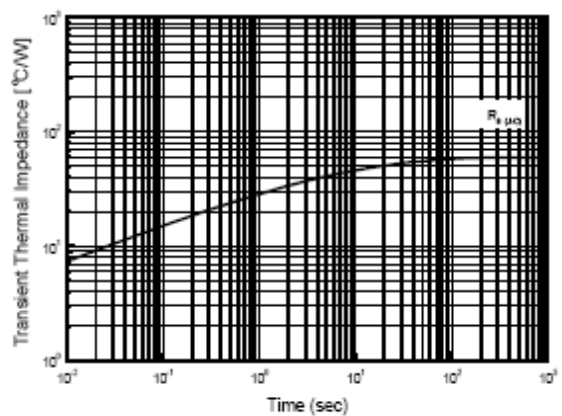


Fig 5. Typical Gate Trigger Voltage vs. Junction Temperature

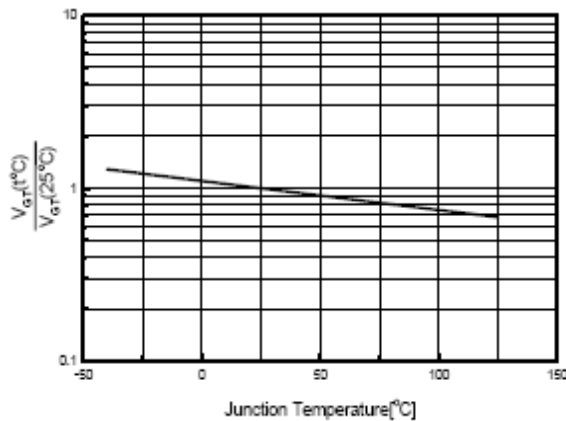


Fig 6. Typical Gate Trigger Current vs. Junction Temperature

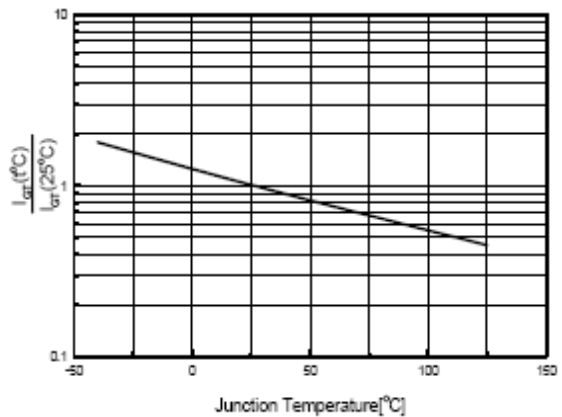


Fig 7. Typical Holding Current

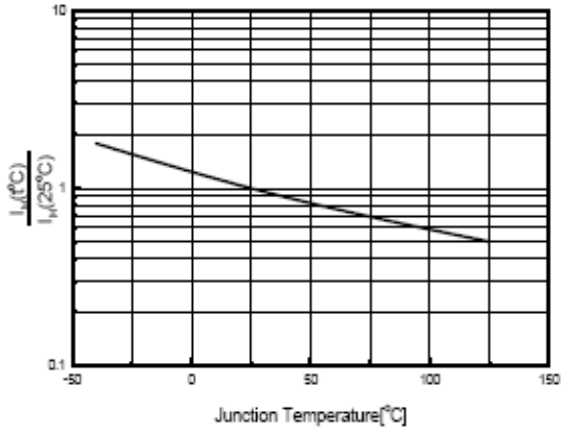
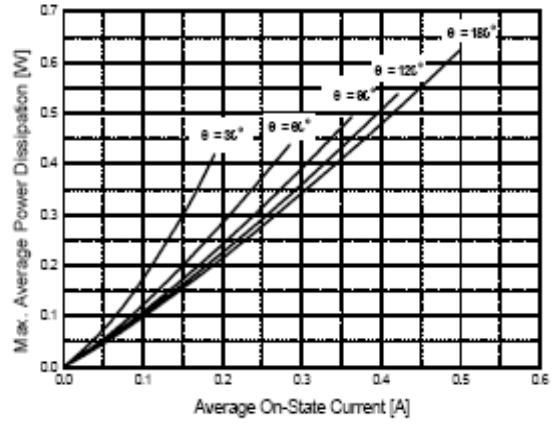
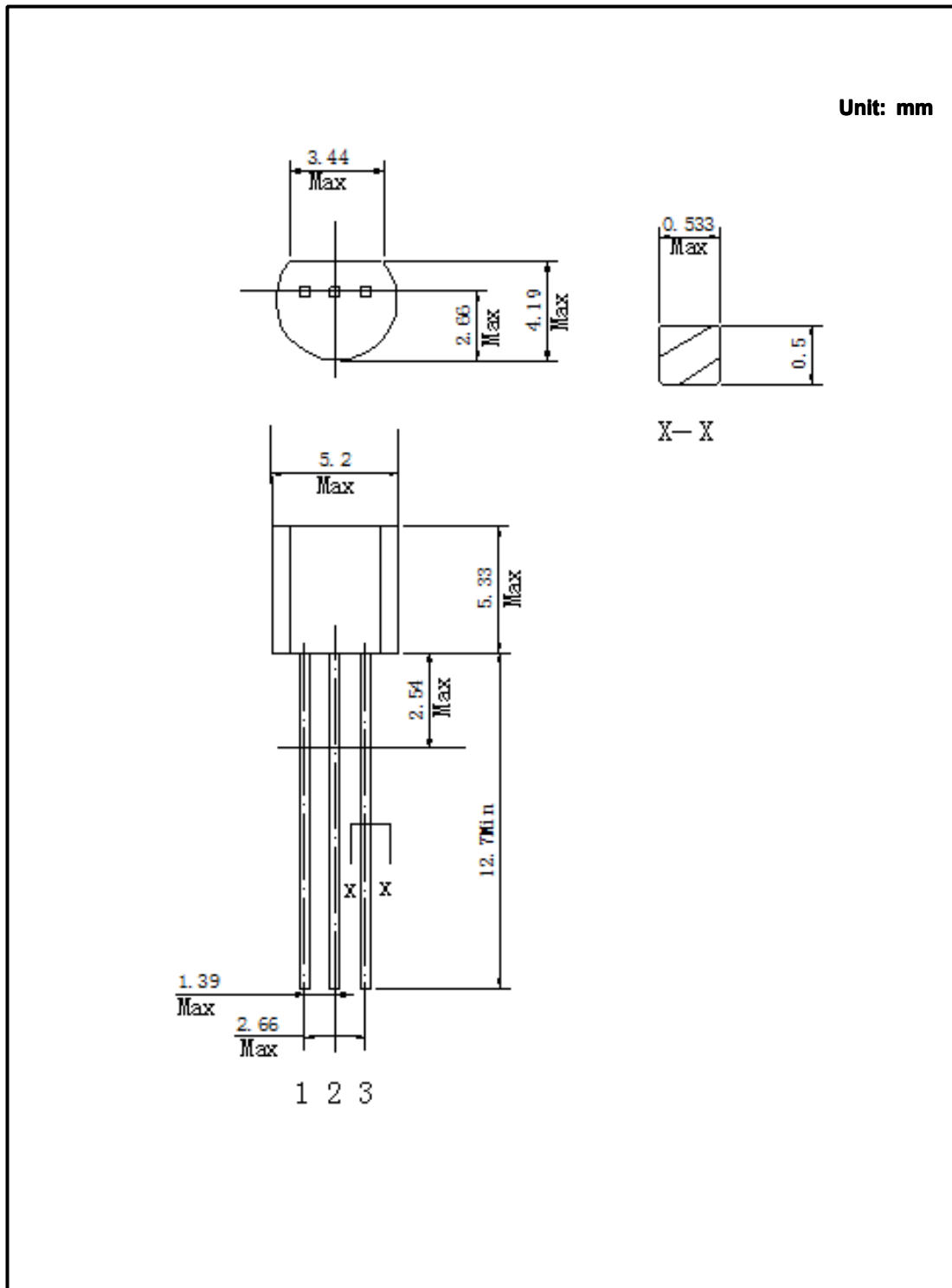


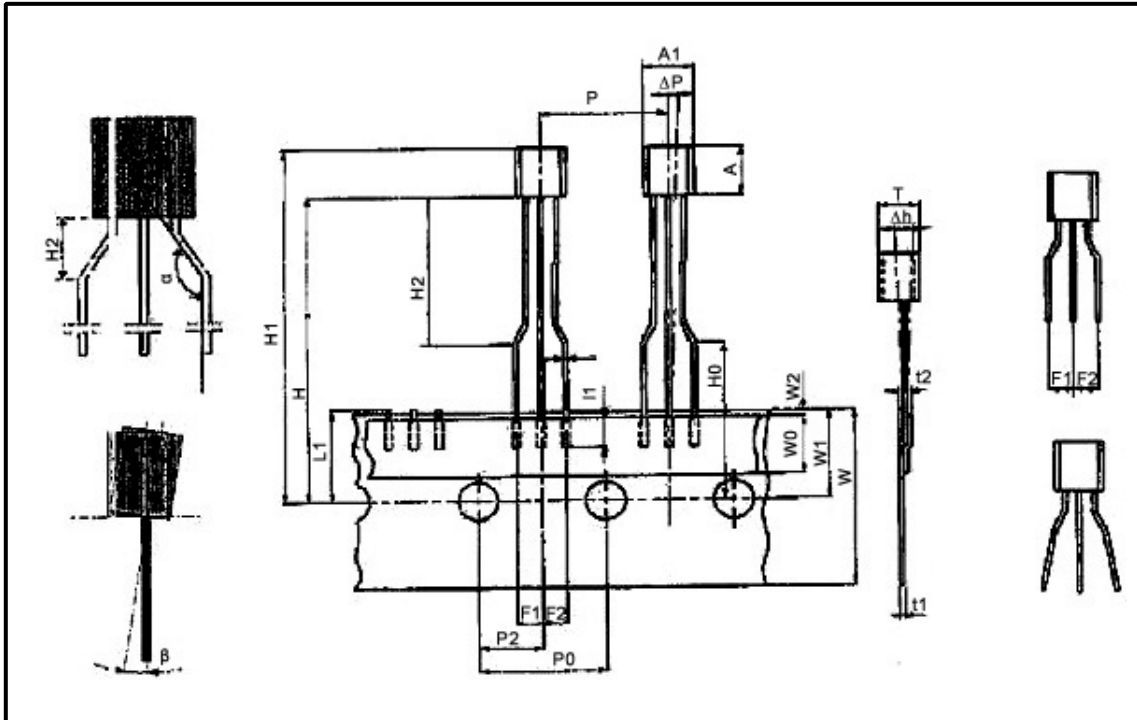
Fig 8. Power Dissipation



**TO-92 Package Dimension**



**TO-92 Tape Reel Size**



SYMBOL	min.	nom	max.	SYMBOL	min.	nom	max.
F1/F2	2.25	2.4	2.55	I1	2.5		3.0
P	11.7	12.7	13.7	L1			11
P0	12.4	12.7	13.0	W	17.5	18.0	19.0
P2	5.95	6.35	6.75	W0	5.7	6.0	6.3
H	19.35		20.45	W1	8.5	9.0	9.75
H0	12.5	13.0	13.5	W2			0.5
H1			25.5	Δh	-1.0	0.0	1.0
H2	6		6.5	ΔP	-1.0	0.0	1.0
H3	9.5			T1	0.35		0.65
α	130°	135°	140°	T2			1.44