

HSC106D

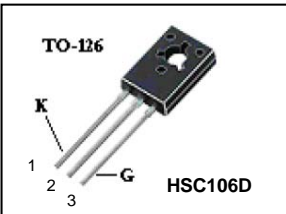
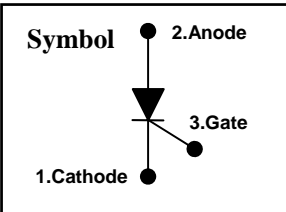
Sensitive Gate Silicon Controlled Rectifier

$$V_{DRM} = 400 \text{ V}$$

$$I_{T(RMS)} = 4.0 \text{ A}$$

FEATURES

- ❑ Repetitive Peak Off-State Voltage ($V_{RM}= 400\text{V}$)
- ❑ R.M.S On-state Current ($I_{T(RMS)}=4.0\text{A}$)
- ❑ Average On-state Current ($I_{T(AV)}=2.55\text{A}$)
- ❑ Sensitive Gate Triggering (0.2mA_{Max} @ 25°C)



General Description

Glassivated PNP devices designed for high volume consumer applications such as temperature, light and speed control ; process and remote control, and warning systems where reliability of operation is important.

Absolute Maximum Ratings ($T_j=25^\circ\text{C}$)

Symbol	Parameter	Value	Units
V_{DRM}	Repetitive Peak Off-State Voltage (Forward)	400	V
V_{RRM}	Repetitive Peak Off-State Voltage (Reverse)	400	V
$I_{T(RMS)}$	On-State R.M.S Current (180° Condition Angles, $T_c=80^\circ\text{C}$)	4.0	A
$I_{T(AV)}$	On-State Average Current (180° Condition Angles, $T_c=80^\circ\text{C}$)	2.55	A
I_{TSM}	Surge On-State Current (1/2 Cycle, 60Hz, Sine Wave, Non-repetitive, $T_j = 110^\circ\text{C}$)	20	A
I^2t	Circuit Fusing Considerations ($t=8.3\text{ms}$)	1.65	A^2s
P_{GM}	Forward Peak Gate Power Dissipation (Pulse Width $\leq 1.0\mu\text{sec}$, $T_c=80^\circ\text{C}$)	0.5	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation (Pulse Width $\leq 1.0\mu\text{sec}$, $T_c=80^\circ\text{C}$)	0.1	W
V_{GRM}	Reverse Peak Gate Voltage	6.0	V
I_{FGM}	Forward Peak Gate Current (Pulse Width $\leq 1.0 \mu\text{sec}$, $T_c=80^\circ\text{C}$)	0.2	A
T_{STG}	Storage Temperature Range	-40 to +150	$^\circ\text{C}$
T_j	Operating Junction Temperature	-40 to +110	$^\circ\text{C}$

Electrical Characteristics ($T_a=25^\circ\text{C}$)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
I_{GT}	Gate Trigger Current ⁽¹⁾	$V_{AK}=6\text{VDC}, R_L=100\Omega, T_J=25^\circ\text{C}$ $V_{AK}=6\text{VDC}, R_L=100\Omega, T_J=-40^\circ\text{C}$		15 35	200 500	μA
V_{GT}	Gate Trigger Voltage ⁽¹⁾	$V_{AK}=6\text{VDC}, R_L=100\Omega, T_J=25^\circ\text{C}$ $V_{AK}=6\text{VDC}, R_L=100\Omega, T_J=-40^\circ\text{C}$	0.4 0.5	0.6 0.75	0.8 1.0	V
V_{GD}	Non Trigger Gate Voltage	$V_{AK}=12\text{VDC}, R_L=100\Omega, T_C=110^\circ\text{C}$	0.2			V
I_H	Holding Current	$V_{AK}=12\text{VDC}$, Gate open, Initiating current=20mA, $T_J=25^\circ\text{C}$ $T_J=-40^\circ\text{C}$ $T_J=110^\circ\text{C}$		0.19 0.33 0.07	3.0 6.0 2.0	mA
I_L	Latching Current	$V_{AK}=12\text{VDC}, I_G=20\text{mA}$, Gate Open, $T_J=25^\circ\text{C}$ $T_J=110^\circ\text{C}$		0.2 0.35	5.0	mA
I_{DRM} I_{RRM}	Repetitive or Reverse Peak Blocking Current	$V_{AK}=V_{DRM}$ or V_{RRM} , $T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$			10 100	μA μA
V_{TM}	Peak Forward On-State Voltage ⁽²⁾	$I_{FM}=1\text{A}$			2.2	V
dv/dt	Critical Rate of Rise Off state Voltage	$V_{AK}=V_{DRM}$, Exponential waveform, $R_{GK}=1\text{k}\Omega$, Gate open, $T_J=110^\circ\text{C}$		8.0		V/ μs

⁽¹⁾ R_{GK} Current is not included in measurement

⁽²⁾ Pulse Test : Pulse width $\leq 2.0\text{mS}$, Duty Cycle $\leq 2\%$

Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$R_{TH(J-C)}$	Thermal Resistance	Junction to Case			3.0	$^\circ\text{C}/\text{W}$
$R_{TH(J-A)}$	Thermal Resistance	Junction to Ambient			75	$^\circ\text{C}/\text{W}$
TL	Maximum Lead Temperature for Soldering Purpose 1/8", from case for 10second				260	$^\circ\text{C}$

Performance Curves

Fig 1. Average Current Derating

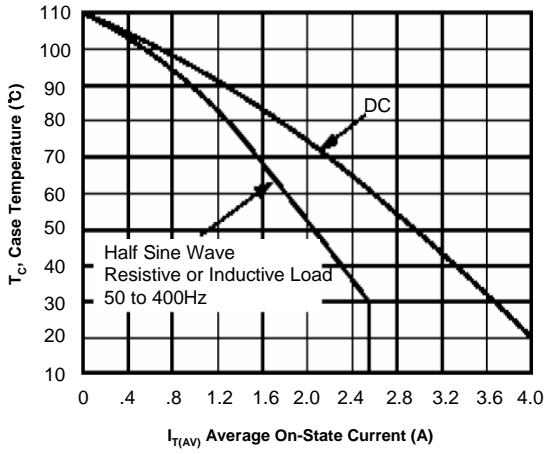


Fig 2. Maximum On-State Power Dissipation

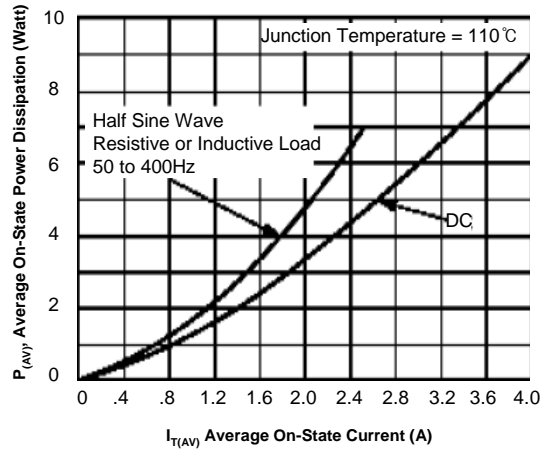


Fig 3. Typical Gate Trigger Current vs Junction Temperature

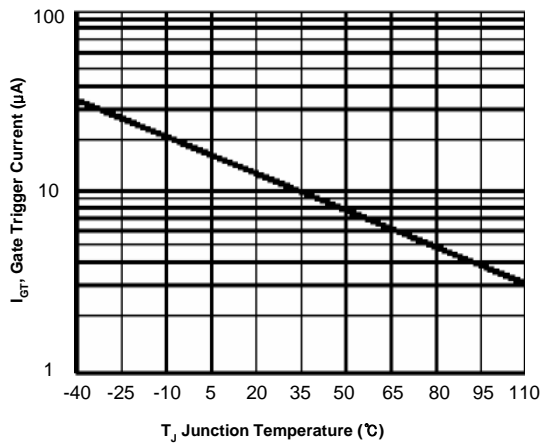


Fig 4. Typical Holding Current vs Junction Temperature

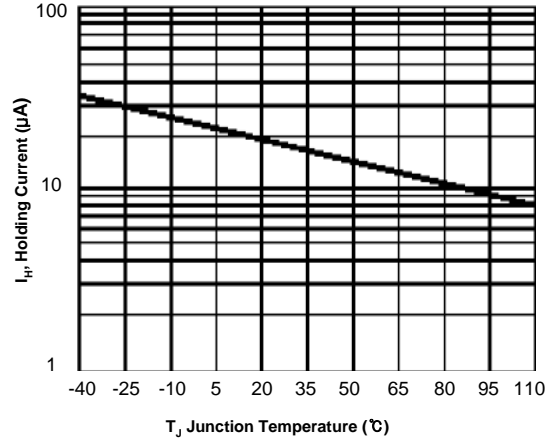


Fig 5. Typical Gate Trigger Voltage vs Junction Temperature

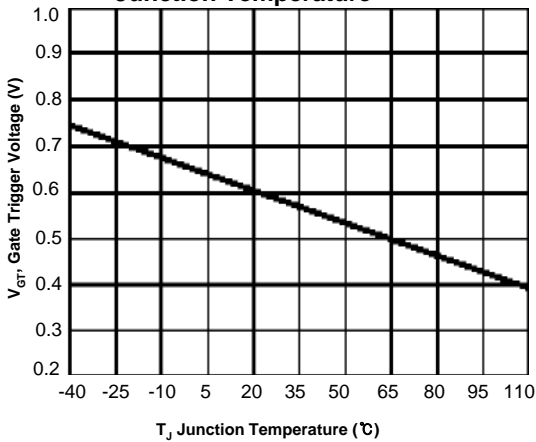
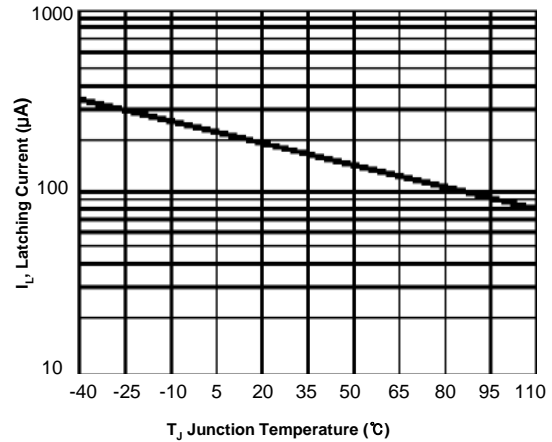
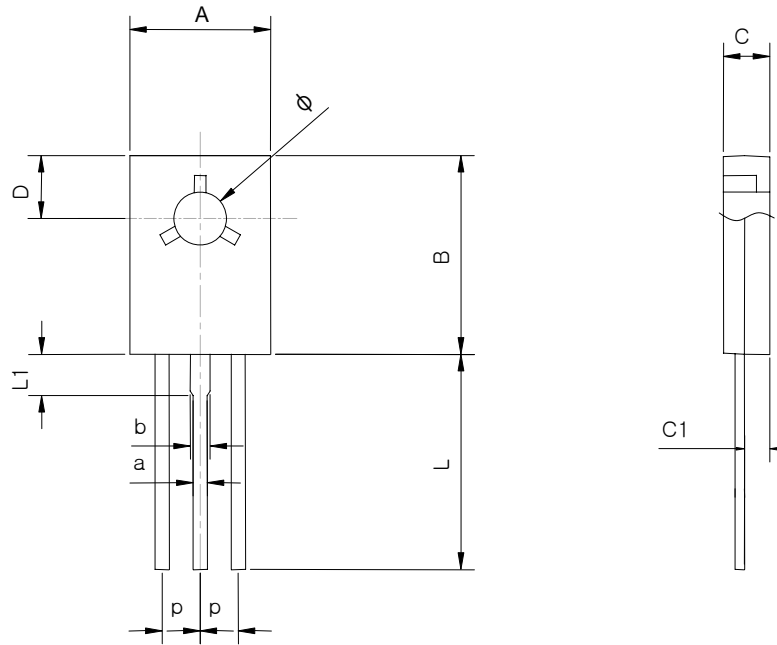


Fig 6. Typical Latching Current vs Junction Temperature



Package Dimension

HSC106D
(TO-126)



Dimension Table

Unit :[mm]

Symbol	Dimension		Symbol	Dimension	
	Min	Max		Min	Max
A	-	8.5	L1	2.3	2.7
B	-	12.0	ϕ	3.0	3.4
C	-	2.8	a	0.7	0.86
C1	1.27 Typ		b	1.2 Typ	
D	3.6	4.0	p		2.3
L	-	13.0			