

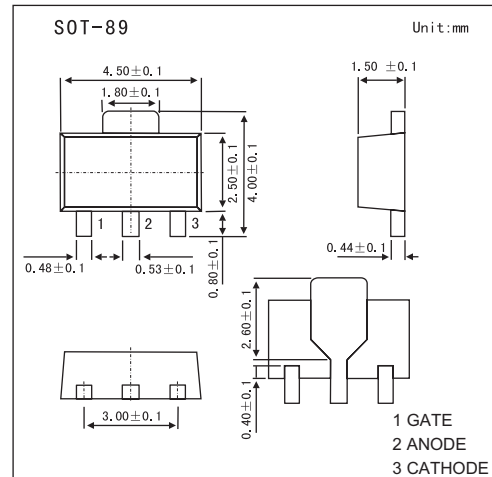
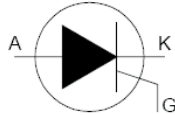
Silicon Controlled Rectifiers

HBT169M

■ Features

- Repetitive peak off-state voltages :400V
- Average on-state current :0.5A
- RMS on-state current :0.8A
- Non-repetitive peak on-state current :8A

Symbol



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Peak Repetitive Forward and Reverse Blocking Voltage*	V_{DRM} and V_{RRM}	400	V
Forward Current RMS	$I_{T(RMS)}$	0.8	A
Non-repetitive peak on-state current (t=10ms)	I_{TSM}	8	A
Non-repetitive peak on-state current (t=8.3ms)		9	A
Circuit Fusing Considerations (t = 10ms)	I^2t	0.32	A^2s
Repetitive rate of rise of on-state current after triggering *1	di_T/dt	50	A/us
Peak gate current	I_{GM}	1	A
Peak Gate Power — Forward, $T_A = 25^\circ\text{C}$	P_{GM}	2	W
Average Gate Power — Forward, $T_A = 25^\circ\text{C}$	$P_{GF(AV)}$	0.1	W
Peak Gate Current — Forward, $T_A = 25^\circ\text{C}$	I_{GFM}	1	A
Peak gate voltage	V_{GM}	5	V
Peak Gate Voltage — Reverse	V_{GRM}	5	V
Thermal resistance junction to lead *2	$R_{th\ j-lead}$	60	K/W
Thermal resistance junction to ambient *2	$R_{th\ j-a}$	150	K/W
Storage temperature	T_{stg}	150	$^\circ\text{C}$
Operating junction temperature	T_J	125	$^\circ\text{C}$

*1 $I_{TM}=2A$; $I_G=10mA$; $di_G/dt=100mA/us$

*2 pcb mounted; lead length=4mm

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■ Electrical Characteristics (Ta = 25°C, unless otherwise noted.)

Parameter	Symbol	Testconditions	Min	Typ.	Max	Unit
On-state Voltage	V _T	I _T =1A		1.2	1.35	V
Gate Trigger Current (Continuous dc)*2 T _c = 25°C	I _{GT}	V _D =12V, I _T =10mA, Gate open circuit		50	200	μ A
Latching Current	I _L	V _D =12V, I _{GT} =0.5mA; R _{GK} =1k Ω		2	6	mA
Holding Current	I _H	V _D =12V, I _{GT} =0.5mA; R _{GK} =1k Ω		2	5	mA
Gate Trigger Voltage	V _{GT}	V _D =12V, I _T =10mA, Gate open circuit		0.5	0.8	V
		V _D = V _{DRM} (max), I _T =10mA; T _j =125 °C, Gate open circuit	0.2	0.2		
Off-state Leakage Current	I _D , I _R	V _D =V _{DRM} (max); V _R = V _{RRM} (max); T _j =125 °C; R _{GK} =1k Ω		0.05	0.1	mA
Critical rate of rise of off-state voltage	dV _D /dt	V _{DM} =67% V _{DRM} (max); T _j =125 °C, exponential waveform; R _{GK} =1k Ω	500	800		V/us
Gate controlled turn-on time	t _{gt}	I _{TM} =2A; V _D =V _{DRM} (max), G=10mA; di _G /dt=0.1A/us		2		us
Circuit commutated turn-off time	t _q	V _D =67% V _{DRM} (max); T _j =125 °C, I _M =1.6A; V _R =35V; di _{TM} /dt=30A/us, dv _D /dt=2V/us; R _{GK} =1k Ω		100		us

*1. Forward current applied for 1 ms maximum duration, duty cycle ≤ 1%.

*2. R_{GK} current is not included in measurement.

■ Marking

Marking	169
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