HP20C60

SCRs

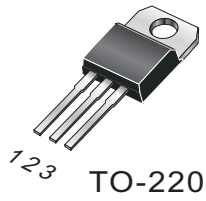
HAOPIN MICROELECTRONICS CO.,LTD.

Description

Standard gate triggering SCR is fully isolated package suitable for the application where requiring high bidirectional blocking voltage capability and also suitable for over voltage protection ,motor control circuit in power tool, inrush current limit circuit and heating control system.

Symbol

Simplified outline



TO-220

Pin	Description
1	Cathode
2	Anode
3	Gate

Applications:

- Motor control
- Industrial and domestic lighting
- Heating
- Static switching

Features

- Blocking voltage to 600 V
- On-state RMS current to 20 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_{T\ (RMS)}$	RMS on-state current （full sine wave）	20	A
I_{TSM}	Surge on-state current	220	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{th(j-c)}$	Thermal resistance Junction to Case		-	-	1.1	℃/W
$R_{th(j-a)}$	Thermal resistance Junction to ambient		-	-	60	℃/W

Limiting values in accordance with the Maximum system(IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{DRM}	Repetitive peak off-state Voltages		-	600	V
$I_{T(AV)}$	Average On-state current	Half sine wave; Tc=102℃	-	13	A
$I_{T(RMS)}$	RMS on-state current	180°Cconduction angle	-	20	A
I_{TSM}	Surge On-state current	1/2Cycle.sine wave 60 Hz, Non-Repetitive	-	220	A
I^2t	I^2t for fusing	T=8.3ms	-	242	A^2S
di/dt	Critical rate of rise of on-state current		-	50	A/μs
I_{FGM}	Forward peak gate current		-	5	A
V_{RGM}	Reverse peak gate voltage		-	5	V
P_{GM}	Peak gate power		-	20	W
$P_{G(AV)}$	Average gate power		-	1	W
T_{stg}	Storage temperature		-40	+150	℃
T_j	Operating junction Temperature Range		-40	+125	℃

T_J=25°C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Static characteristics							
I_{GT}	Gate trigger current	V_{AK}=6V(DC); RL=10Ω		-	-	15	mA
I_{DRM}	Peak Re[etotove off-state current	$V_{AK}=V_{DRM}$	Tc=25℃	-	-	10	μA
			Tc=125℃	-	-	200	
I_H	Holding current	I_T=100mA,Gate Open	Tc=25℃	-	-	20	mA
V_{TM}	Peak forward on-state voltage	I_{TM}=40A	Tp=380μs	-	-	1.6	V
V_{GT}	Gate trigger voltage	V_D=6V(DC); RL=10Ω	Tc=25℃	-	-	1.5	V
V_{GD}	Non-Trigger voltage	V_{AK}=6V; RL=100Ω	Tc=125℃	0.2	-	-	V

Dynamic Characteristics

D_V/dt	Critical rate of rise of Off-state voltage	V_D=67% of Rated V_{DRM}, Tj=125℃ Exponential waveform;	200	-	-	V/μs
t_{gt}	Gate controlled turn-on time	I_{TM}=16A;V_D=Rated V_{DRM},IG=2mA	-	-	-	μs
t_g	Crcuit commutated tum-off time		-	-	-	μs

Description

Fig 1. Gate Characteristics

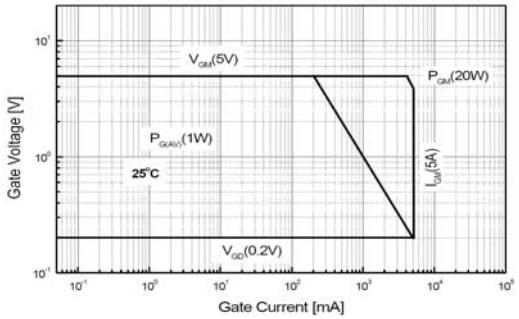


Fig 2. Maximum Case Temperature

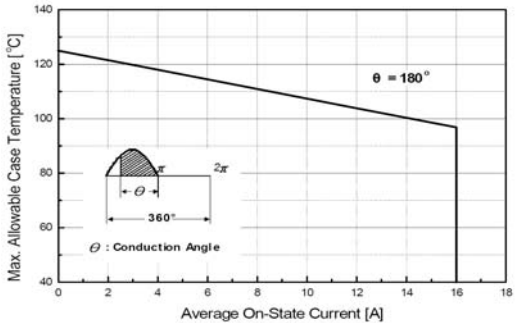


Fig 3. Typical Forward Voltage

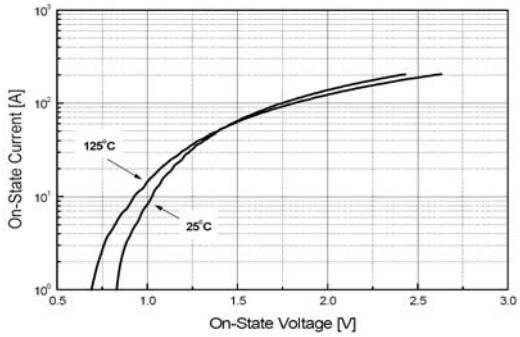


Fig 4. Thermal Response

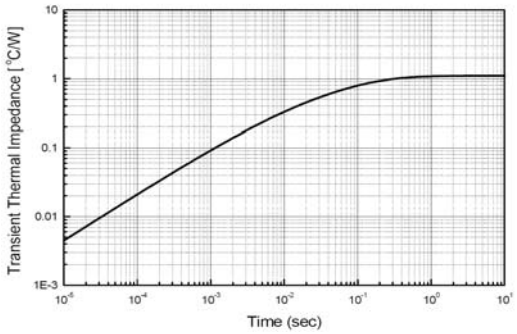


Fig 5. Typical Gate Trigger Voltage vs. Junction Temperature

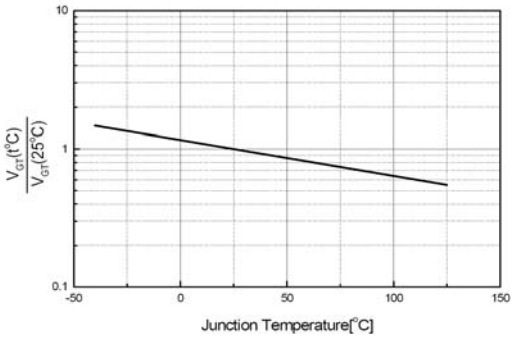
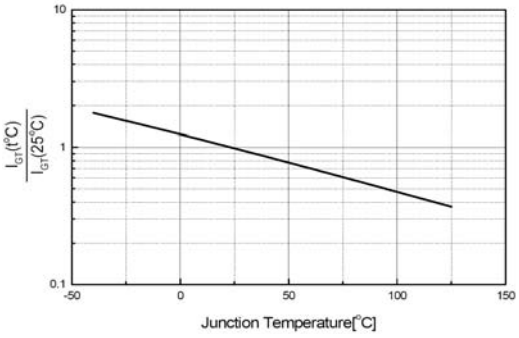


Fig 6. Typical Gate Trigger Current vs. Junction Temperature



Description

Fig 7. Typical Holding Current

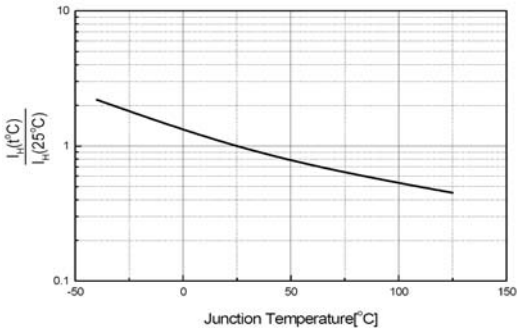
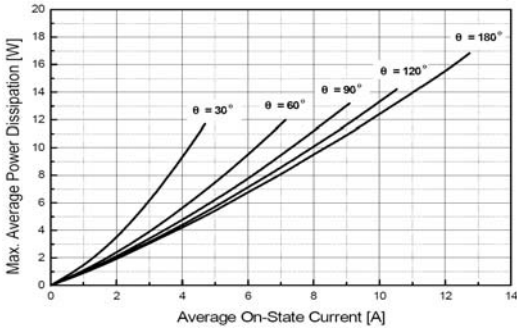
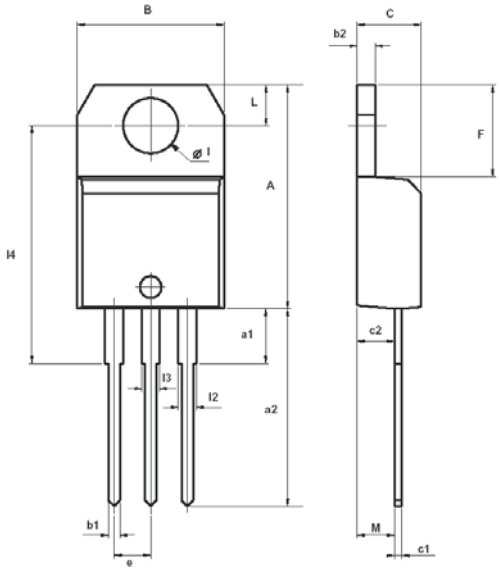


Fig 8. Power Dissipation



MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g
TO-220



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
l4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
l2	1.14		1.70	0.044		0.066
l3	1.14		1.70	0.044		0.066
M		2.60			0.102	