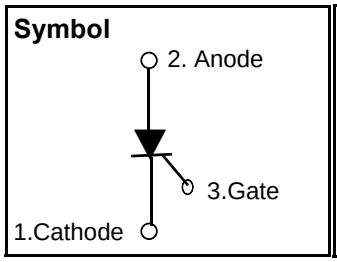
Discrete & Integration SEMICONDUCTOR

DCP20C60

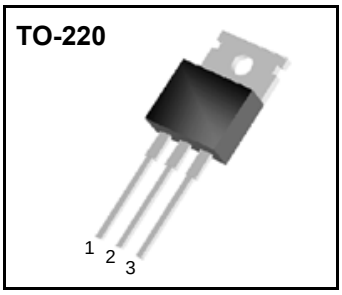
Standard Gate Silicon Controlled - Rectifiers



BV_{DRM} = 600V

$I_{T(RMS)}$ = 20 A

I_{TSM} = 220A



Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 20 A)
- ◆ Low On-State Voltage (1.4V(Typ.)@ I_{TM})
- ◆ Non-isolated Type

General Description

Standard gate triggering thyristor is 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.

Absolute Maximum Ratings (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Condition	Ratings	Units
V_{DRM}	Repetitive Peak Off-State Voltage	sine wave,50 to 60Hz,gate open	600	V
$I_{T(AV)}$	Average On-State Current	half sine wave : T_C =102 °C	13	A
$I_{T(RMS)}$	R.M.S On-State Current	180° Conduction Angle	20	A
I_{TSM}	Surge On-State Current	1/2 Cycle, 60Hz, Sine Wave 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	T_C = 102 °C, pulse width ≤ 1.0μs	50	A/μs
P_{GM}	Forward Peak Gate Power Dissipation	T_C = 102 °C,pulse width ≤ 1.0μs	20	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	T_C = 102 °C, pulse width ≤ 1.0μs	1	W
I_{FGM}	Forward Peak Gate Current	T_C =102 °C, pulse width ≤ 1.0μs	5	A
V_{RGM}	Reverse Peak Gate Voltage		5.0	V
T_J	Operating Junction Temperature		- 40 ~ 125	°C
T_{STG}	Storage Temperature		- 40 ~ 150	°C

Electrical Characteristics (T_C = 25 °C unless otherwise noted)

Symbol	Items	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
I_{DRM}	Repetitive Peak Off-State Current	$V_{AK} = V_{DRM}$ T_C = 25 °C T_C = 125 °C	— —	— —	10 200	μA
V_{TM}	Peak On-State Voltage (1)	I_{TM} = 40 A tp=380μs	—	—	1.6	V
I_{GT}	Gate Trigger Current (2)	V_{AK} = 6 V(DC), R_L=10 Ω T_C = 25 °C	—	—	15	mA
V_{GT}	Gate Trigger Voltage (2)	V_D = 6 V(DC), R_L=10 Ω T_C = 25 °C	—	—	1.5	V
V_{GD}	Non-Trigger Gate Voltage (1)	V_{AK} = 12 V, R_L=100 Ω T_C = 125 °C	0.2	—	—	V
dv/dt	Critical Rate of Rise Off-State Voltage	Linear slope up to V_D=V_{DRM} 67%, Gate open T_J = 125°C	200	—	—	V/μs
I_H	Holding Current	I_T = 100mA, Gate Open T_C = 25 °C	—	—	20	mA
$R_{th(j-c)}$	Thermal Impedance	Junction to case	—	—	1.1	°C/W
$R_{th(j-a)}$	Thermal Impedance	Junction to Ambient	—	—	60	°C/W

※ Notes :

1. Pulse Width ≤ 1.0 ms , Duty cycle ≤ 1%
2. R_{GK} Current not Included in measurement.

Fig 1. Gate Characteristics

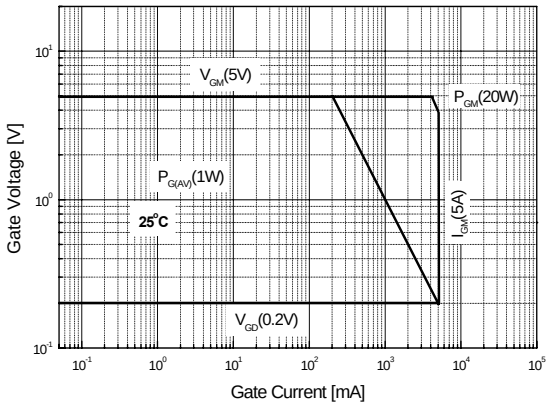


Fig 2. Maximum Case Temperature

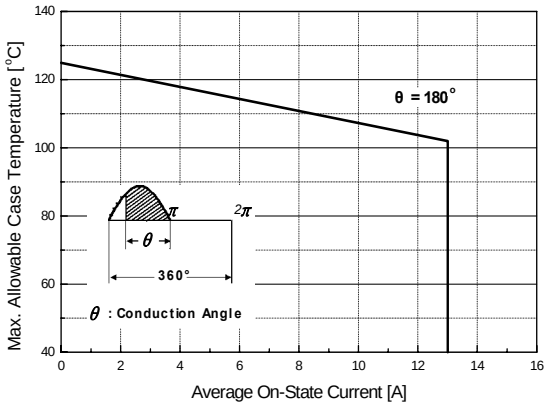


Fig 3. Typical Forward Voltage

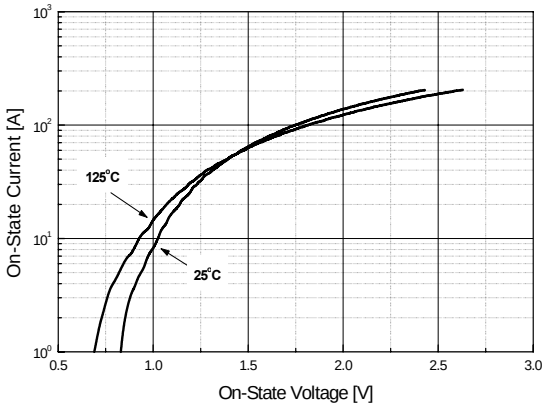


Fig 4. Thermal Response

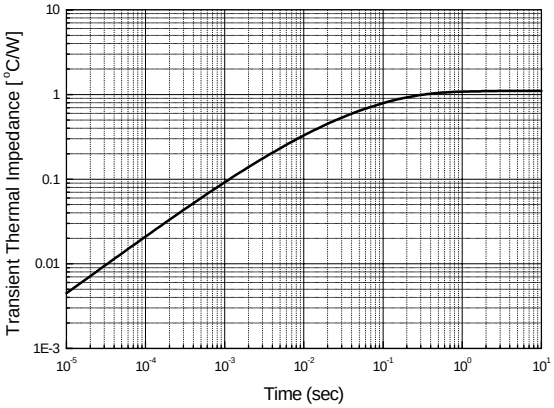


Fig 5. Typical Gate Trigger Voltage vs. Junction Temperature

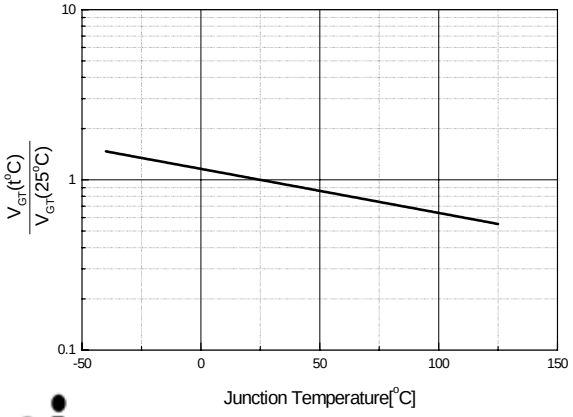


Fig 6. Typical Gate Trigger Current vs. Junction Temperature

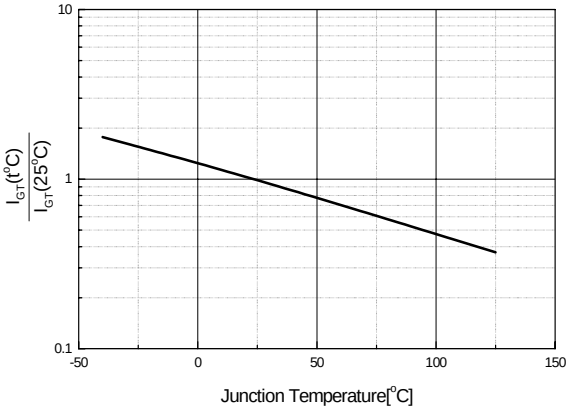


Fig 7. Typical Holding Current

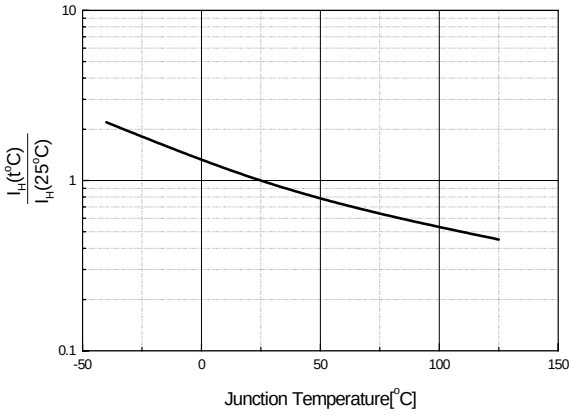
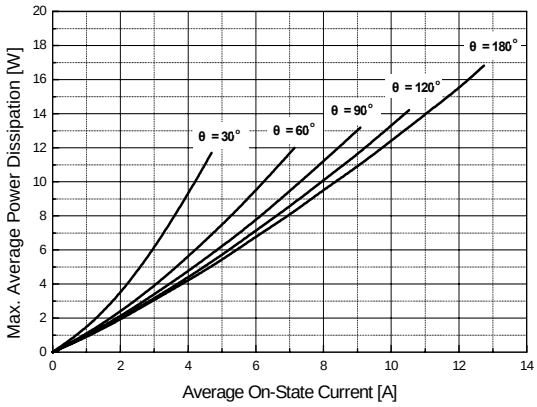


Fig 8. Power Dissipation



TO-220 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.7		10.1	0.382		0.398
B	6.3		6.7	0.248		0.264
C	9.0		9.47	0.354		0.373
D	12.8		13.3	0.504		0.524
E	1.2		1.4	0.047		0.055
F		1.7			0.067	
G		2.5			0.098	
H	3.0		3.4	0.118		0.134
I	1.25		1.4	0.049		0.055
J	2.4		2.7	0.094		0.106
K	5.0		5.15	0.197		0.203
L	2.2		2.6	0.087		0.102
M	1.25		1.55	0.049		0.061
N	0.45		0.6	0.018		0.024
O	0.6		1.0	0.024		0.039
ϕ		3.6			0.142