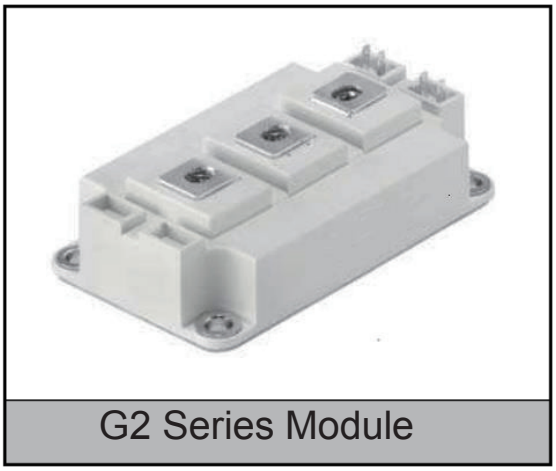
G400HF120TK-G2 400A 1200V

FEATURES

High short circuit capability,self limiting short circuit current

- ☐ IGBT CHIP(Trench+ Field Stop technology)
- ☐ $V_{CE(sat)}$ with positive temperature coefficient
- ☐ Fast switching and short tail current, Low switching losses
- ☐ Free wheeling diodes with fast and soft reverse recovery



G2 Series Module

APPLICATIONS

- ☐ High frequency switching application
- ☐ Medical applications
- ☐ Motion/servo control
- ☐ UPS systems

ABSOLUTE MAXIMUM RATINGS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
IGBT				
V_{CES}	Collector - Emitter Voltage	T_{vj}=25°C	1250	V
V_{GES}	Gate - Emitter Voltage		±30	V
I_C	DC Collector Current	T_C=25°C	600	A
		T_C=80°C	400	A
I_{CM}	Repetitive Peak Collector Current	t_p=1ms	800	A
P_{tot}	Power Dissipation Per IGBT		2358	W
Diode				
V_{RRM}	Repetitive Reverse Voltage	T_{vj}=25°C	1250	V
$I_{F(AV)}$	Average Forward Current	Tc=25°C	600	A
		Tc=80°C	400	A
I_{FRM}	Repetitive Peak Forward Current	t_p=1ms	800	A

ELECTRICAL AND THERMAL CHARACTERISTICS TC=25°C unless otherwise specified

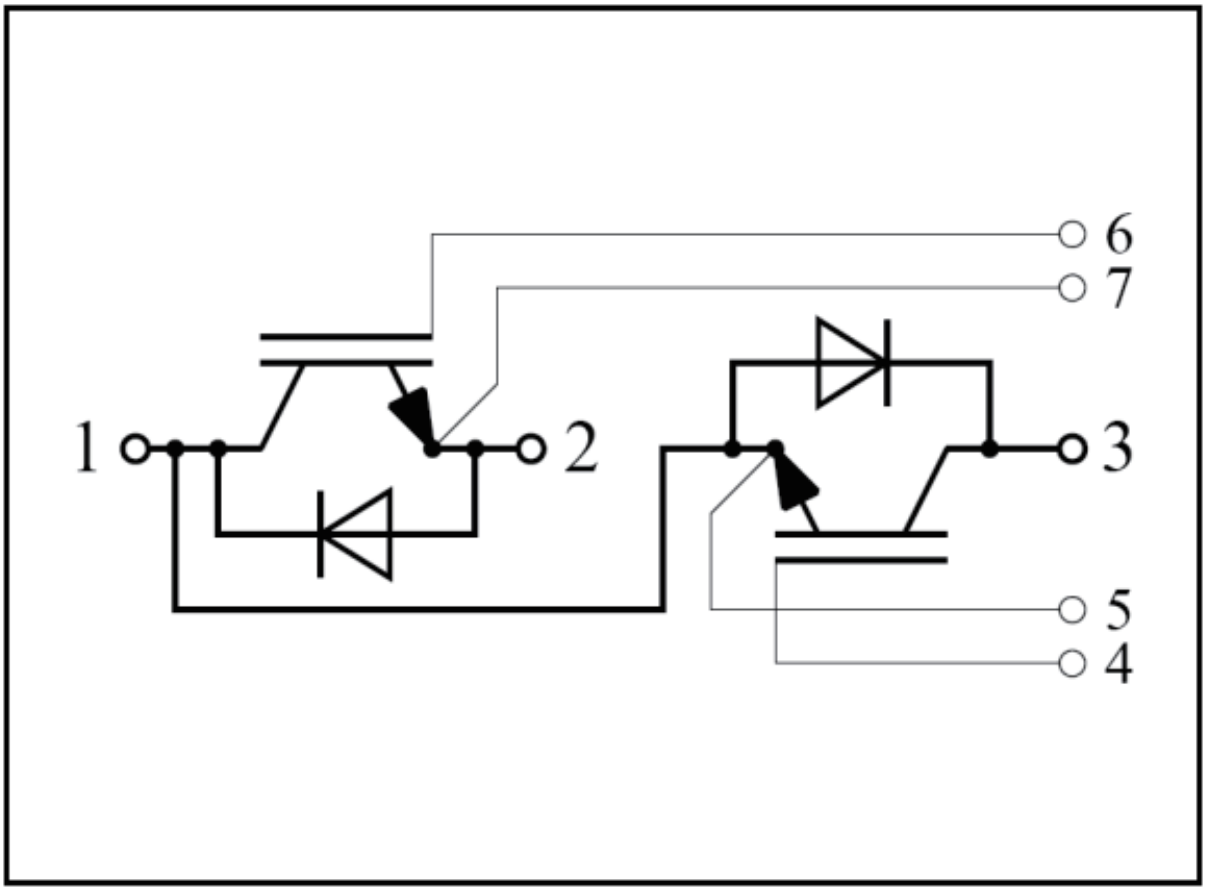
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
IGBT							
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	V_{CE}=V_{GE}, I_C=2.0mA		5.0		6.8	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	I_C=400A, V_{GE}=15V, T_{vj}=25°C			1.68	1.75	V
		I_C=400A, V_{GE}=15V, T_{vj}=125°C			1.75		V
I_{CES}	Collector Leakage Current	V_{CE}=1250V, V_{GE}=0V, T_{vj}=25°C				1	mA
		V_{CE}=1250V, V_{GE}=0V, T_{vj}=125°C				5	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V,V_{GE}±15V, T_{vj}=125°C		-500		500	nA
R_{gint}	Integrated Gate Resistor	Per switch			3.3		Ω
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz			26		nF
C_{res}	Reverse Transfer Capacitance				1.65		nF
$t_{d(on)}$	Turn - on Delay Time	Vcc=600V,Ic=400A,	T_{vj} =25°C		390		ns
		R_G =2.2Ω,	T_{vj} =125°C		395		ns
t_r	Rise Time	V_{GE}=±15V,	T_{vj} =25°C		130		ns
		Inductive Load	T_{vj} =125°C		135		ns
$t_{d(off)}$	Turn - off Delay Time	Vcc=600V,Ic=400A,	T_{vj} =25°C		570		ns
		R_G =2.2Ω,	T_{vj} =125°C		600		ns
t_f	Fall Time	V_{GE}=±15V,	T_{vj} =25°C		140		ns
		Inductive Load	T_{vj} =125°C		155		ns
E_{on}	Turn - on Energy	Vcc=600V,Ic=400A,	T_{vj} =25°C		8.4		mJ
		R_G =2.2Ω,	T_{vj} =125°C		17		mJ
E_{off}	Turn - off Energy	V_{GE}=±15V,	T_{vj} =25°C		37.3		mJ
		Inductive Load	T_{vj} =125°C		47		mJ
I_{sc}	Short Circuit Current	t_{psc}≤10μS , V_{GE}=15V T_{vj}=125°C,Vcc=900V			2400		A
R_{thJC}	Junction-to-Case Thermal Resistance **(Per IGBT)**					0.05	K /W
Diode							
V_F	Forward Voltage	I_F=400A , V_{GE}=0V, T_{vj} =25°C			1.7	1.75	V
		I_F=400A , V_{GE}=0V, T_{vj} =125°C			1.75		V
Q_{rr}	Recovery Charge	I_F=400A , V_R=600V			56		uC
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-2840A/μs			312		A
E_{rec}	Reverse Recovery Energy	T_{vj} =125°C			26.3		mJ
R_{thJCD}	Junction-to-Case Thermal Resistance **(Per Diode)**					0.1	K /W

MODULE CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$T_{vj\ max}$	Max. Junction Temperature				175	°C
$T_{vj\ op}$	Operating Temperature		-40		150	°C
T_{stg}	Storage Temperature		-40		125	°C
V_{isol}	Insulation Test Voltage	AC, t=1min		3000		V
Torque	To-Sink	Recommended（M6）	3		5	N·m
Torque	To-Terminal	Recommended（M6）	2.5		5	N·m
Weight				302		g

CIRCUIT DIAGRAM



PACKAGE OUTLINE