RG450HF170B2

450A 1700V IGBT Module

FEATURES

- □ High short circuit capability,self limiting short circuit current
- □ 1700V IGBT CHIP(Trench+ Field Stop technology)
- □ $V_{CE(sat)}$ with positive temperature coefficient
- □ Fast switching, Low switching losses
- □ Free wheeling diodes with fast and soft reverse recovery
- □ Temperature sense included

G2 Series Module

APPLICATIONS

- ☐ High Power Converters
- ☐ Motor Driverters
- ☐ Servo Drivers
- ☐ Wind Turbines
- ☐ 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	1700	V
V_{GES}	Gate - Emitter Voltage		±20	V
I_C	DC Collector Current	T_C=25°C	650	A
		T_C=100°C	450	A
I_{CM}	Repetitive Peak Collector Current	t_p=1ms	900	A
P_{tot}	Power Dissipation Per IGBT	T_C=25°C Tjmax=175℃	2500	W
Diode				
V_{RRM}	Repetitive Reverse Voltage	T_{vj}=25°C	1700	V
$I_{F(AV)}$	Average Forward Current	Tc=25°C	650	A
		Tc=100°C	450	A
I_{FRM}	Repetitive Peak Forward Current	t_p=1ms	900	A
I^2t		T_{vj} =150°C, t=10ms, V_R=0V	25	KA^2s

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=2mA		5.0	5.6	6.2	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	I_C=450A, V_{GE}=15V, T_{vj}=25°C		1.75	1.85	1.95	V
		I_C=450A, V_{GE}=15V, T_{vj}=*150°C*			1.95		V
I_{CES}	Collector Leakage Current	V_{CE}=1700V, V_{GE}=0V, T_{vj}=25°C				4	μA
		V_{CE}=1700V, V_{GE}=0V, T_{vj}=150°C				1	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V,V_{GE}±15V, T_{vj}=150°C		-300		300	nA
Q_{ge}	Gate Charge	V_{CE}=900V, I_C=450A , V_{GE}=±15V			3.8		uC
Rgint	Internal gate resistor	V_{CE}=25V, V_{GE}=0V, f =1MHz			1.8		Ω
C_{ies}	Input Capacitance				30		nF
C_{res}	Reverse Transfer Capacitance				1.65		nF
$t_{d(on)}$	Turn - on Delay Time	V_{cc}=900V,I_C=450A, R_G =3.3Ω, V_{GE}=±15V, Inductive Load	T_{vj} =25°C		230		ns
			T_{vj} =150°C		260		ns
t_r	Rise Time		T_{vj} =25°C		210		ns
			T_{vj} =150°C		250		ns
$t_{d(off)}$	Turn - off Delay Time	V_{cc}=900V,I_C=450A, R_G =3.3Ω, V_{GE}=±15V, Inductive Load	T_{vj} =25°C		460		ns
			T_{vj} =150°C		670		ns
t_f	Fall Time		T_{vj} =25°C		220		ns
			T_{vj} =150°C		260		ns
E_{on}	Turn - on Energy	V_{cc}=900V,I_C=450A, R_G =3.3Ω, V_{GE}=±15V, Inductive Load	T_{vj} =25°C		258		mJ
			T_{vj} =150°C		275		mJ
E_{off}	Turn - off Energy		T_{vj} =25°C		121		mJ
			T_{vj} =150°C		170		mJ
I_{SC}	Short Circuit Current	t_{psc}≤10μS , V_{GE}=15V T_{vj}=150°C,V_{cc}=1000V			1800		A
R_{thJC}	Junction-to-Case Thermal Resistance **(Per IGBT)**					0.06	K /W
Diode							
V_F	Forward Voltage	I_F=450A , V_{GE}=0V, T_{vj} =25°C			1.95	2.15	V
		I_F=450A , V_{GE}=0V, T_{vj} =150°C			1.9		V
t_{rr}	Reversed time	I_F=450A , V_R=900V di_F/dt=-4500A/μs T_{vj} =150°C			550		ns
I_{RRM}	Max. Reverse Recovery Current				280		A
E_{rec}	Reverse Recovery Energy				125		mJ
R_{thJCD}	Junction-to-Case Thermal Resistance **(Per Diode)**					0.095	K /W

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MODULE CHARACTERISTICS

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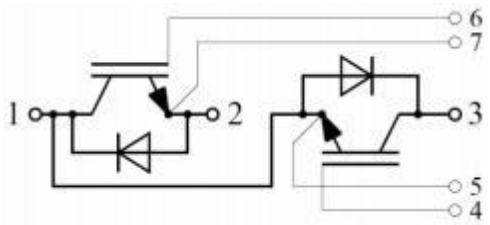
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$T_{vj\ max}$	Max. Junction Temperature				175	°C
T_{vjop}	Operating Temperature		-40		125	°C
T_{stg}	Storage Temperature		-40		150	°C
V_{isol}	Insulation Test Voltage	AC, t=1min	3000			V
Torque	To-Sink	Recommended（M6）	3		6	N·m
Torque	To-Terminal	Recommended（M6）	2.5		5	N·m
Weight				323		g

CIRCUIT DIAGRAM



PACKAGE OUTLINE