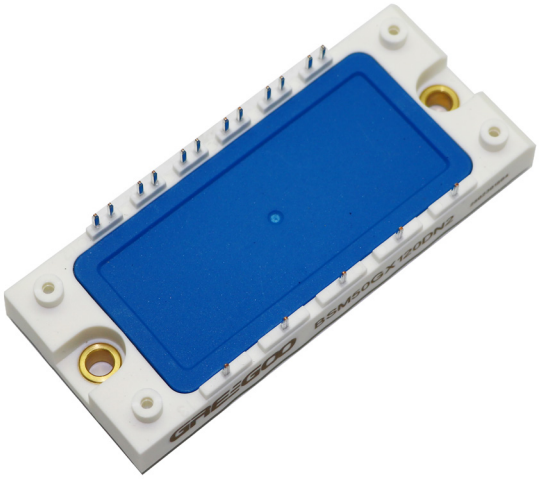
BSM50GX120DN2

Features

- 1200V50A,VCE(sat)(typ.)=1.9V
- Low inductive design
- Lower losses and higher energy
- Field Stop IGBT Technology
- Excellent short circuit ruggedness



General Applications

- Auxiliary Inverter
- Inductive Heating and Welding
- Solar Applications
- UPS Systems

Absolute Maximum Ratings of IGBT

V_{CES}	Collector to Emitter Voltage		1200	V
V_{GES}	Continuous Gate to Emitter Voltage		± 30	V
I_C	Continuous Collector Current	T_{vimax} = 150°C	50	A
I_{cpk}	Peak Collector Current	t_P = 1ms	100	A
t_{sc}	Short Circuit Withstand Time		> 10	μs
T_J	Maximum IGBT Junction Temperature		150	°C
T_{JOP}	Maximum Operating Junction Temperature Range		-40 to +150	°C
T_{stg}	Storage Temperature Range		-40 to +125	°C

Absolute Maximum Ratings of Freewheeling Diode

V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj} = 25°C	1200	V
I_F	Diode Continuous Forward Current	T_{vimax} = 150°C	50	A
I_{FM}	Diode Maximum Forward Current	t_P = 1ms	100	A
I^2t	I^2t Value	Vr=0V,tp=10ms,Tvj=125°C	600	A^2S

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Electrical Characteristics of IGBT at TJ = 25°C (Unless Otherwise Specified)

Parameter		Test Conditions		Min	Typ	Max	Unit
BV_{CES}	Collector to Emitter Breakdown Voltage	V_{GE}=0V, I_C=1mA,T_J=25°C		1200			V
I_{CES}	Collector-emitter cut-off current t	V_{GE}=0V,V_{CE}=1200V,T_J=25°C				1	mA
I_{GES}	Gate to Emitter Leakage Current	V_{GE}=±30V,V_{CE}=0V,T_J=25°C				100	nA
$V_{GE(th)}$	Gate Threshold Voltage	I_C=1mA,V_{CE}=V_{GE},T_J=25°C		5.0		6.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C=50A, V_{GE}=15V	T_J=25°C T_J=125°C		1.90 2.10	2.20	V

Switching Characteristics of IGBT

Parameter		Test Conditions		Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 600V I_C = 50A R_G = 3Ω V_{GE} = ±15V Inductive Load	T_J=25°C T_J=125°C		66 85.5		ns
t_r	Turn-on Rise Time		T_J=25°C T_J=125°C		29.5 60		ns
$t_{d(off)}$	Turn-off Delay Time		T_J=25°C T_J=125°C		270 325		ns
t_f	Turn-off Fall Time		T_J=25°C T_J=125°C		176 290.5		ns
E_{on}	Turn-on Switching Loss		T_J=25°C T_J=125°C		4.7 7.1		mJ
E_{off}	Turn-off Switching Loss		T_J=25°C T_J=125°C		3.5 5.9		mJ
Q_g	Total Gate Charge	V_{GE}= -15V → +15V	T_J=25°C		0.39		uC
R_{gint}	Integrated gate resistor		T_J=25°C		3.6		Ω
C_{ies}	Input Capacitance	V_{CE}=25V V_{GE}=0V f=1MHz	T_J=25°C		2.99		nF
C_{res}	Reverse Transfer Capacitance		T_J=25°C		0.16		
I_{SC}	SC data	V_{GE}≤15V,V_{CC}=600V V_{CEmax}=V_{CES}-L_{sCE}·di/dt	T_J=125°C		215		A
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (IGBT)					0.354	°C/W

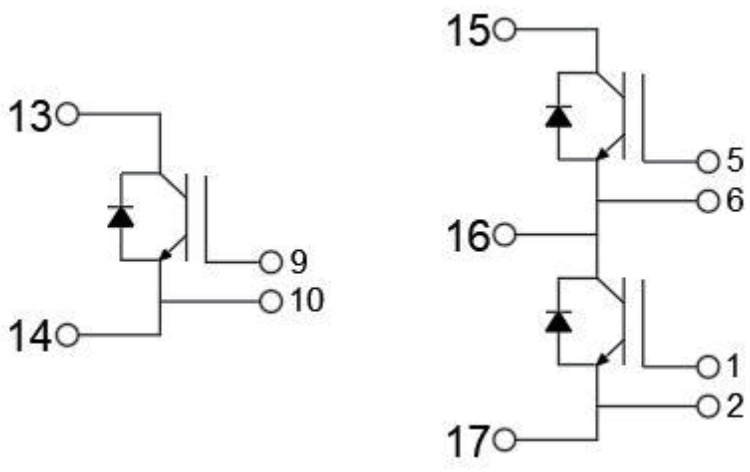
Electrical and Switching Characteristics of Freewheeling Diode

Parameter		Test Conditions		Min	Typ	Max	Unit
V_F	Diode Forward Voltage	I_F=50A , V_{GE}=0V	T_J=25°C T_J=125°C		1.50 1.30	2.0	V
I_{rr}	Diode Peak Reverse Recovery Current	I_F=50A, di/dt= 2680A/μs, V_R=600V, V_{GE} = -15V	T_J=25°C T_J=125°C		35 45		A
Q_{rr}	Diode Reverse Recovery Charge		T_J=25°C T_J=125°C		3.8 9.5		uC
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Diode)					0.75	°C/W

Module Characteristics

Parameter		Min.	Typ.	Max.	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted),f = 50Hz, 1minute	2500			V
$R_{\theta CS}$	Case-To-Sink(Conductive Grease Applied)		0.1		°C/W
M	Mounting Screw: M5	3.0		6.0	N·m

Circuit Diagram



Package Outlines

Dimensions in mm

Weight: 180 g

