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LEGM200BH120L1ST

IGBT Power Module

Features

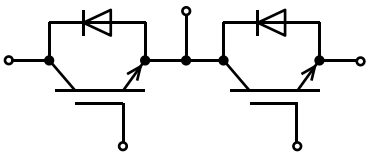
- V_{CE}=1200V I_C=200A
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature 175℃
- Isolation Type Package

Applications

- The inverter
- Motor control and drives

Package Type & Internal Circuit

L1



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Maximum Power Dissipation	V_{EC}=0 V,I_C=1 mA,T_{vj}=25 ℃	1200	V
I_C	Continuous Collector Current	T_C=100 ℃	200	A
I_{CRM}	Peak Collector Current	I_{CRM}=2I_C	400	A
V_{GES}	Gate-Emitter Voltage	T_{vj}=25 ℃	±30	V
P_{tot}	Total Power Dissipation	T_C=25 ℃,T_{vjmax}=175 ℃	1071	W

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=200 A, V_{GE}=15 V, T_{vj}=25 ℃		1.63		V
		I_C=200 A, V_{GE}=15 V, T_{vj}=150 ℃		2.03		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=3.5 mA,V_{CE}=V_{GE},T_{vj}= 25 ℃	5.0	5.9	7.0	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1200 V, V_{GE}=0 V, T_{vj}=25 ℃			1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=15 V, T_{vj}=25 ℃			450	nA
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=200 A,V_{CE}=600 V V_{GE}=±15 V R_G=5 Ω T_{vj}=25 ℃		70.8		ns
t_r	Rise Time, Inductive Load			50.4		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			303		ns
t_f	Fall Time, Inductive Load			74		ns
E_{on}	Turn-on Energy Loss per Pulse			10.6		mJ
E_{off}	Energy Loss per Pulse			8.76		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=200 A,V_{CE}=600 V V_{GE}=±15 V R_G=5 Ω T_{vj}=150 ℃		67		ns
t_r	Rise Time, Inductive Load			61		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			336		ns
t_f	Fall Time, Inductive Load			113		ns
E_{on}	Turn-on Energy Loss per Pulse			28.0		mJ
E_{off}	Energy Loss per Pulse			21.6		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.14	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		150	℃

Maximum Rated Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj}= 25 ℃		1200		V
I_F	Continuous DC Forward Current	T_C=100 ℃		75		A
I_{FRM}	Repetitive Peak Forward Current	t_P=1 ms		150		A

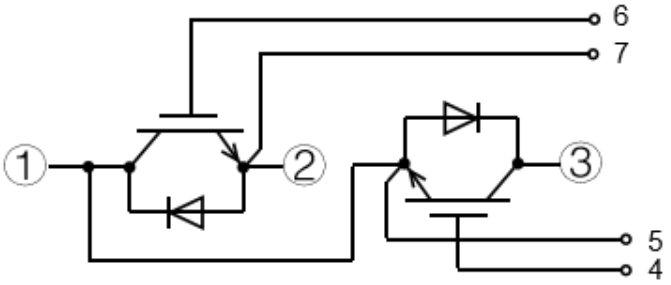
Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=75 A, V_{CE}=0 V, T_{vj}=25 ℃		2.10		V
		I_F=75 A, V_{CE}=0 V, T_{vj}=150 ℃		1.71		V
I_{rr}	Peak reverse recovery current	I_F=75 A,V_R=600 V -di/dt=390 A/us T_{vj}=25 ℃		22		A
Q_r	Recovered Charge			5.0		μC
E_{rec}	Reverse Recovery Energy			1.85		mJ
I_{rr}	Peak reverse recovery current	I_F=75 A,V_R=600 V -di/dt=1270 A/us T_{vj}=150 ℃		37		A
Q_r	Recovered Charge			12.5		μC
E_{rec}	Reverse Recovery Energy			5.1		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.91	K/W
$T_{vj\ op}$	Operating Junction Temperature		-40		150	℃

Module Characteristics

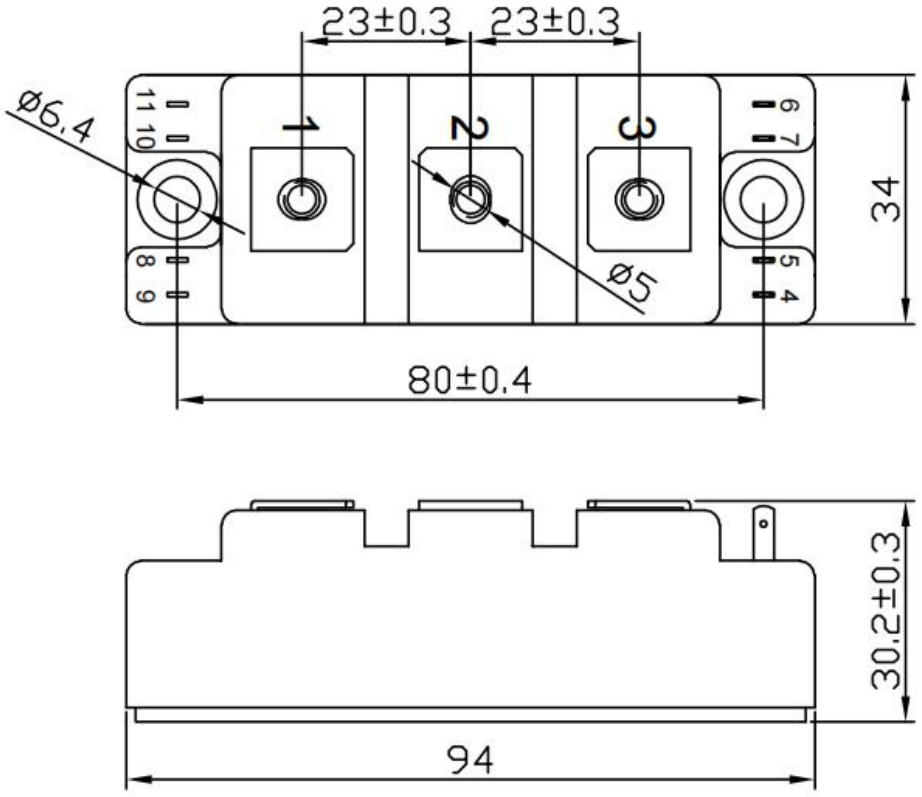
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	t=1min,f=50Hz	2500			V
T_{stg}	Storage Temperature		-40		125	℃
M_t	Module Electrodes Torque	Recommended(M5)	2.5		5.0	N·m
M_s	Module-to-Sink Torque	Recommended(M6)	3.0		6.0	N·m
G	Weight of Module			180		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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