

LEGM300BH120L2SF

IGBT Power Module

Features:

- $V_{CE}=1200V$ $I_C=300A$
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature $150^{\circ}C$
- Isolation Type Package

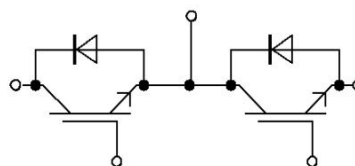
Applications:

- Welder
- Inductive Heating

Package Type & Internal Circuit



L2



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	$V_{EC}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	1200	V
I_C	Continuous Collector Current	$T_C=100^{\circ}C$	300	A
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	600	A
V_{GES}	Gate-Emitter Voltage	$T_{vj}=25^{\circ}C$	± 20	V
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vjmax}=150^{\circ}C$	830	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=300\text{ A}, V_{GE}=15\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$	2.2	2.5	2.8	V
		$I_C=300\text{ A}, V_{GE}=15\text{ V}, T_{vj}=150\text{ }^{\circ}\text{C}$		3.2		V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=6.0\text{ mA}, V_{CE}=V_{GE}, T_{vj}=25\text{ }^{\circ}\text{C}$	5.0	5.5	6.0	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=1200\text{ V}, V_{GE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$			20	uA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0\text{ V}, V_{GE}=15\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$			100	nA
R_{gint}	Internal gate resistor	$T_{vj}=25\text{ }^{\circ}\text{C}$		0.5		Ω
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_G=3\text{ }\Omega$ $T_{vj}=25\text{ }^{\circ}\text{C}$		214		ns
t_r	Rise Time, Inductive Load			166		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			456		ns
t_f	Fall Time, Inductive Load			122		ns
E_{on}	Turn-on Energy Loss per Pulse			22.2		mJ
E_{off}	Energy Loss per Pulse			18.4		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_G=3\text{ }\Omega$ $T_{vj}=150\text{ }^{\circ}\text{C}$		222		ns
t_r	Rise Time, Inductive Load			178		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			502		ns
t_f	Fall Time, Inductive Load			202		ns
E_{on}	Turn-on Energy Loss per Pulse			32		mJ
E_{off}	Energy Loss per Pulse			22.6		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.091	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		125	$^{\circ}\text{C}$
I_{SC}	SC data	$V_{GE} \leq 15\text{ V}, V_{CC} = 900\text{ V}$ $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$ $t_p \leq 10\text{ }\mu\text{s}, T_{vj} = 150\text{ }^{\circ}\text{C}$		1300		A

Maximum Rated Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj} = 25\text{ }^{\circ}\text{C}$		1200		V
I_F	Continuous DC Forward Current	$T_C = 100\text{ }^{\circ}\text{C}$		300		A
I_{FRM}	Repetitive Peak Forward Current	$t_p = 1\text{ ms}$		600		A

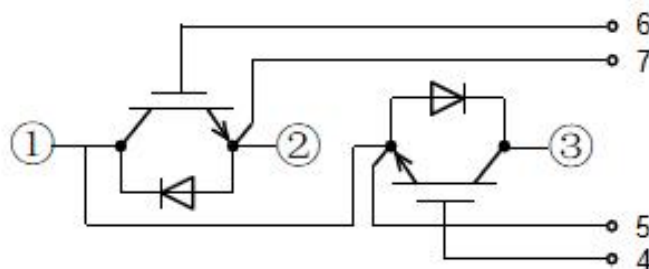
Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 75\text{ A}, V_{CE} = 0\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$		1.9	2.3	V
		$I_F = 75\text{ A}, V_{CE} = 0\text{ V}, T_{vj} = 150\text{ }^{\circ}\text{C}$		2.0		V
t_{rr}	Reverse Recovery time	$I_F = 75\text{ A}, V_R = 600\text{ V}$ $-di/dt = 1200\text{ A/us}$ $T_{vj} = 25\text{ }^{\circ}\text{C}$		320		ns
Q_r	Recovered Charge			29		uC
E_{rec}	Reverse Recovery Energy			14.8		mJ
t_{rr}	Reverse Recovery time	$I_F = 75\text{ A}, V_R = 600\text{ V}$ $-di/dt = 1200\text{ A/us}$ $T_{vj} = 150\text{ }^{\circ}\text{C}$		380		ns
Q_r	Recovered Charge			44		uC
E_{rec}	Reverse Recovery Energy			22		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.65	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		150	$^{\circ}\text{C}$

Module Characteristics

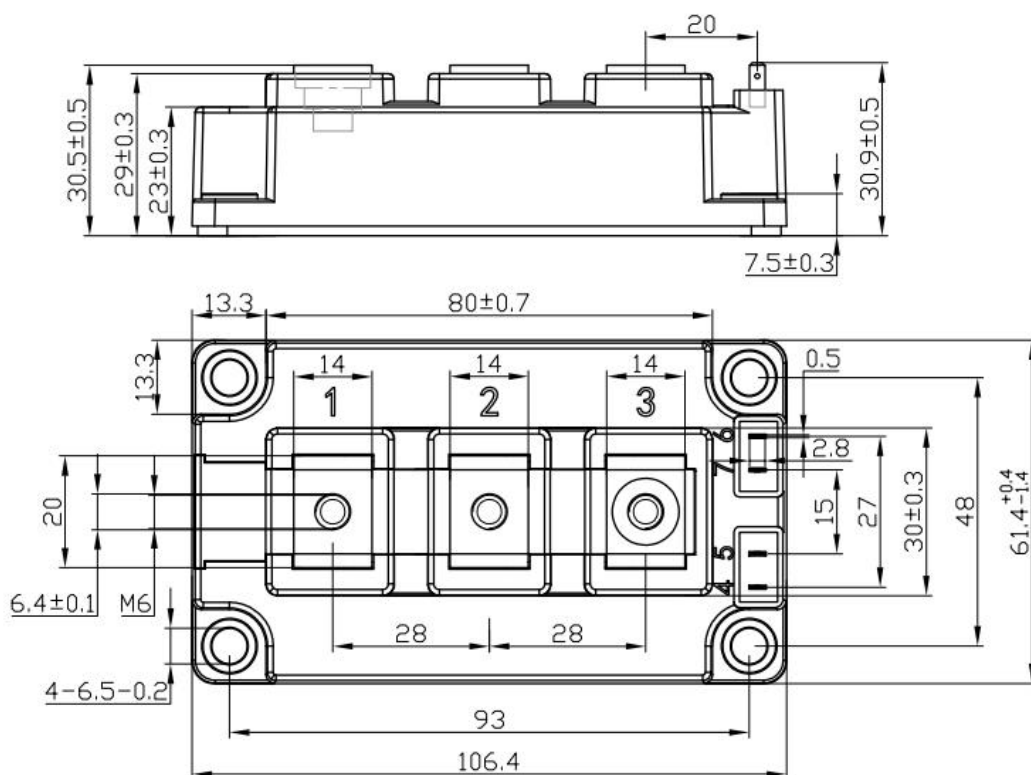
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	$t = 1\text{ min}, f = 50\text{ Hz}$	2500			V
T_{stg}	Storage Temperature		-40		125	$^{\circ}\text{C}$
M_t	Module Electrodes Torque	Recommended(M5)	2.5		5.0	N·m
M_s	Module-to-Sink Torque	Recommended(M6)	3.0		6.0	N·m
G	Weight of Module			160		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



DISCLAIMER

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.