LEGM900BH170L6H7

IGBT Power Module

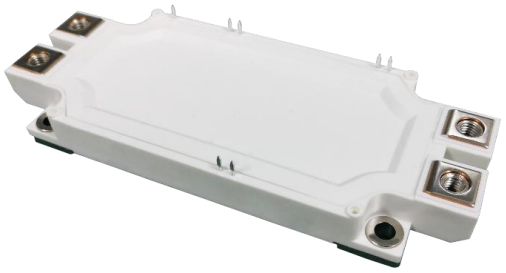
Features:

- V_{CE}=1700V I_C=900A
- V_{CEsat} with positive temperature coefficient
- Baseplate isolation with Al_2O_3 ceramic
- Unbeatable robustness
- Overload operation up to 175℃

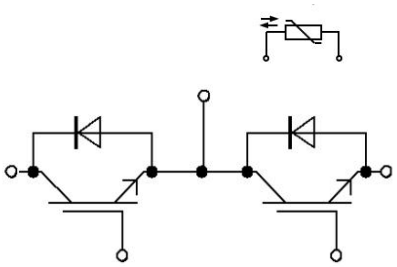
Applications

- Motor control and drives
- High power Converters
- UPS systems
- Wind turbines

Package Type & Internal Circuit



L6



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	T_{vj}=25 ℃	1700	V
I_C	Continuous Collector Current	T_C=95 ℃	900	A
I_{CRM}	Peak Collector Current	t_P=1ms	1800	A
V_{GES}	Gate-Emitter Voltage		±20	V
P_{tot}	Total power dissipation	T_{vj}=25 ℃,T_{vjmax}=175 ℃	3660	W

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=900A, V_{GE}=15 V, T_{vj}=25 ℃		1.75	2.1	V
		I_C=900A, V_{GE}=15 V, T_{vj}=175 ℃		2.15		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C= 30 mA,V_{CE}=V_{GE},T_{vj}= 25 ℃	5.0	6.0	7.5	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1700 V, V_{GE}=0 V, T_{vj}=25 ℃			1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=20 V, T_{vj}=25 ℃			0.5	nA
Q_G	Gate charge	I_C=900A,V_{CE}=900 V,V_{GE}=±15 V		7.8		uC
C_{ies}	Input capacitance	f = 100 KHz, T_{vj}= 25°C, V_{CE} = 25 V, V_{GE}= 0 V		113		nF
C_{oes}	Output capacitance			2.89		nF
C_{res}	Reverse transfer capacitance			0.72		nF
R_{Gint}	Internal gate resistor	f = 100 KHz, V_{GE}= 0 V,CE short		0.33		Ω
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=900A,V_{CE}=900 V V_{GE}=±15 V R_{Gon}=0.5 Ω R_{Goff}=1.5 Ω T_{vj}=25 ℃		170		ns
t_r	Rise Time, Inductive Load			75		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			512		ns
t_f	Fall Time, Inductive Load			370		ns
E_{on}	Turn-on Energy Loss per Pulse			147		mJ
E_{off}	Energy Loss per Pulse			187		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=900A,V_{CE}=900 V V_{GE}=±15 V R_{Gon}=0.5 Ω R_{Goff}=1.5 Ω T_{vj}=175 ℃		215		ns
t_r	Rise Time, Inductive Load			91		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			654		ns
t_f	Fall Time, Inductive Load			601		ns
E_{on}	Turn-on Energy Loss per Pulse			290		mJ
E_{off}	Energy Loss per Pulse			286		mJ
$R_{th(j-c)}$	IGBT thermal resistance junction to case IGBT	per IGBT			0.041	K/W
Tvj op	Temperature under switching conditions		-40		175	℃
I_{sc}	SC	V_{GE}=15V, V_{CC}=1100V, tp ≤ 6 μs, T_{vj}=175 ℃,$V_{CEM\ Chip}$ ≤ 1700V		3500		A

Maximum Rated Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj}= 25 ℃		1700		V
I_F	Continuous DC Forward Current			900		A
I_{FRM}	Repetitive Peak Forward Current	t_P=1 ms		1800		A
I^2t	I^2t Value	V_R=0 V, t_P=10 ms, T_{vj}=150 ℃		40000		A^2s

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=900 A, V_{CE}=0 V, T_{vj}=25 ℃		2.0		V
		I_F=900 A, V_{CE}=0 V, T_{vj}=175 ℃		2.2		V
I_{rr}	Peak reverse recovery current	I_F=900 A,V_R=900 V, di/dt=9900 A/us T_{vj}=25 ℃		936		A
Q_r	Recovered Charge			143		uC
E_{rec}	Reverse Recovery Energy			89		mJ
I_{rr}	Peak reverse recovery current	I_F=450 A,V_R=900 V, di/dt=9900 A/us T_{vj}=175 ℃		1080		A
Q_r	Recovered Charge			307		uC
E_{rec}	Reverse Recovery Energy			176		mJ
$R_{th(j-c)}$	Thermal resistance, junction to case	Per Diode			0.069	K/W
$T_{vj\ op}$	Operating Junction Temperature		-40		175	℃

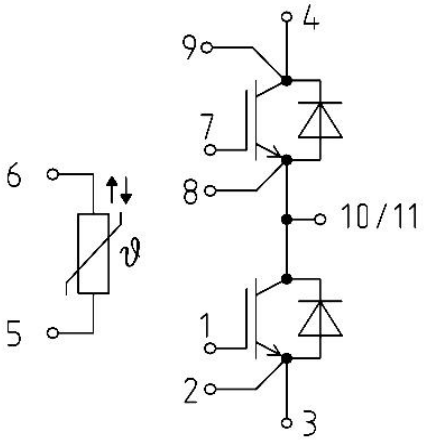
NTC-Thermistor (Characteristic Values)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R_{25}	Rated resistance	T_c=25 ℃		5		KΩ
ΔR/R	Deviation of R100	T_c=100 ℃	-5		5	%
P_{25}	Power dissipation	T_c=25 ℃		20		mW
$B_{25/50}$	B-value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298,15K))]$		3380		K
$B_{25/100}$	B-value	$R_2=R_{25}\exp[B_{25/100}(1/T_2-1/(298,15K))]$		3450		K

Module Characteristics

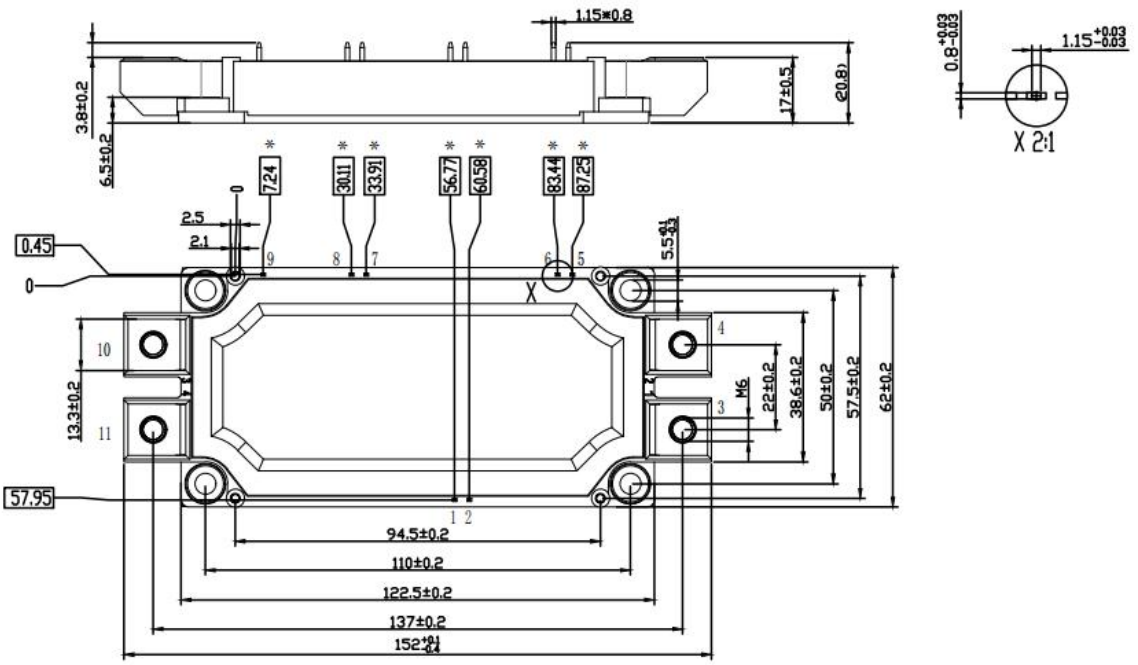
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	t=1min,f=50Hz			3400	V
T_{stg}	Storage Temperature		-40		125	℃
M_t	Module Electrodes Torque	Recommended(M5)	3.0		6.0	N·m
M_s	Module-to-Sink Torque	Recommended(M6)	3.0		6.0	N·m
G	Weight of Module			340		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



=all dimensions with tolerance of Ø0.5

DISCLAIMER

1. This product datasheet is subject to change without prior notice. Leading Energy reserves the right to modify products for performance enhancement or other purposes.
2. Operating conditions may differ from simulation assumptions in several aspects like level of DC-link voltage, applied gate-voltage and gate-resistor, case and junction temperatures as well as the power circuit stray-inductance. Therefore, deviations of parameters and assumptions used for the simulation and the real application may exist.
3. Although Leading Energy is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors. Therefore, in order to prevent personal injury or fire arising from failure, please take necessary safety measures. Leading Energy shall have no responsibility for any damages arising out of the use of our products beyond the rating specified by Leading Energy.
4. Due to the technical requirements, our product may contain dangerous substances. For further information, please contact the relevant sales representative.
5. This product datasheet is for reference only and is not part of the contract. The technical agreement signed by both parties shall prevail.