

LEGM900CJ120L6H

IGBT Power Module

Features:

- $V_{CE}=1200V$ $I_C=900A$
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature 175°C
- Isolation Type Package

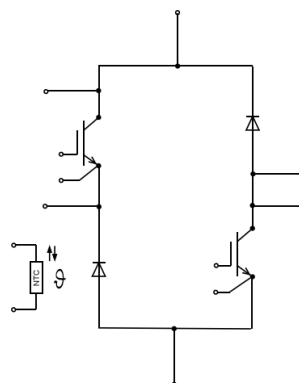
Applications:

- Uninterruptible Power Supplies (UPS)
- High power converter
- Inverter for motor drives AC and DC servo drives

Package Type & Internal Circuit



L6



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	$T_{vj}=25\text{ }^{\circ}\text{C}$	1200	V
I_C	Continuous Collector Current	$T_C=90\text{ }^{\circ}\text{C}$	900	A
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	1800	A
V_{GES}	Gate-Emitter Voltage	$T_{vj}=25\text{ }^{\circ}\text{C}$	± 20	V

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=900\text{ A}, V_{GE}=15\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$		1.65		V
		$I_C=900\text{ A}, V_{GE}=15\text{ V}, T_{vj}=175\text{ }^{\circ}\text{C}$		2.05		V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=18.0\text{ mA}, V_{CE}=V_{GE}, T_{vj}=25\text{ }^{\circ}\text{C}$	5.3	5.8	6.3	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=1200\text{ V}, V_{GE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$			100	μA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0\text{ V}, V_{GE}=20\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$			100	nA
C_{ies}	Input capacitance	$V_{GE}=0\text{ V},$ $V_{CE}=25\text{ V},$ $f=100\text{ kHz}$		124		nF
C_{oes}	Output capacitance			3.3		nF
C_{res}	Reverse transfer capacitance			0.7		nF
R_G	Gate input resistance	$f=1\text{ MHz}$		0.42		Ω
Q_G	Gate charge	$V_{GE}=-15\text{ V to }15\text{ V}, V_{CE}=600\text{ V}$		10.8		μC
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=900\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_G=0.51\Omega$ $T_{vj}=25\text{ }^{\circ}\text{C}$		290		ns
t_r	Rise Time, Inductive Load			90		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			420		ns
t_f	Fall Time, Inductive Load			100		ns
E_{on}	Turn-on Energy Loss per Pulse			50		mJ
E_{off}	Energy Loss per Pulse			85		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=900\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_G=0.51\Omega$ $T_{vj}=175\text{ }^{\circ}\text{C}$		350		ns
t_r	Rise Time, Inductive Load			110		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			540		ns
t_f	Fall Time, Inductive Load			110		ns
E_{on}	Turn-on Energy Loss per Pulse			120		mJ
E_{off}	Energy Loss per Pulse			130		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.046	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		150	$^{\circ}\text{C}$
I_{SC}	SC data	$V_{GE}\leq 15\text{ V}, V_{CC}=800\text{ V}$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt$ $t_p\leq 6\text{ }\mu\text{s}, T_{vj}=175\text{ }^{\circ}\text{C}$		3200		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	$T_C=90\text{ }^{\circ}\text{C}$		900		A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ ms}$		1800		A
I^2t	I^2t Value	$V_R=0\text{ V}$, $t_p=10\text{ ms}$, $T_{vj}=175\text{ }^{\circ}\text{C}$		45000		A ² s

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=900\text{ A}$, $V_{CE}=0\text{ V}$, $T_{vj}=25\text{ }^{\circ}\text{C}$		1.9		V
		$I_F=900\text{ A}$, $V_{CE}=0\text{ V}$, $T_{vj}=175\text{ }^{\circ}\text{C}$		2.1		V
t_{rr}	Reverse Recovery time	$I_F=900\text{ A}$, $V_R=600\text{ V}$ $R_G=0.51\Omega$, $V_{GE}=\pm 15\text{ V}$ $T_{vj}=25\text{ }^{\circ}\text{C}$		400		ns
Q_{rr}	Recovered Charge			60		uC
E_{rec}	Reverse Recovery Energy			20		mJ
t_{rr}	Reverse Recovery time	$I_F=900\text{ A}$, $V_R=600\text{ V}$ $R_G=0.51\Omega$, $V_{GE}=\pm 15\text{ V}$ $T_{vj}=175\text{ }^{\circ}\text{C}$		700		ns
Q_{rr}	Recovered Charge			141		uC
E_{rec}	Reverse Recovery Energy			48		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.072	K/W
$T_{vj\text{ op}}$	Operating Junction Temperature		-40		150	$^{\circ}\text{C}$

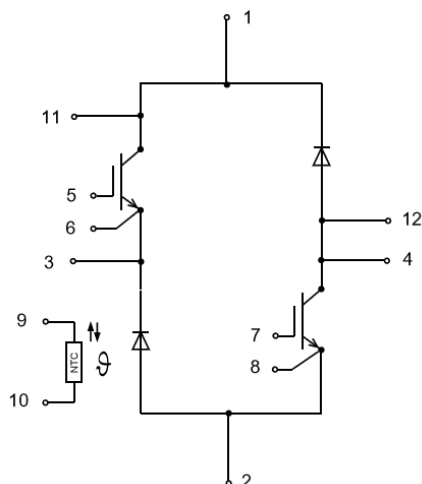
Module Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	$t=1\text{ min}$, $f=50\text{ Hz}$	4000			V
T_{stg}	Storage Temperature		-40		150	$^{\circ}\text{C}$
M_t	Module Electrodes Torque	Recommended(M6)	3.0		6.0	N·m
M_s	Module-to-Sink Torque	Recommended(M5)	3.0		6.0	N·m
G	Weight of Module			350		g

NTC-Thermistor (Characteristic Values)

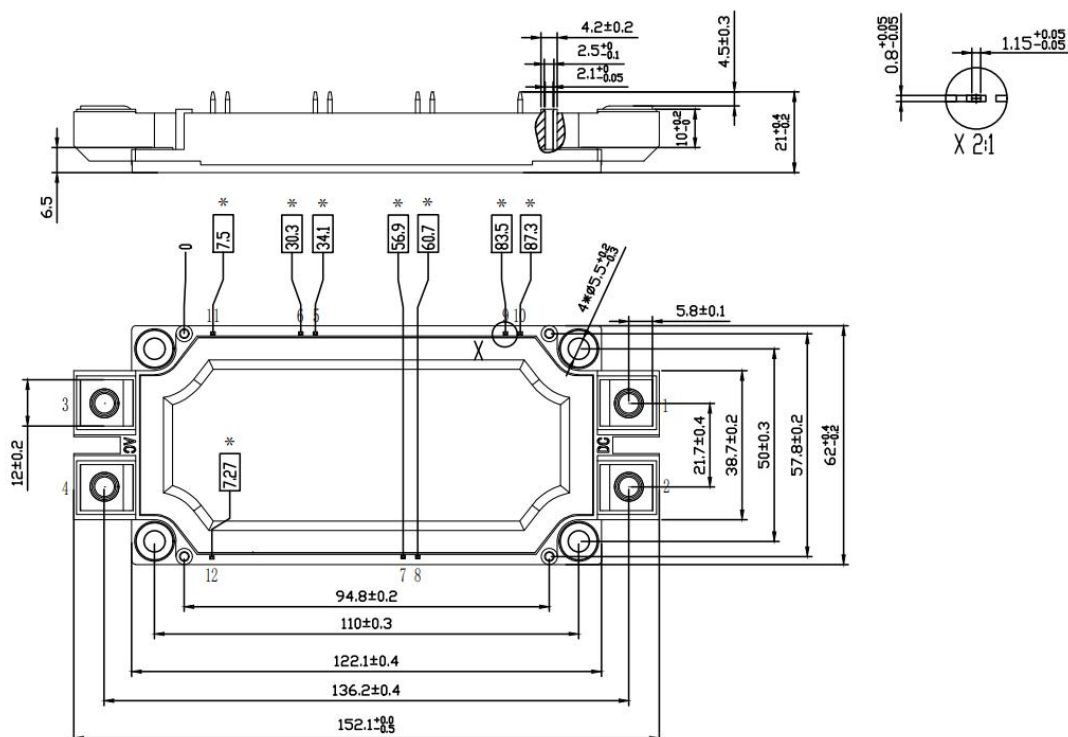
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R_{25}	Rated resistance	$T_c=25\text{ }^{\circ}\text{C}$		5		K Ω
$\Delta R/R$	Deviation of R100	$T_c=100\text{ }^{\circ}\text{C}$	-5		5	%
P_{25}	Power dissipation	$T_c=25\text{ }^{\circ}\text{C}$			20	mW
$B_{25/50}$	B-value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298,15\text{K}))]$		3375		K

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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