LEGM100BH120L1SZ

IGBT Power Module

Features:

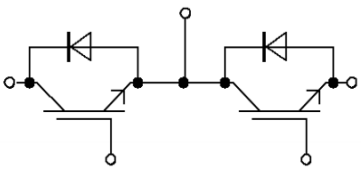
- V_{CE}=1200V I_C=100A
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature 150℃
- Isolation Type Package

Applications:

- Welder
- Inductive heating

Package Type & Internal Circuit

L1



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℃	1200	V
I_C	Continuous Collector Current	T_C=100℃	100	A
I_{CRM}	Peak Collector Current	I_{CRM}=2I_C	200	A
V_{GES}	Gate-Emitter Voltage	T_{vj}=25℃	±30	V
P_{tot}	Total Power Dissipation	T_C=25℃,T_{vjmax}=150℃	550	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=100 A, V_{GE}=15 V, T_{vj}=25 ℃		1.80	2.25	V
		I_C=100 A, V_{GE}=15 V, T_{vj}=125 ℃		2.6	3	V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=2 mA,V_{CE}=V_{GE},T_{vj}= 25 ℃	5	6	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1200 V, V_{GE}=0 V, T_{vj}=25 ℃			5.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=15 V, T_{vj}=25 ℃			400	nA
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=100 A,V_{CE}=600 V V_{GE}=±15 V R_{Gon}=5 Ω T_{vj}=25 ℃		36		ns
t_r	Rise Time, Inductive Load			42		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			282		ns
t_f	Fall Time, Inductive Load			76		ns
E_{on}	Turn-on Energy Loss per Pulse			2.39		mJ
E_{off}	Energy Loss per Pulse			6.22		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=100 A,V_{CE}=600 V V_{GE}=±15 V R_{Gon}=5Ω T_{vj}=125 ℃		40		ns
t_r	Rise Time, Inductive Load			46		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			322		ns
t_f	Fall Time, Inductive Load			134		ns
E_{on}	Turn-on Energy Loss per Pulse			3.01		mJ
E_{off}	Energy Loss per Pulse			8.98		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.22	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		125	℃
I_{SC}	SC data	V_{GE} ≤15 V, V_{CC} = 600 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt t_P ≤ 10 μs, T_{vj} = 125 ℃		450		A

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 ℃		50		A
I_{FRM}	Repetitive Peak Forward Current	t_P=1 ms		100		A
I^2t	I^2t Value	V_R=0 V, t_P=10 ms, T_{vj}=125 ℃		550		A^2s

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=50 A, V_{CE}=0 V, T_{vj}=25 ℃		1.9	2.2	V
		I_F=50 A, V_{CE}=0 V, T_{vj}=125 ℃		1.8	2.2	V
t_{rr}	Reverse Recovery time	I_F=50 A,V_R=600 V -di/dt=3000 A/us T_{vj}=25 ℃		43		ns
Q_r	Recovered Charge			2.10		uC
E_{rec}	Reverse Recovery Energy			0.43		mJ
t_{rr}	Reverse Recovery time	I_F=50A,V_R=600 V -di/dt=3000 A/us T_{vj}=125 ℃		45		ns
Q_r	Recovered Charge			1.86		uC
E_{rec}	Reverse Recovery Energy			0.47		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.85	K/W
$T_{vj\ op}$	Operating Junction Temperature		-40		125	℃

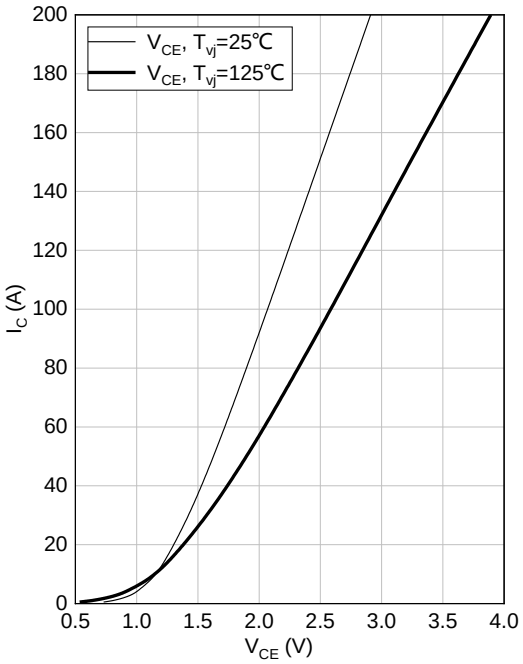
Module Characteristics

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			160		g

Output characteristic of IGBT,Inverter (typical)

$I_c = f(V_{CE})$

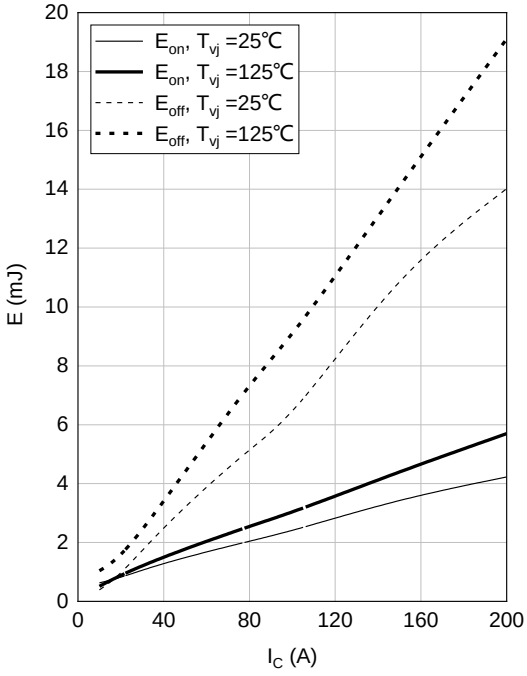
$V_{GE} = 15V$



Switching losses of IGBT,Inverter (typical)

$E_{on} = f(I_C)$, $E_{off} = f(I_C)$

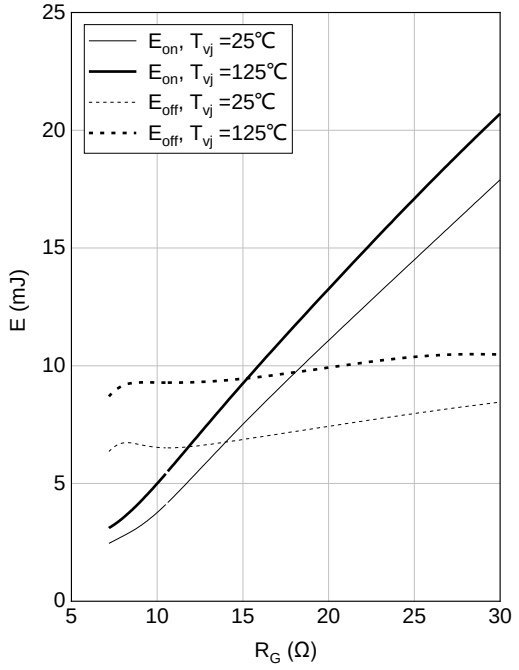
$V_{GE} = \pm 15V$, $R_{Gon} = 7\Omega$, $V_{CE} = 600V$



Switching losses of IGBT,Inverter (typical)

$E_{on} = f(R_G)$, $E_{off} = f(R_G)$

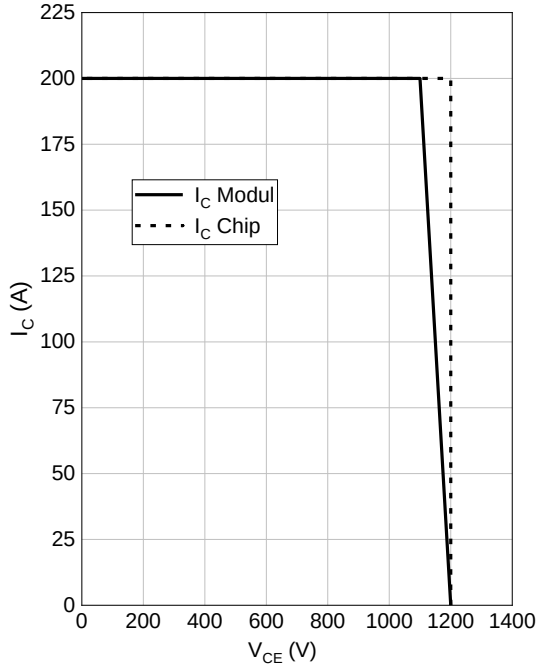
$V_{GE} = \pm 15V$, $I_C = 100A$, $V_{CE} = 600V$



RBSOA IGBT,Inverter (typical)

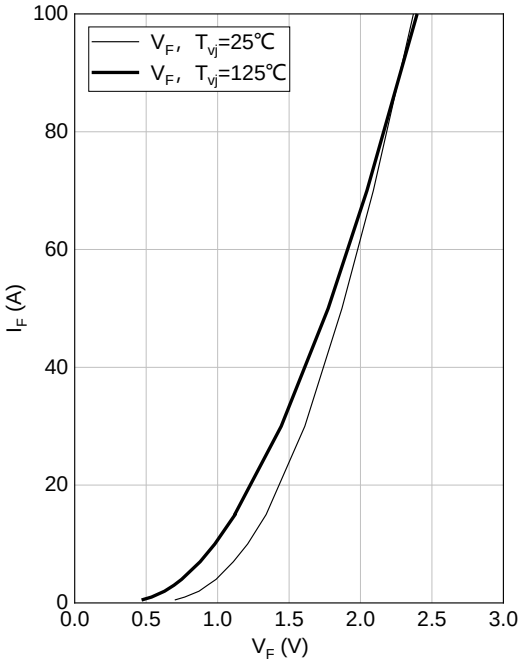
$I_C = f(V_{CE})$

$V_{GE} = \pm 15V$, $R_{Goff} = 7\Omega$, $T_{vj} = 125$ ℃



forward characteristic of Diode,Inverter (typical)

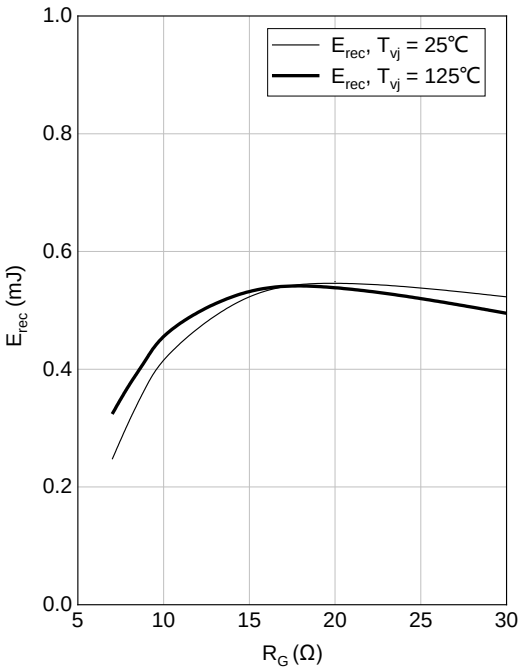
$I_F = f(V_F)$



switching losses of Diode, Inverter (typical)

$E_{rec} = f(R_G)$,

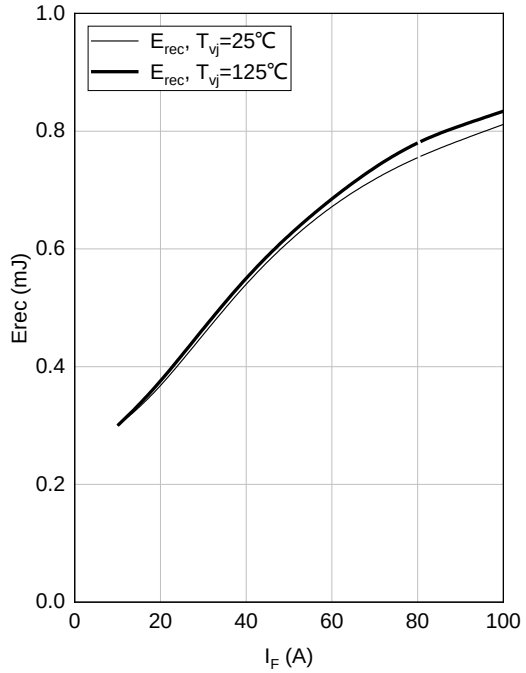
I_F = 50A，V_{CE} = 600V



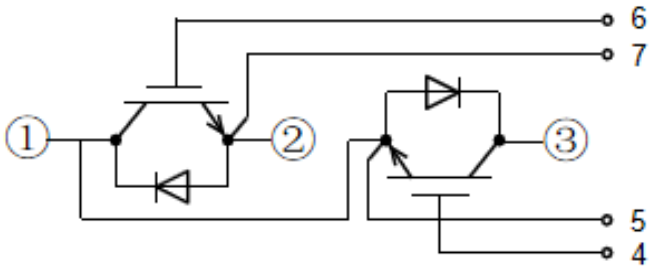
switching losses of Diode, Inverter (typical)

Erec = $f(I_F)$,

R_{Gon} = 15 Ω，V_{CE} = 600V

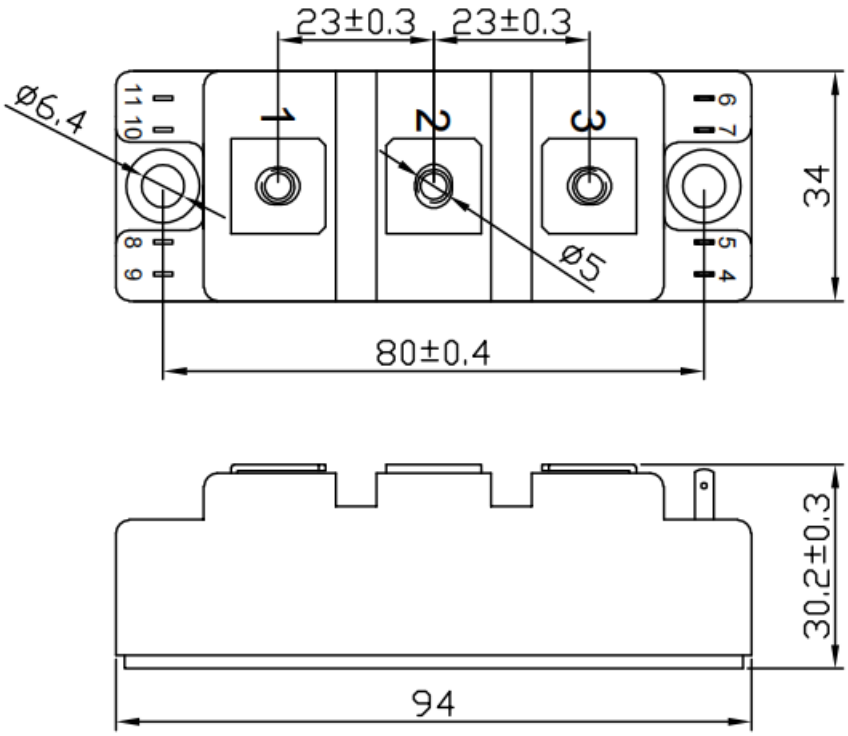


Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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