LEGM100BH120L1ST

IGBT Power Module

Features:

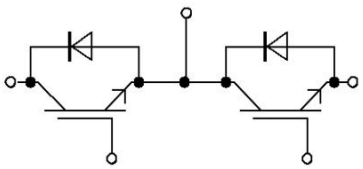
- V_{CE}=1200V I_C=100A
- Low V_{CEsat}
- Maximum junction temperature 175℃
- Isolation Type Package

Applications:

- Motor Drives
- High Power Converters

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 ℃	±20	V
P_{tot}	Total Power Dissipation	T_C=25 ℃,T_{vjmax}=175 ℃	536	W

Maximum Rated 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 ℃		1.63		V
		I_C=100 A, V_{GE}=15 V, T_{vj}=25 ℃		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=100 A,V_{CE}=600 V V_{GE}=±15 V R_G=10 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			5.28		mJ
E_{off}	Energy Loss per Pulse			4.38		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=100 A,V_{CE}=600 V V_{GE}=±15 V R_G=10 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			6.58		mJ
E_{off}	Energy Loss per Pulse			6.26		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.28	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		150	°C

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 ℃		30		A
I_{FRM}	Repetitive Peak Forward Current	t_p=1 ms		60		A

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=30 A, V_{CE}=0 V, T_{vj}=25 ℃		1.86		V
		I_F=30 A, V_{CE}=0 V, T_{vj}=150 ℃		1.52		V
I_{rr}	Peak reverse recovery current	I_F=30 A,V_R=600 V -di/dt=1460 A/us T_{vj}=25 ℃		58.4		A
Q_r	Recovered Charge			3.31		uC
E_{rec}	Reverse Recovery Energy			1.1		mJ
I_{rr}	Peak reverse recovery current	I_F=30 A,V_R=600 V -di/dt=1460 A/us T_{vj}=150 ℃		72		A
Q_r	Recovered Charge			7.41		uC
E_{rec}	Reverse Recovery Energy			2.79		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			1.2	K/W
$T_{vj\ op}$	Operating Junction Temperature		-40		150	℃

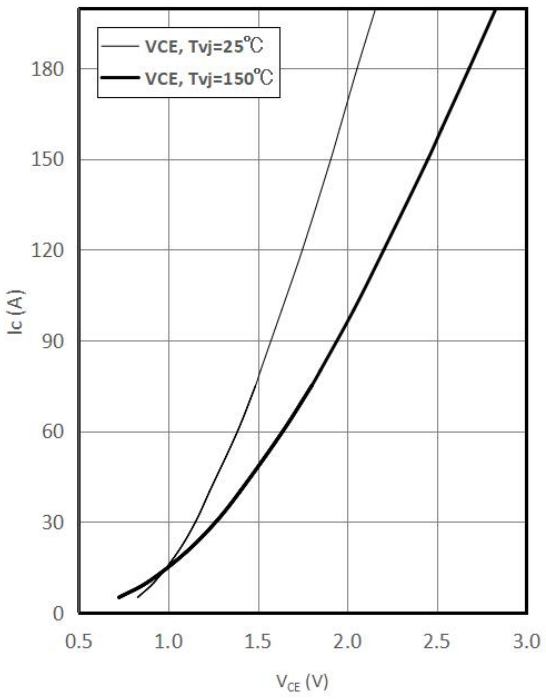
Module Characteristics

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			160		g

Output characteristic of IGBT,Inverter (typical)

$I_c = f(V_{CE})$

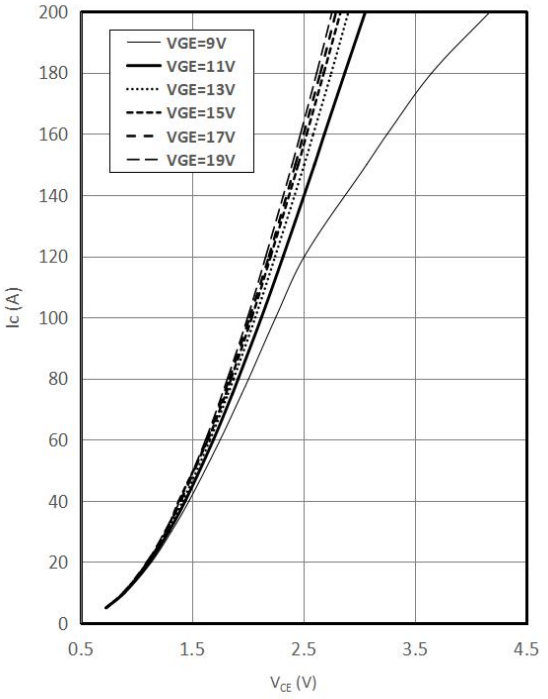
$V_{GE} = 15V$



Output characteristic of IGBT,Inverter (typical)

$I_c = f(V_{CE})$

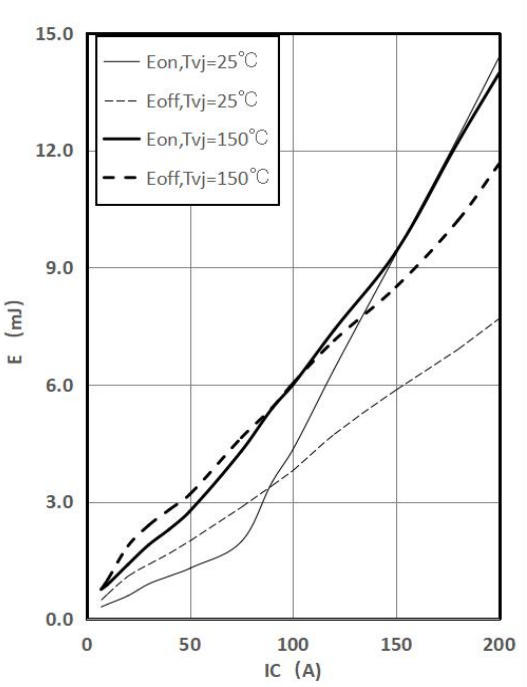
$T_{vj}=150℃$



Switching losses of IGBT,Inverter (typical)

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

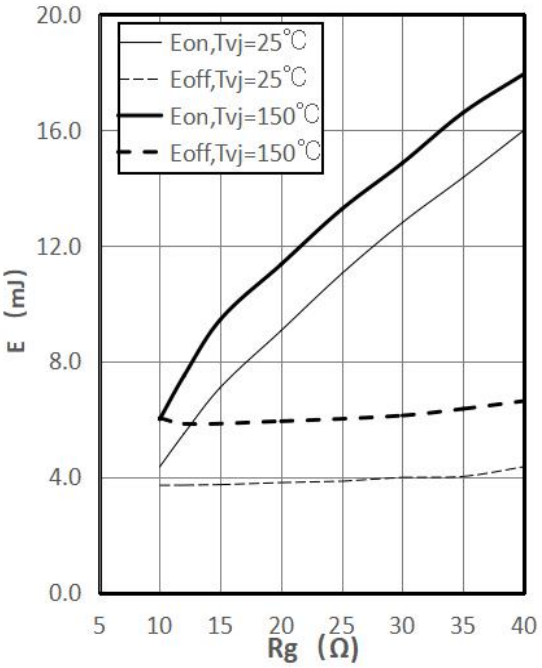
$V_{GE} = \pm 15V$, $R_G = 10\ \Omega$, $V_{CE} = 600V$



Switching losses of IGBT,Inverter (typical)

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

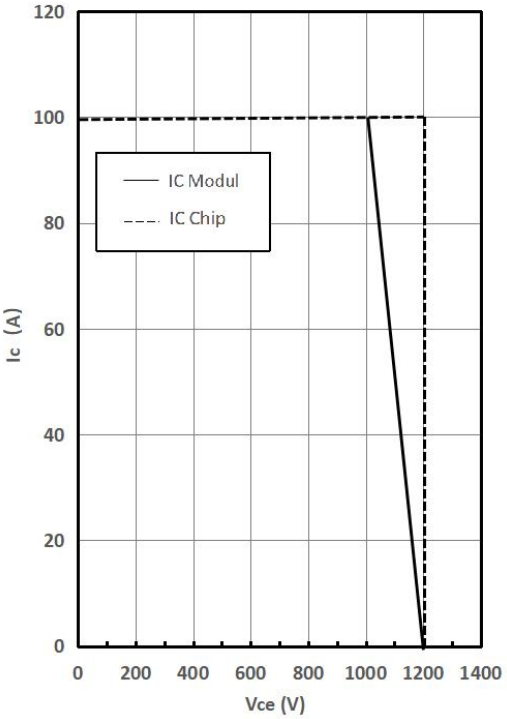
$V_{GE} = \pm 15V$, $I_C = 100\ A$, $V_{CE} = 600V$



RBSOA IGBT,Inverter (typical)

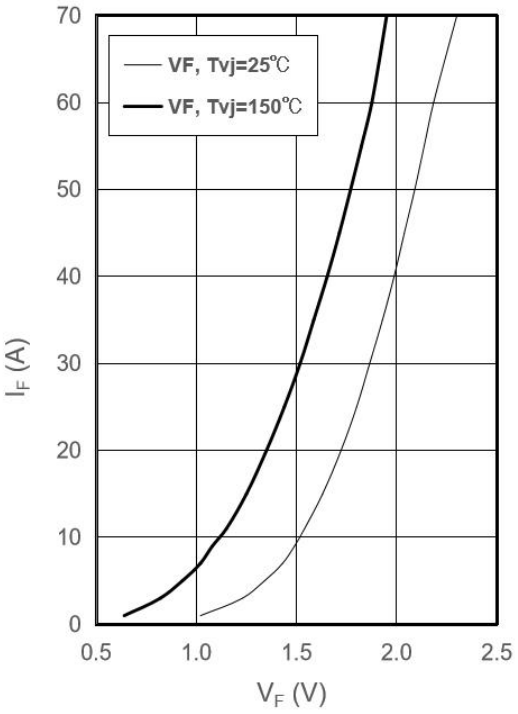
I_C= f (V_{CE})

V_{GE} = ±15V



Forward characteristic of Diode,Inverter (typical)

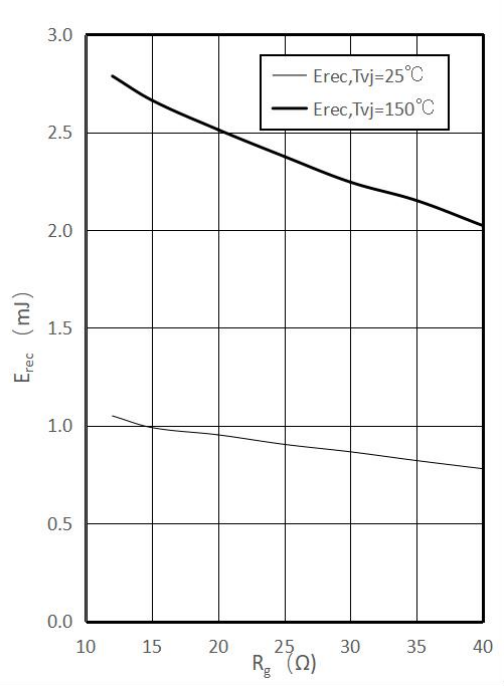
I_F = f (V_F)



Switching losses of Diode, Inverter (typical)

E_{rec} = f (R_G),

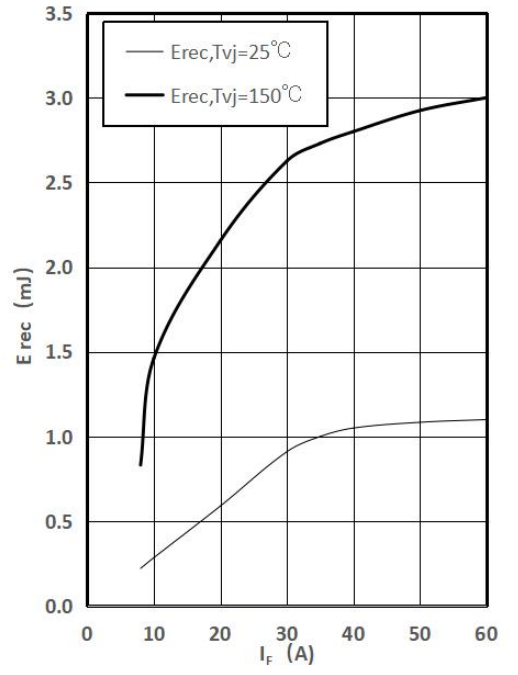
I_F = 30A，V_{CE} = 600V



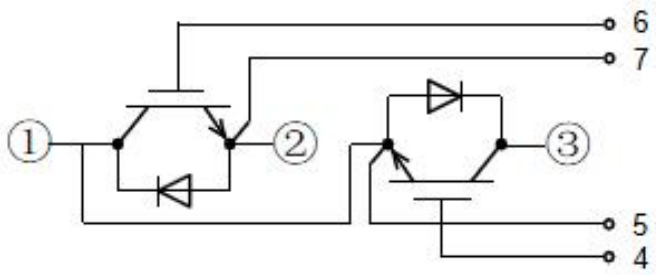
Switching losses of Diode, Inverter (typical)

E_{rec} = f(I_F),

R_G =10 Ω，V_{CE} = 600V

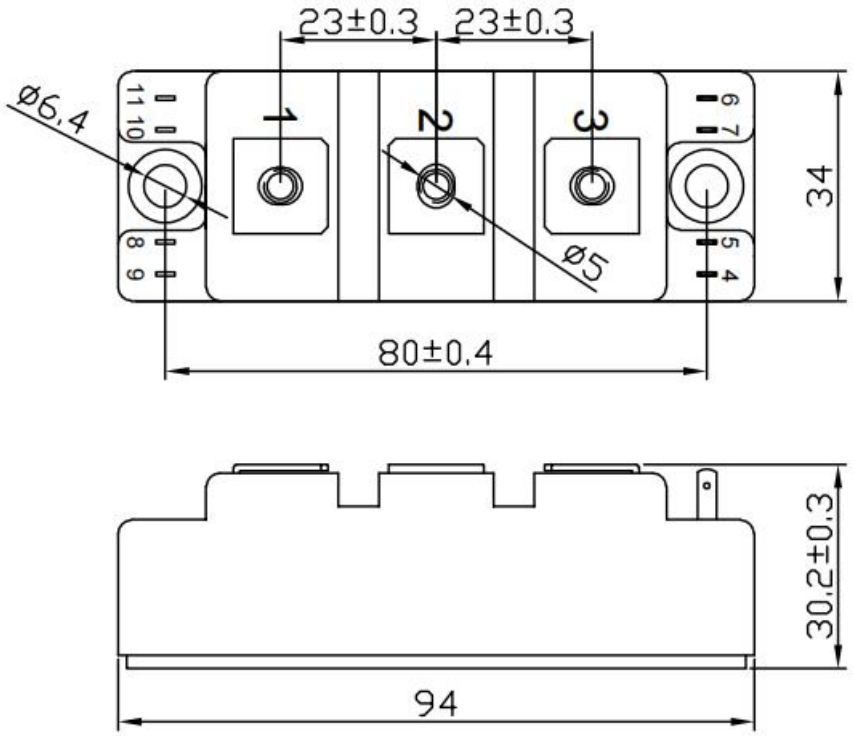


Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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