

LEGM100CW120D3H

IGBT Power Module

Features:

- $V_{CE}=1200V$ $I_C=100A$
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature $175^{\circ}C$
- Isolation Type Package

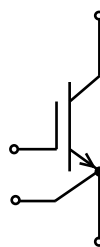
Applications:

- The inverter
- Motor control and drives

Package Type & Internal Circuit



D3



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	$T_C=100^{\circ}C$	100	A
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	200	A
V_{GES}	Gate-Emitter Voltage	$T_{vj}=25^{\circ}C$	± 30	V
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vjmax}=150^{\circ}C$	500	W

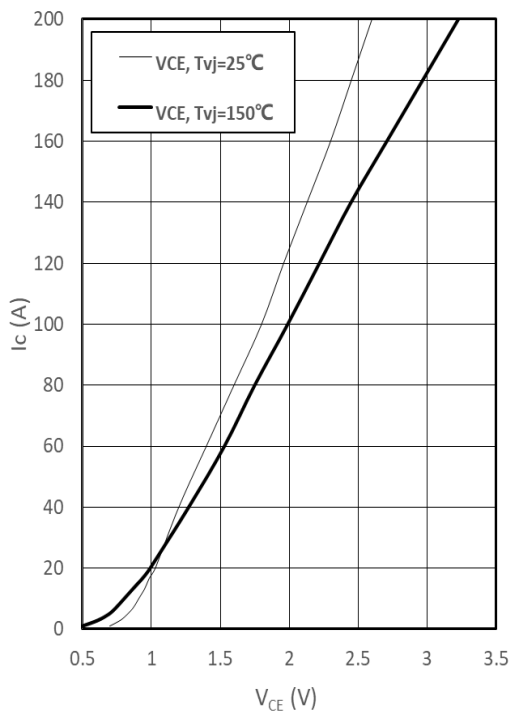
Characteristics Values (IGBT)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100A, V_{GE}=15V, T_{vj}=25^\circ C$		1.8	2.3	V
		$I_C=100A, V_{GE}=15V, T_{vj}=150^\circ C$		2.0	2.7	V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=5.0mA, V_{CE}=V_{GE}, T_{vj}=25^\circ C$	5.2	6	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^\circ C$			20	μA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0V, V_{GE}=15V, T_{vj}=25^\circ C$			200	nA
r_G	Integrated gate resister		-	4.2	-	Ω
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$	-	9.65	-	nF
C_{oes}	Output Capacitance		-	492	-	pF
C_{res}	Reverse Transfer Capacitance		-	328	-	pF
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=100A, V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=2\Omega$ $T_{vj}=25^\circ C$		106		ns
t_r	Rise Time, Inductive Load			40		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			330		ns
t_f	Fall Time, Inductive Load			240		ns
E_{on}	Turn-on Energy Loss per Pulse			2.6		mJ
E_{off}	Energy Loss per Pulse			8.3		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=100A, V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=2\Omega$ $T_{vj}=150^\circ C$		120		ns
t_r	Rise Time, Inductive Load			43		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			421		ns
t_f	Fall Time, Inductive Load			327		ns
E_{on}	Turn-on Energy Loss per Pulse			5.1		mJ
E_{off}	Energy Loss per Pulse			14.9		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.29	K/W
$T_{vj op}$	Temperature under switching conditions		-40		150	$^\circ C$
I_{SC}	SC data	$V_{GE} \leq 15V, V_{CC}=600V$ $V_{CEmax}=V_{CES}-L_{sCE} \cdot di/dt$ $t_p \leq 10\mu s, T_{vj}=150^\circ C$		400		A

Output characteristic of IGBT (typical)

$$I_c = f(V_{CE})$$

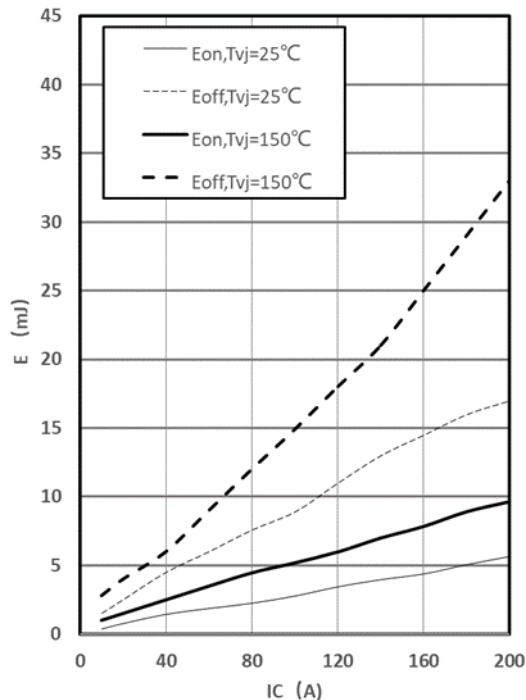
$$V_{GE} = 15V$$



Switching losses of IGBT (typical)

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

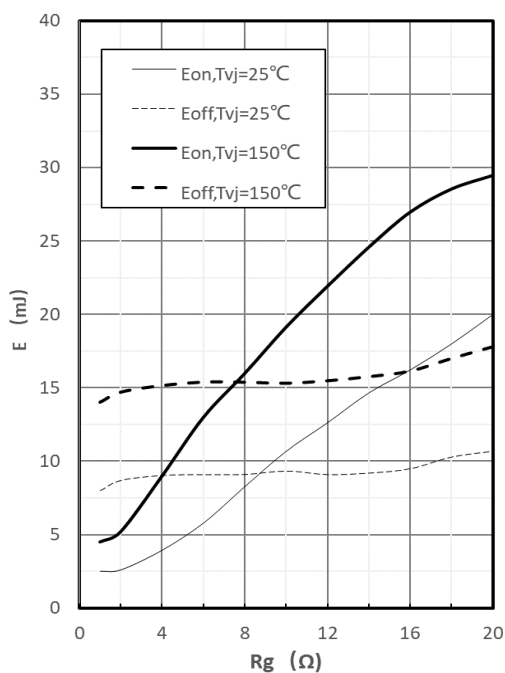
$$V_{GE} = \pm 15V, R_G = 2\Omega, V_{CE} = 600V$$



Switching losses of IGBT (typical)

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

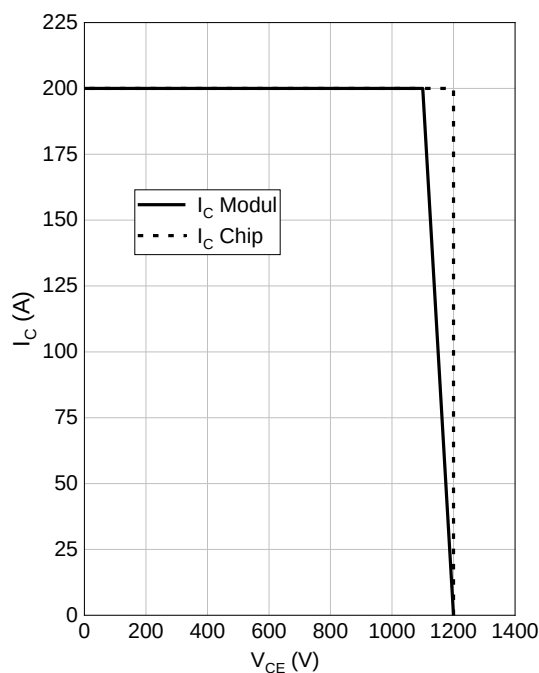
$$V_{GE} = \pm 15V, I_c = 100A, V_{CE} = 600V$$



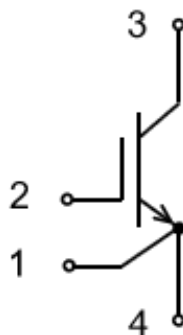
RBSOA IGBT (typical)

$$I_c = f(V_{CE})$$

$$V_{GE} = \pm 15V, R_{Goff} = 2\Omega, T_{vj} = 125^\circ\text{C}$$

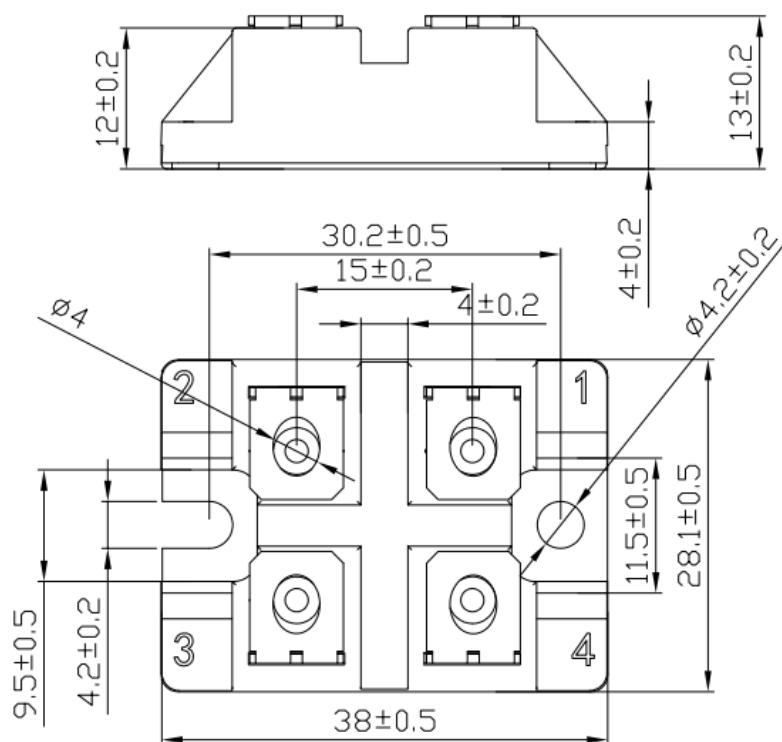


Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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