

LEGM150BC70E2H_B

IGBT Power Module

Features:

- $V_{CE}=700V$ $I_C=150A$
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature 175°C
- Isolation Type Package

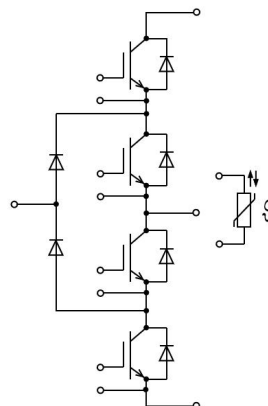
Applications:

- UPS
- Motor control and drives

Package Type & Internal Circuit



E2



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	$V_{EC}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	700	V
I_C	Continuous Collector Current	$T_C=100^{\circ}C$	150	A
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	300	A
V_{GES}	Gate-Emitter Voltage	$T_{vj}=25^{\circ}C$	± 30	V
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vjmax}=150^{\circ}C$	1000	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=150A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.5	1.9	V
		$I_C=150A, V_{GE}=15V, T_{vj}=150^{\circ}C$		1.75		V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=2.0mA, V_{CE}=V_{GE}, T_{vj}=25^{\circ}C$	5.2	6.2	6.7	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=700V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1.0	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0V, V_{GE}=15V, T_{vj}=25^{\circ}C$			400	nA
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=150A, V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=1\Omega$ $T_{vj}=25^{\circ}C$		78		ns
t_r	Rise Time, Inductive Load			61.5		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			334		ns
t_f	Fall Time, Inductive Load			76.5		ns
E_{on}	Turn-on Energy Loss per Pulse			0.75		mJ
E_{off}	Energy Loss per Pulse			5.25		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=150A, V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=1\Omega$ $T_{vj}=150^{\circ}C$		78.9		ns
t_r	Rise Time, Inductive Load			64.8		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			376		ns
t_f	Fall Time, Inductive Load			181.5		ns
E_{on}	Turn-on Energy Loss per Pulse			1.05		mJ
E_{off}	Energy Loss per Pulse			6.75		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.45	K/W
$T_{vj op}$	Temperature under switching conditions		-40		150	$^{\circ}C$
I_{SC}	SC data	$V_{GE} \leq 15V, V_{CC} = 360V$ $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$ $t_p \leq 10\mu s, T_{vj} = 150^{\circ}C$		630		A

Maximum Rated Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj}=25\text{ }^{\circ}\text{C}$		700		V
I_F	Continuous DC Forward Current	$T_C=100\text{ }^{\circ}\text{C}$		150		A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ ms}$		300		A

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=150\text{ A}, V_{CE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$		1.7	2.2	V
		$I_F=150\text{ A}, V_{CE}=0\text{ V}, T_{vj}=150\text{ }^{\circ}\text{C}$		1.6		V
t_{rr}	Reverse Recovery time	$I_F=150\text{ A}, V_R=300\text{ V}$ -di/dt=2800 A/us $T_{vj}=25\text{ }^{\circ}\text{C}$		210		ns
Q_r	Recovered Charge			9		uC
E_{rec}	Reverse Recovery Energy			1.1		mJ
t_{rr}	Reverse Recovery time	$I_F=150\text{ A}, V_R=300\text{ V}$ -di/dt=2800 A/us $T_{vj}=150\text{ }^{\circ}\text{C}$		261		ns
Q_r	Recovered Charge			11.6		uC
E_{rec}	Reverse Recovery Energy			3.1		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.6	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		150	$^{\circ}\text{C}$

Maximum Rated Values (Diode D5-D6)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj}=25\text{ }^{\circ}\text{C}$		700		V
I_F	Continuous DC Forward Current	$T_C=100\text{ }^{\circ}\text{C}$		150		A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ ms}$		300		A

Characteristic Values (Diode D5-D6)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=150\text{ A}, V_{CE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$		1.7	2.2	V
		$I_F=150\text{ A}, V_{CE}=0\text{ V}, T_{vj}=150\text{ }^{\circ}\text{C}$		1.6		V
t_{rr}	Reverse Recovery time	$I_F=150\text{ A}, V_R=300\text{ V}$ -di/dt=2800 A/us $T_{vj}=25\text{ }^{\circ}\text{C}$		210		ns
Q_r	Recovered Charge			9		uC
E_{rec}	Reverse Recovery Energy			1.1		mJ
t_{rr}	Reverse Recovery time	$I_F=150\text{ A}, V_R=300\text{ V}$ -di/dt=2800 A/us $T_{vj}=150\text{ }^{\circ}\text{C}$		261		ns
Q_r	Recovered Charge			11.6		uC
E_{rec}	Reverse Recovery Energy			3.1		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.6	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		150	$^{\circ}\text{C}$

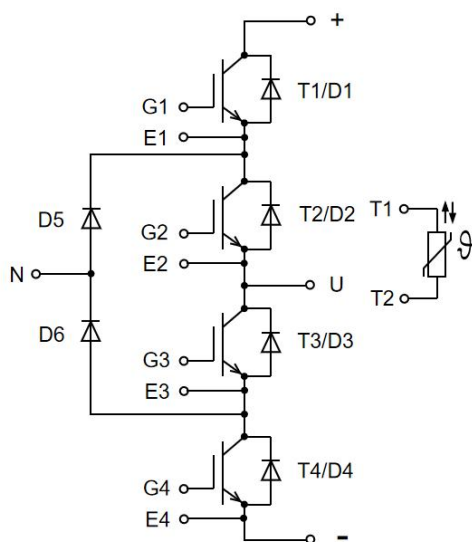
NTC-Thermistor (Characteristic Values)

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	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298,15K))]$		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

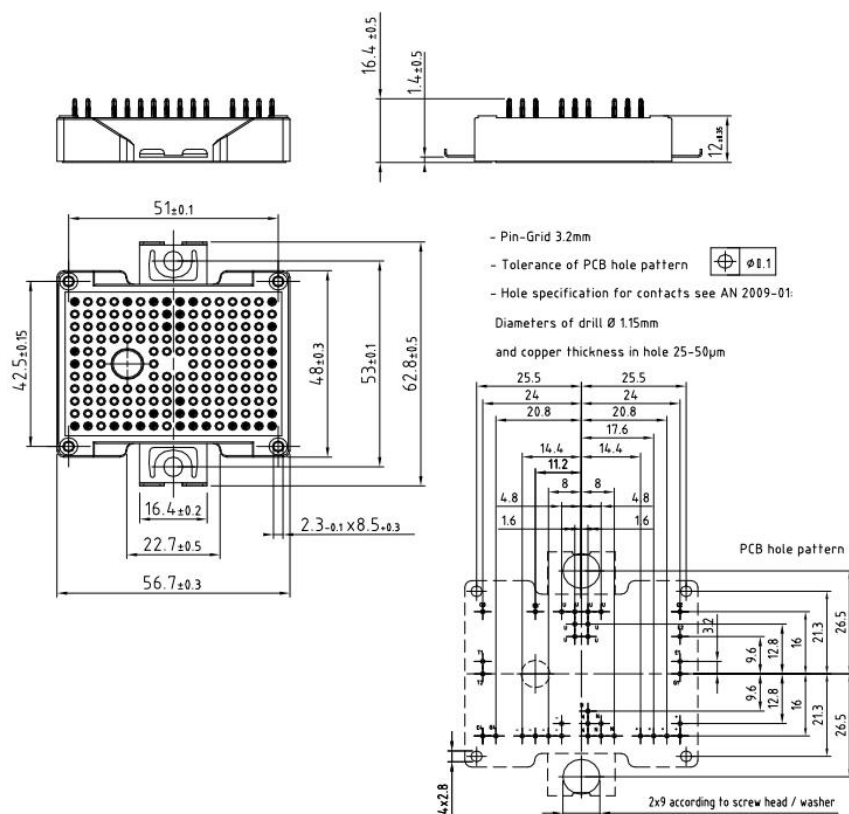
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	$t=1\text{ min}, f=50\text{ Hz}$	2500			V
T_{stg}	Storage Temperature		-40		150	°C
M_t	Module Electrodes Torque	Recommended(M5)	2.5		5.0	N·m
M_s	Module-to-Sink Torque	Recommended(M6)	3.0		6.0	N·m
G	Weight of Module			40		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



DISCLAIMER

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.