LEGM35TD120E1H7

IGBT Power Module

Features:

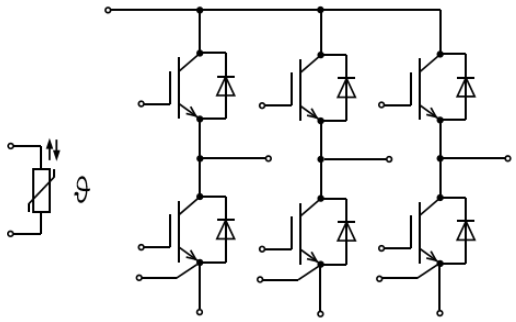
- V_{CE}=1200V I_C=35A
- Low $V_{CE(sat)}$
- TRENCHSTOP™ IGBT7
- V_{CEsat} with positive temperature coefficient
- Overload operation up to 175℃
- Isolation Type Package

Applications:

- Auxiliary Inverters
- Air Conditioning
- Motor Drives

Package Type & Internal Circuit

E1



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℃	35	A
I_{CRM}	Peak Collector Current	I_{CRM}=2I_C	70	A
V_{GES}	Gate-Emitter Voltage	T_{vj}=25℃	±20	V
P_{tot}	Total Power Dissipation	T_C=25℃,T_{vjmax}=175℃	214	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=35 A, V_{GE}=15 V, T_{vj}=25 ℃		1.8		V
		I_C=35 A, V_{GE}=15 V, T_{vj}=150 ℃		2.3		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=1.5 mA,V_{CE}=V_{GE},T_{vj}= 25 ℃	5.2	6.1	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1200 V, V_{GE}=0 V, T_{vj}=25 ℃			1.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=20 V, T_{vj}=25 ℃			500	nA
C_{ies}	Input capacitance	f = 1 MHz, T_{vj}= 25°C, V_{CE} = 25 V, V_{GE}= 0 V		3.13		nF
C_{oes}	Output capacitance			0.17		nF
C_{res}	Reverse transfer capacitance			0.09		nF
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=35 A,V_{CE}=600 V V_{GE}=±15 V R_G=12 Ω T_{vj}=25 ℃		44		ns
t_r	Rise Time, Inductive Load			42		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			141		ns
t_f	Fall Time, Inductive Load			240		ns
E_{on}	Turn-on Energy Loss per Pulse			3.71		mJ
E_{off}	Turn-off Energy Loss per Pulse			1.91		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=35 A,V_{CE}=600 V V_{GE}=±15 V R_G=12 Ω T_{vj}=150 ℃		26		ns
t_r	Rise Time, Inductive Load			52		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			177		ns
t_f	Fall Time, Inductive Load			282		ns
E_{on}	Turn-on Energy Loss per Pulse			6.10		mJ
E_{off}	Turn-off Energy Loss per Pulse			2.75		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.7	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		150	℃
I_{sc}	SC	V_{GE}≤15V, V_{CE}=600V,t_p≤10μs, T_{vj}=125℃,V_{CES}≤1200V		243		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 ℃		35		A
I_{FRM}	Repetitive Peak Forward Current	t_P=1 ms		70		A

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=35 A, V_{CE}=0 V, T_{vj}=25 ℃		1.93		V
		I_F=35 A, V_{CE}=0 V, T_{vj}=150 ℃		1.59		V
I_{rr}	Peak reverse recovery current	I_F=35 A,V_R=600 V T_{vj}=25 ℃ V_{GE}=-15 V -di/dt=940 A/us		45		A
Q_r	Recovered Charge			3.25		μC
E_{rec}	Reverse Recovery Energy			1.03		mJ
I_{rr}	Peak reverse recovery current	I_F=35A,V_R=600 V T_{vj}=150 ℃ V_{GE}=-15 V -di/dt=940 A/us		64		A
Q_r	Recovered Charge			6.86		μC
E_{rec}	Reverse Recovery Energy			2.06		mJ
R_{thJC}	Thermal resistance, junction to case				0.9	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		150	℃

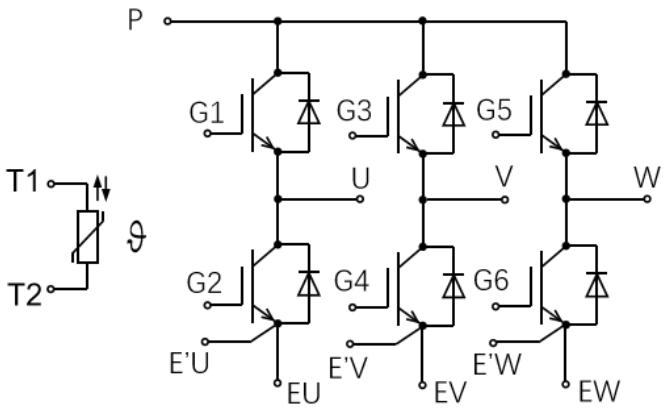
NTC-Thermistor (Characteristic Values)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R_{25}	Rated resistance	T_c=25 ℃		5		KΩ
ΔR/R	Deviation of R100	T_c=100 ℃	-5		5	%
P_{25}	Power dissipation	T_c=25 ℃		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

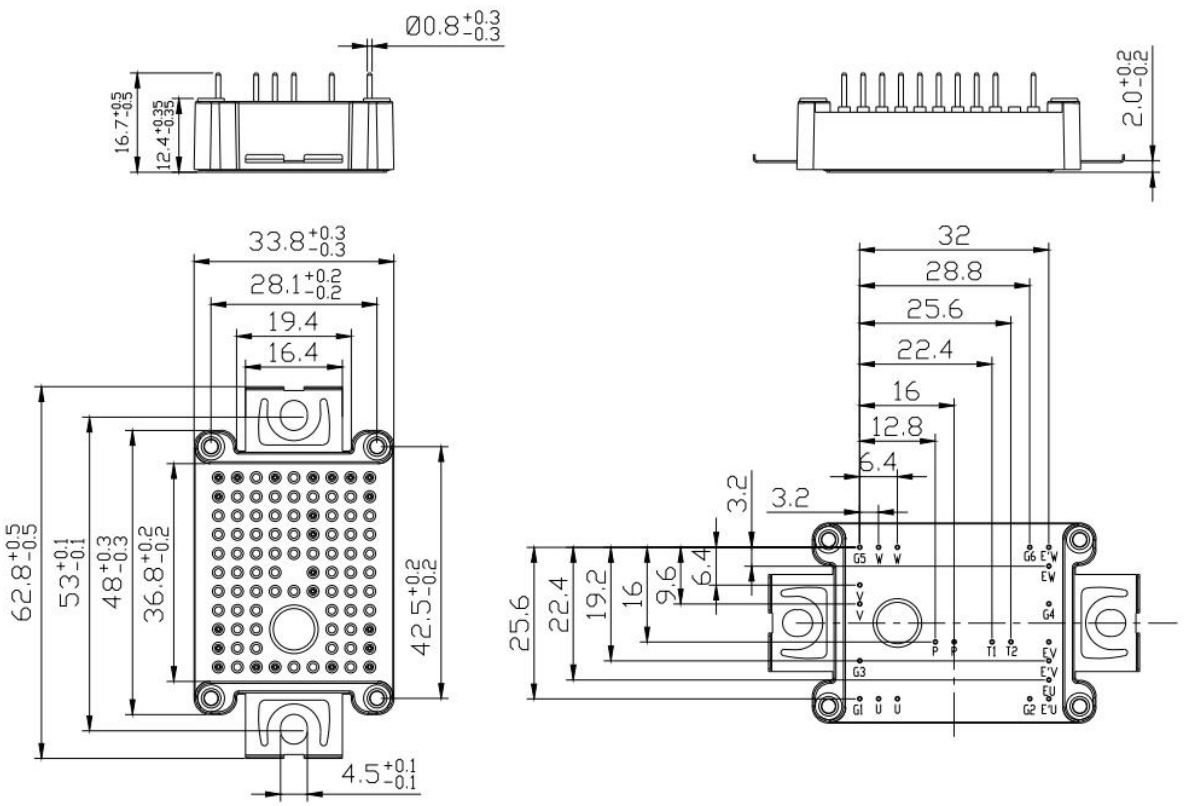
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	t=1min,f=50Hz	2500			V
T_{stg}	Storage Temperature		-40		125	℃
F	Mountig Force per Clamp		20		50	N
G	Weight of Module			25		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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