LEGM75TD120E2H7

IGBT Power Module

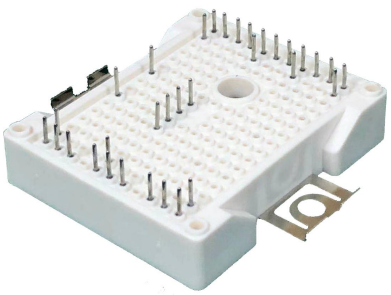
Features:

- V_{CE}=1200V I_C=75A
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Overload operation up to 175℃
- Isolation Type Package

Applications:

- The inverter
- Motor control and drives

Package Type & Internal Circuit



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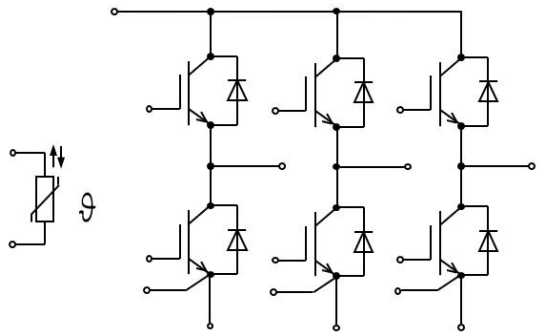


Internal Circuit

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℃	75	A
I_{CRM}	Peak Collector Current	I_{CRM}=2I_C	150	A
V_{GES}	Gate-Emitter Voltage	T_{vj}=25℃	±20	V
P_{tot}	Total Power Dissipation	T_C=25℃,T_{vjmax}=175℃	262	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=75 A, V_{GE}=15 V, T_{vj}=25 ℃		1.72		V
		I_C=75 A, V_{GE}=15 V, T_{vj}=175 ℃		2.13		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=6.0 mA,V_{CE}=V_{GE}	5.5	6.2	7.0	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1200V, V_{GE}=0 V, T_{vj}=25 ℃			1.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=15 V, T_{vj}=25 ℃			100	nA
C_{ies}	Input Capacitance	f = 1MHz, T_{vj}= 25℃, V_{CE}= 25 V, V_{GE}= 0 V		10.36		nF
C_{oes}	Output Capacitance			316		pF
C_{res}	Reverse Transfer Capacitance			45.7		pF
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=75 A,V_{CE}=600 V V_{GE}=±15 V R_G=5 Ω T_{vj}=25 ℃		148		ns
t_r	Rise Time, Inductive Load			161		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			169		ns
t_f	Fall Time, Inductive Load			235		ns
E_{on}	Turn-on Energy Loss per Pulse			11.7		mJ
E_{off}	Energy Loss per Pulse			5.57		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	I_C=75 A,V_{CE}=600 V V_{GE}=±15 V R_G=5 Ω T_{vj}=175 ℃		170		ns
t_r	Rise Time, Inductive Load			187		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			256		ns
t_f	Fall Time, Inductive Load			390		ns
E_{on}	Turn-on Energy Loss per Pulse			18.0		mJ
E_{off}	Energy Loss per Pulse			8.79		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT			0.572	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		175	°C
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} = 150 ℃		300		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 ℃		75		A
I_{FRM}	Repetitive Peak Forward Current	t_P=1 ms		150		A

Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=75 A,T_{vj}=25 ℃		2.10		V
		I_F=75 A,T_{vj}=175 ℃		1.71		V
I_{rr}	Peak reverse recovery current	I_F=75 A,V_R=600 V T_{vj}=25 ℃ V_{GE}=-15 V -di/dt=390 A/us		22		A
Q_r	Recovered Charge			4.99		uC
E_{rec}	Reverse Recovery Energy			1.85		mJ
I_{rr}	Peak reverse recovery current	I_F=75 A,V_R=600V T_{vj}=175 ℃ V_{GE}=-15 V -di/dt=390 A/us		37		A
Q_r	Recovered Charge			12.5		uC
E_{rec}	Reverse Recovery Energy			5.10		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.856	K/W
$T_{vj\ op}$	Operating Junction Temperature		-40		175	℃

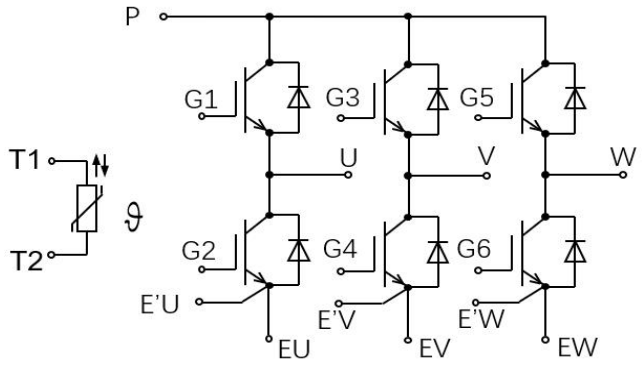
NTC-Thermistor (Characteristic Values)

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

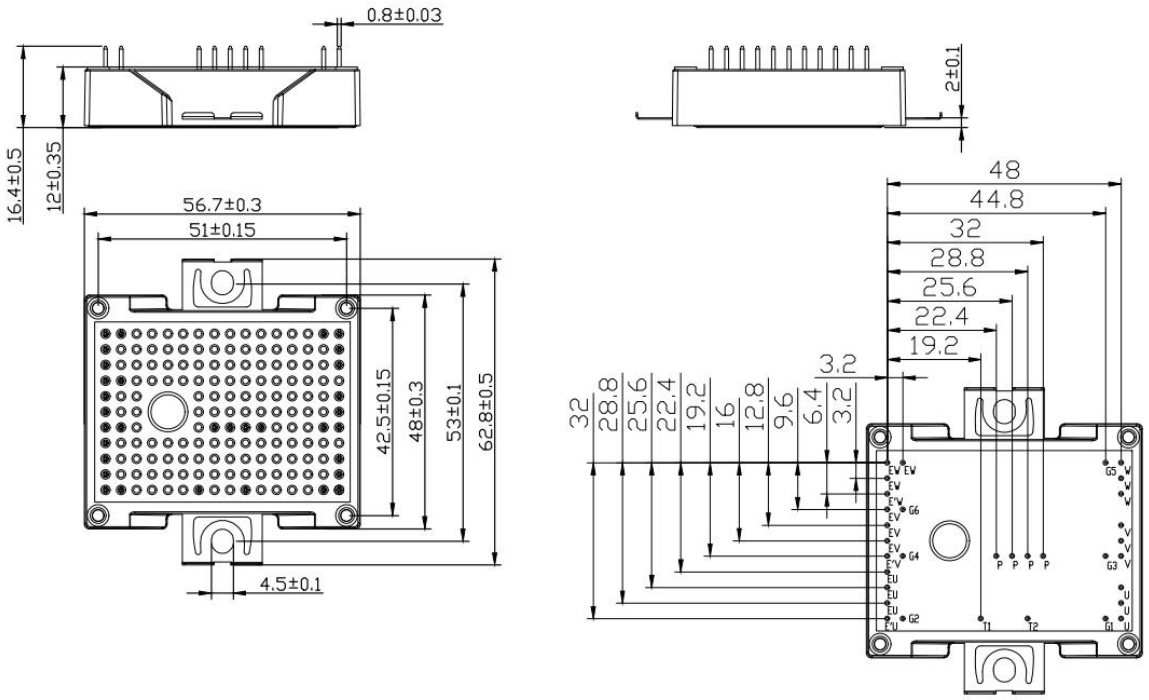
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	t=1min,f=50Hz	2500			V
T_{stg}	Storage Temperature		-40		125	℃
M_s	Module-to-Sink Torque	Recommended(M5)	3.0		6.0	N·m
G	Weight of Module			44		g

Circuit Diagram



Package Dimensions

(Dimensions in Millimeters)



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