HCG150F3L65B2A

V_{CES}=650V, $I_{C\ (nom)}$ =150A

Features

- Low inductive design
- Low Vcesat with high junction temperature
- High-speed switching with low capacitances
- Low Switching Losses

Package

Benefits

- Higher System Efficiency
- Reduce cooling requirements
- Increased power density
- Enabling higher frequency

Applications

- Three-level applications
- Energy storage systems
- Solar applications

Absolute Maximum Ratings Tc=25°C unless otherwise noted

TI-T4 IGBT

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage	650	V
V_{GES}	Gate - Emitter Voltage	±20	V
I_C	Collector Current @ T_C =25°C, T_{vj}=150°C	150	A
I_{CM}	Pulsed Collector Current t_p=1ms	300	A

D1-D4 Diode

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	650	V
I_F	Diode Continuous Forward Current	150	A
I_{FM}	Diode Maximum Forward Current t_p =1ms	300	A

D5,D6 Diode

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	650	V
I_F	Diode Continuous Forward Current	150	A
I_{FM}	Diode Maximum Forward Current t_p =1ms	300	A

T1-T4 IGBT Characteristics Tc =25℃ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.		Test Conditions
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage		1.70	2.10	V	Ic=150A,V_{GE}=15V,Tj=25℃
			2.05			Ic=150A,V_{GE}=15V,Tj=125℃
			2.10			Ic=150A,V_{GE}=15V,Tj=150℃
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	4.8	5.71	6.2	V	Ic=3mA,V_{CE}=V_{GE}, Tj=25℃
I_{CES}	CollectorCut-Off Current			1.0	mA	V_{CE}=V_{CES},V_{GE}=0V, Tj=25℃
I_{GES}	Gate-Emitter Leakage Current			400	nA	V_{GE}=V_{GES},V_{GE}=0V,Tj=25℃
C_{ies}	Input Capacitance	--	7.86	--	nF	V_{CE} =25V,f=1MHz,
C_{oss}	Output Capacitance	--	0.4	--		V_{GE} =0V
C_{rss}	Reverse Transfer Capacitance	--	0.07	--		
Q_g	Total Gate Charge	--	290	--	nC	V_{GE} = -15…+15V
E_{On}	Turn-On Switching Energy	--	1.81	--	mJ	V_{CC}=300V,I_C=150A R_G=10Ω,V_{GE}=±15V, Tj=25℃
E_{Off}	Turn Off Switching Energy	--	6.63	--		
$t_{d(on)}$	Turn-on Delay Time	--	59	--	ns	
t_r	Turn-on Rise Time	--	286	--		
$t_{d(off)}$	Turn-off Delay Time	--	213	--		
t_f	Turn- off Fall Time	--	66	--		
I_{SC}	SC Data		750		A	tP≤6μs,V_{GE}=15V,Tj=150℃, V_{CC}=360V,V_{CEM}≤650V
R_{thJC}	Thermal resistance,junction to case		0.398		K/W	*per IGBT*
R_{thCH}	Thermal resistance, case to heatsink		0.422		K/W	*per IGBT*
$T_{vj\ op}$	Temperature under switching conditions	-40		175	℃	

D1-D4 Diode Characteristics Tc =25℃ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_F	Diode Forward Voltage		1.54	1.95	V	Ic=150A,VGE=0V,Tj=25℃
			1.38			IF=150A,VGE=0V,Tj=125℃
			1.34			IF=150A,VGE=0V,Tj=150℃
Q_r	Recovered Charge	--	1.48	--	μC	VR=300V,IF=150A, -di/dt=2400A/μs,VGE=-15V Tj=25℃
I_{RM}	Peak Reverse Recovery Current	--	48	--	A	
E_{rec}	Reverse Recovery Energy	--	0.33	--	mJ	
R_{thJC}	Thermal resistance,junction to case		0.544		K/W	*per DIODE*
R_{thCH}	Thermal resistance, case to heatsink		0.496		K/W	*per DIODE*
$T_{vj\ op}$	Temperature under switching conditions	-40		175	℃	

D5-D6 Diode Characteristics Tc =25℃ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_F	Diode Forward Voltage		1.55	1.95	V	Ic=150A,VGE=0V,Tj=25℃
			1.40			IF=150A,VGE=0V,Tj=125℃
			1.35			IF=150A,VGE=0V,Tj=150℃
Q_r	Recovered Charge	--	1.05	--	μC	VR=300V,IF=150A, -di/dt=2400A/μs,VGE=-15V Tj=25℃
I_{RM}	Peak Reverse Recovery Current	--	33	--	A	
E_{rec}	Reverse Recovery Energy	--	0.21	--	mJ	
R_{thJC}	Thermal resistance,junction to case		0.615		K/W	*per DIODE*
R_{thCH}	Thermal resistance, case to heatsink		0.565		K/W	*per DIODE*
$T_{vj\ op}$	Temperature under switching conditions	-40		175	℃	

NTC-Thermistor Characteristics

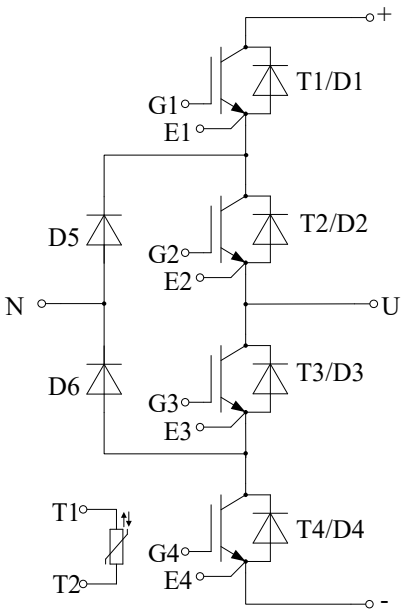
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
R_{25}	Rated Resistance	T_{NTC}=25℃		5.0		kΩ
$B_{25/50}$	B-value	$R_2=R_{25exp}[B_{25/50}(1/T_2-1/(298,15K))]$		3380		K
$B_{25/80}$	B-value	$R_2=R_{25exp}[B_{25/80}(1/T_2-1/(298,15K))]$		3435		K

Package

Symbol	Parameter	Test Conditions	Values	Unit
V_{ISOL}	Isolation test voltage	RMS,f=50Hz,t=1min	2.5	kV
d_{Creep}	Creepage distance		6.3	mm
d_{Clear}	Clearance		5.0	mm
	Internal isolation	basic insulation (class 1, IEC 61140)	Al_2O_3	
CTI	Comparative tracking		> 200	
L_{sCE}	Stray inductance module		14	nH
T_{stg}	Storage temperature		-40~125	℃
M	Mounting torque for module mounting	M5, Screw	1.3~1.5	Nm
G	Weight		39	g

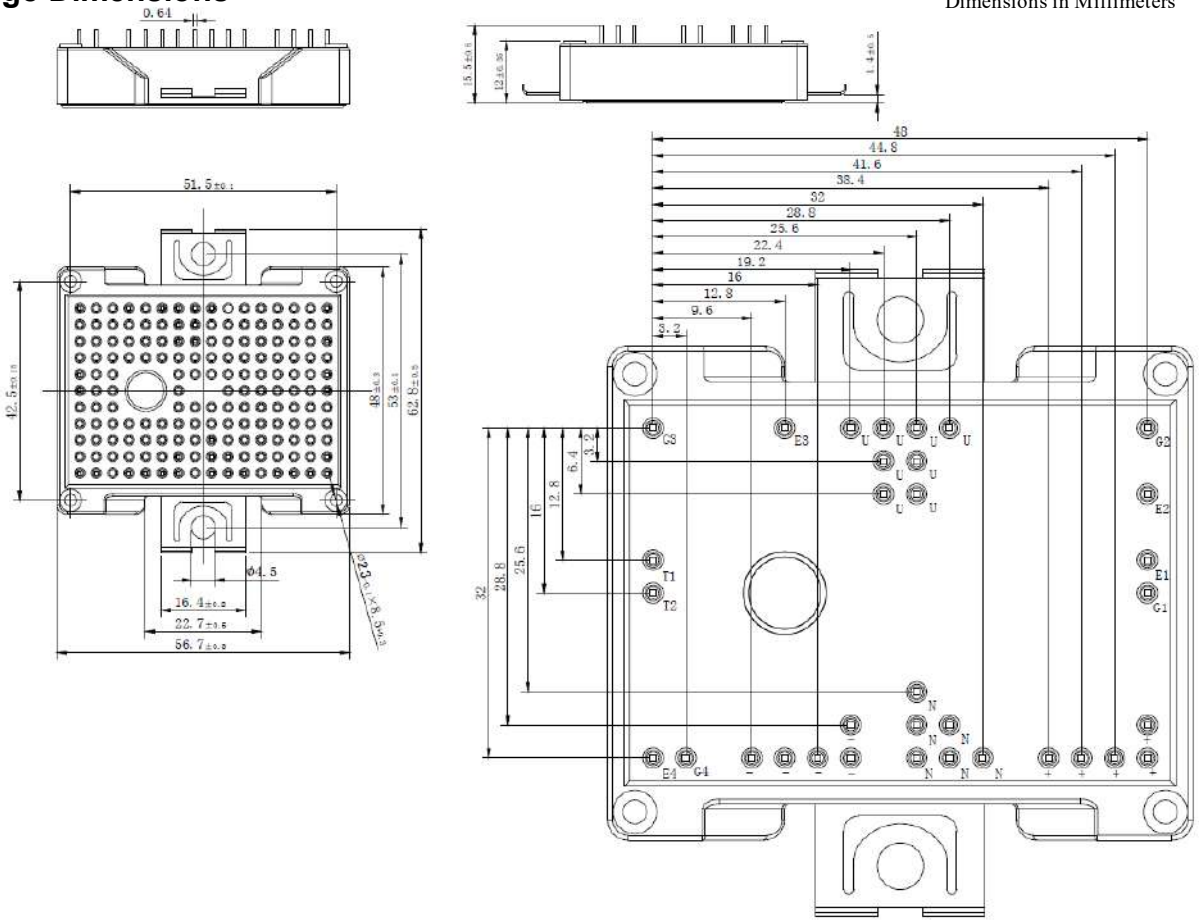
IGBT Module

Circuit diagram



Package Dimensions

Dimensions in Millimeters



Revision History

Document Version	Description of Changes
RevX.0.1	Released

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