

HCG50FT120M3B

$V_{CES}=1200V$, I_C (nom) =50A

Features

- Low inductive design
- Low V_{cesat} with high junction temperature
- Fast & soft reverse recovery anti-parallel FWD
- Low Switching Losses

Benefits

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

Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply

Absolute Maximum Ratings

$T_C=25^{\circ}C$ unless otherwise noted

IGBT-inverter

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate - Emitter Voltage	± 20	V
I_C	Collector Current @ $T_C = 25^{\circ}C$, $T_{vj}=150^{\circ}C$	50	A
I_{CM}	Pulsed Collector Current $t_p=1ms$	100	A

Diodeinverter

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current	50	A
I_{FM}	Diode Maximum Forward Current $t_p=1ms$	100	A

Package



IGBT-inverter Characteristics $T_c = 25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage		1.70	2.15	V	$I_c=50A, V_{GE}=15V, T_j=25^{\circ}C$
			1.95			$I_c=50A, V_{GE}=15V, T_j=125^{\circ}C$
			2.0			$I_c=50A, V_{GE}=15V, T_j=150^{\circ}C$
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	5.2	5.8	6.5	V	$I_c=2.4mA, V_{CE}=V_{GE}, T_j=25^{\circ}C$
I_{CES}	CollectorCut-Off Current			1.0	mA	$V_{CE}=V_{CES}, V_{GE}=0V, T_j=25^{\circ}C$
I_{GES}	Gate-Emitter Leakage Current			400	nA	$V_{GE}=V_{GES}, V_{GE}=0V, T_j=25^{\circ}C$
E_{On}	Turn-On Switching Energy	--	6.10	--	mJ	$V_{CC}=600V, I_c=75A, R_G=1.5\Omega, V_{GE}=\pm 15V, T_j=25^{\circ}C$
E_{Off}	Turn Off Switching Energy	--	2.88	--		
$t_{d(on)}$	Turn-on Delay Time	--	171	--	ns	
t_r	Turn-on Rise Time	--	32	--		
$t_{d(off)}$	Turn-off Delay Time	--	340	--		
t_f	Turn- off Fall Time	--	82	--		
I_{sc}	SC Data		220		A	$t_p\leq 10\mu s, V_{GE}=15V, T_j=125^{\circ}C, V_{CC}=900V, V_{CEM}\leq 1200V$
R_{thJC}	Thermal resistance,junction to case		0.512		K/W	<i>per IGBT</i>
R_{thCH}	Thermal resistance, case to heatsink		0.197		K/W	<i>per IGBT</i>
$T_{vj\ op}$	Temperature under switching conditions	-40		150	$^{\circ}C$	

Diode-inverter Characteristics $T_c = 25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_F	Diode Forward Voltage		1.70	2.15	V	$I_c=50\text{A}, V_{GE}=0\text{V}, T_j=25^{\circ}\text{C}$
			1.65			$I_F=50\text{A}, V_{GE}=0\text{V}, T_j=125^{\circ}\text{C}$
			1.65			$I_F=50\text{A}, V_{GE}=0\text{V}, T_j=150^{\circ}\text{C}$
Q_r	Recovered Charge	--	5.2	--	μC	$V_R=600\text{V}, I_F=50\text{A}, -di/dt=1890\text{A}/\mu\text{s}, V_{GE}=-15\text{V}, T_j=25^{\circ}\text{C}$
I_{RM}	Peak Reverse Recovery Current	--	51	--	A	
E_{rec}	Reverse Recovery Energy	--	1.62	--	mJ	
R_{thJC}	Thermal resistance, junction to case		0.793		K/W	<i>per DIODE</i>
R_{thCH}	Thermal resistance, case to heatsink		0.306		K/W	<i>per DIODE</i>
$T_{vj op}$	Temperature under switching conditions	-40		150	$^{\circ}\text{C}$	

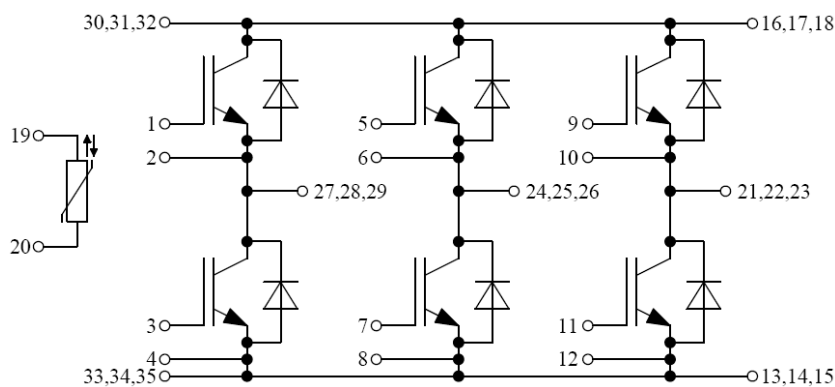
NTC-Thermistor Characteristics

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

Package

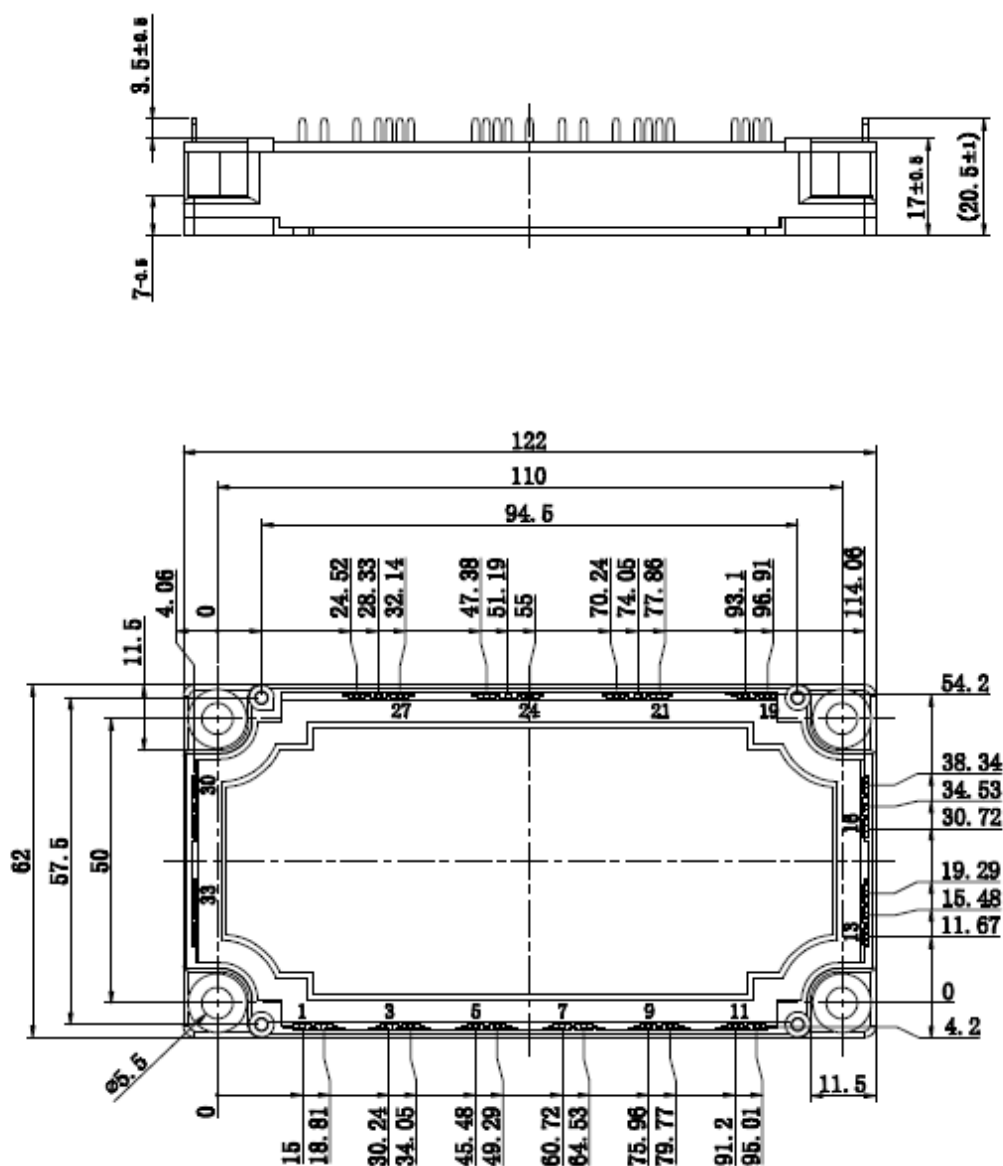
Symbol	Parameter	Test Conditions	Values	Unit
V_{ISOL}	Isolation test voltage	RMS, f=50Hz, t=1min	2.5	kV
d_{Creep}	Creepage distance		10.0	mm
d_{Clear}	Clearance		7.5	mm
CTI	Comparative tracking index		> 200	
L_{sCE}	Stray inductance module		60	nH
T_{stg}	Storage temperature		-40~125	$^{\circ}\text{C}$
M	Mounting torque for module mounting	M5, Screw	3~6	Nm
G	Weight		300	g

Circuit diagram



Package Dimensions

Dimensions in Millimeters



Revision History

Document Version	Description of Changes
RevX.0.1	Released

Zhejiang HIITIO New Energy Co., Ltd

ADD : NO.1125 Zhixing Road,Qiaonan District, Xiaoshan Economic and
Technological Development Zone, Hangzhou, Zhejiang

TEL :400-667-9977

