STARPOWER

SEMICONDUCTOR **IGBT**

GD25FFX120C5SP

1200V/25A 6 in one-package

General Description

STARPOWER IGBT Power Module provides ultra low conduction loss as well as short circuit ruggedness. They are designed for the applications such as general inverters and UPS.

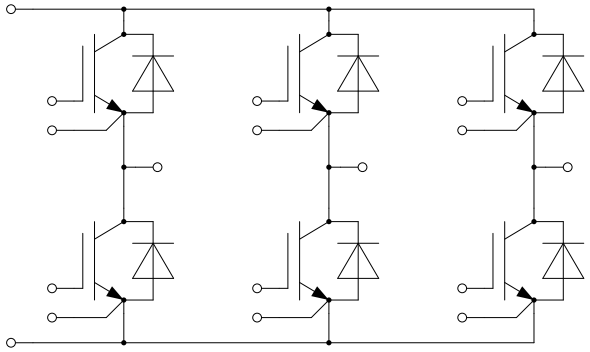
Features

- Low $V_{CE(sat)}$ Trench IGBT technology
- 10μs short circuit capability
- $V_{CE(sat)}$ with positive temperature coefficient
- Maximum junction temperature 175°C
- Low inductance case
- Fast & soft reverse recovery anti-parallel FWD
- Isolated copper baseplate using DBC technology

Typical Applications

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

Equivalent Circuit Schematic



Absolute Maximum Ratings T_C=25°C unless otherwise noted

IGBT

Symbol	Description	Value	Unit
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	±20	V
I_C	Collector Current @ T_C=25°C @ T_C=100°C	50 25	A
I_{CRM}	Repetitive Peak Collector Current t_p limited by T_{vjop}	50	A
P_D	Maximum Power Dissipation @ T_{vj}=175°C	242	W

Diode

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current	25	A
I_{FRM}	Repetitive Peak Forward Current tp limited by T_{vjop}	50	A

Module

Symbol	Description	Value	Unit
T_{vjmax}	Maximum Junction Temperature	175	°C
T_{vjop}	Operating Junction Temperature	-40 to +150	°C
T_{STG}	Storage Temperature Range	-40 to +125	°C
V_{ISO}	Isolation Voltage RMS,f=50Hz,t=1min	2500	V

IGBT Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C=25A,V_{GE}=15V, T_{vj}=25°C		1.70	2.15	V
		I_C=25A,V_{GE}=15V, T_{vj}=125°C		1.95		
		I_C=25A,V_{GE}=15V, T_{vj}=150°C		2.00		
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C=1.00mA,V_{CE}=V_{GE}, T_{vj}=25°C	5.6	6.2	6.8	V
I_{CES}	Collector Cut-Off Current	V_{CE}=V_{CES},V_{GE}=0V, T_{vj}=25°C			1.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE}=V_{GES},V_{CE}=0V, T_{vj}=25°C			400	nA
R_{Gint}	Internal Gate Resistance			0		Ω
C_{ies}	Input Capacitance	V_{CE}=25V,f=1MHz, V_{GE}=0V		2.59		nF
C_{res}	Reverse Transfer Capacitance			0.07		nF
Q_G	Gate Charge	V_{GE}=-15…+15V		0.19		μC

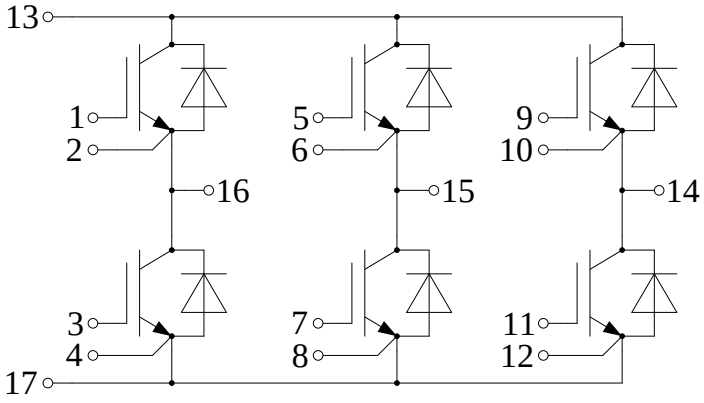
Diode Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Diode Forward Voltage	I_F=25A,V_{GE}=0V,T_{vj}=25°C		1.85	2.30	V
		I_F=25A,V_{GE}=0V,T_{vj}=125°C		1.90		
		I_F=25A,V_{GE}=0V,T_{vj}=150°C		1.95		

Module Characteristics T_C=25°C unless otherwise noted

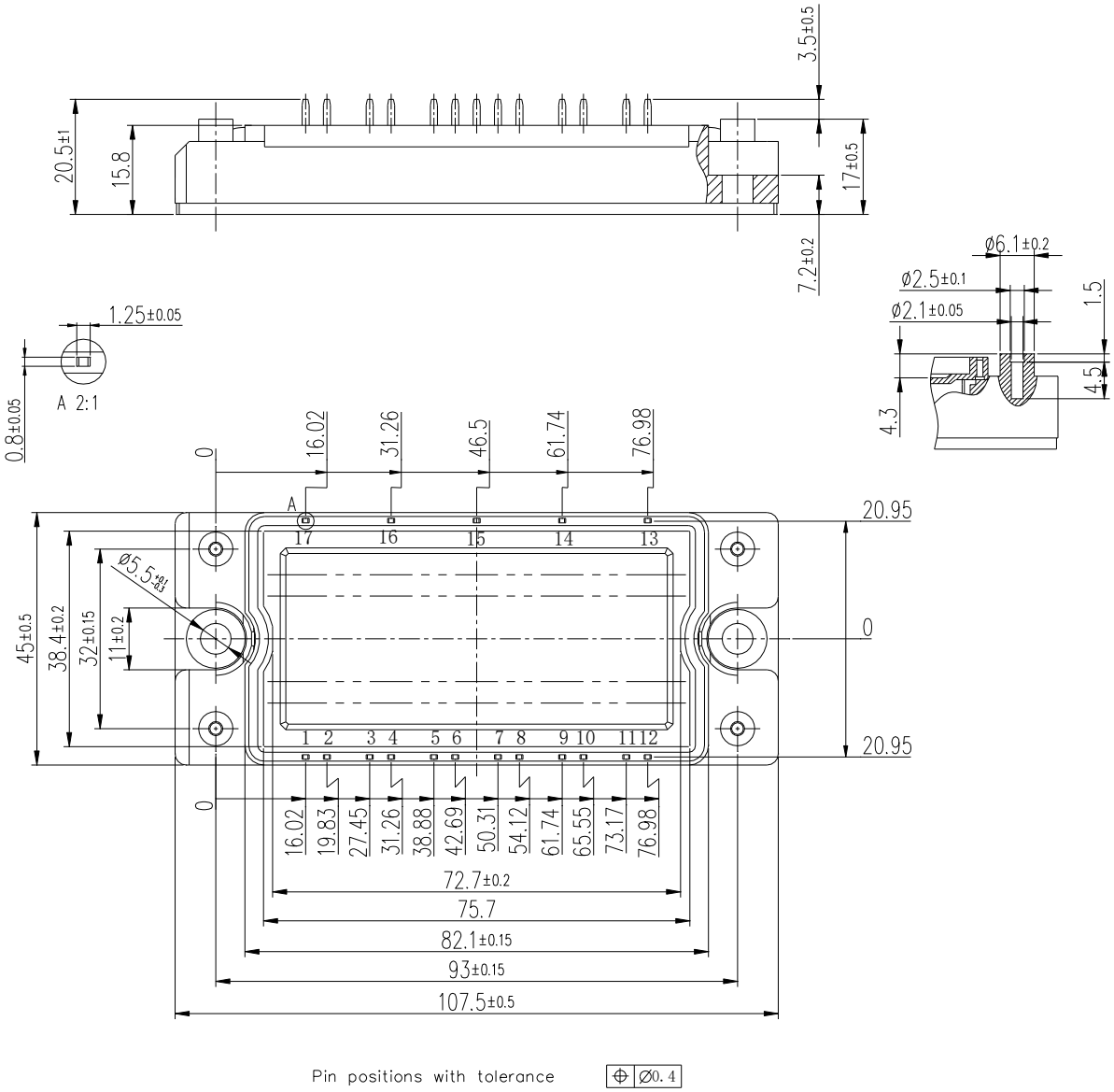
Symbol	Parameter	Min.	Typ.	Max.	Unit
L_{CE}	Stray Inductance		19		nH
$R_{CC'+EE'}$	Module Lead Resistance, Terminal to Chip		1.80		mΩ
R_{thJC}	Junction-to-Case (per IGBT) Junction-to-Case (per Diode)			0.619 1.014	K/W
M	Mounting Torque, Screw M5	3.0		6.0	N.m
G	Weight of Module		200		g

Circuit Schematic



Package Dimensions

Dimensions in Millimeters



Pin positions with tolerance ⌖ Ø0.4

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