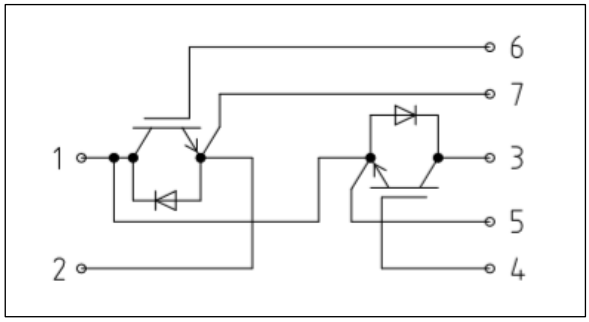
IGBT 34mm 半桥模块

Features



- 1200V 100A
- $V_{CE(sat)(typ.)}$= 2.45V @V_{GE}= 15V,I_C= 100A
- High speed switching
- Higher system efficiency
- Soft current turn-off waveforms

General Description

JIAEN FS IGBTs offer lower losses and higher energy efficiency
For general inverter and other soft switching applications.

IGBT Maximum Rated Values(T_C=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	± 20	V
I_C	Continuous Collector Current (T_C=25 ℃)	140	A
	Continuous Collector Current (T_C=80℃)	100	A
I_{CRM}	Repetitive Peak Collector Current (tp= 1 ms)	200	A
P_D	Maximum Power Dissipation (T_C=25 ℃)	500	W

IGBT Characteristics (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C= 100A	-	2.45	3.0	V
	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C= 100A	-	2.95		V
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE}= V_{CE}, I_C= 4mA	5.0	6.0	7.0	V
Q_g	Total Gate Charge	V_{GE}=-15V…+15V	-	1.5		uC
R_g	Gate Resistance	V_{GE}= 0V, f= 1MHz		5		Ω
C_{ies}	Input Capacitance	V_{CE}=25V V_{GE}=0V f = 1MHz	-	8.3	-	nF
C_{oes}	Output Capacitance		-	1.5	-	nF
C_{res}	Reverse Transfer Capacitance		-	0.42	-	nF
I_{CES}	Collector-Emitter Leakage Current	V_{CE}= 1200V, V_{GE}= 0V	-	-	5.0	mA
I_{GES}	Gate Leakage Current, Forward	V_{GE}=20V, V_{CE}= 0V	-	-	200	nA
	Gate Leakage Current, Reverse	V_{GE}= -20V, V_{CE}= 0V	-	-	-200	nA

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V V_{GE}=±15V I_C=100A R_G=10Ω Inductive Load T_C=25℃	-	32.5	-	ns
t_r	Turn-on Rise Time		-	50	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	300	-	ns
t_f	Turn-off Fall Time		-	63	-	ns
Eon	Turn-on Switching Loss		-	4	-	mJ
Eoff	Turn-off Switching Loss		-	14	-	mJ
Ets	Total Switching Loss		-	18	-	mJ
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V V_{GE}=±15V I_C=100A R_G=10Ω Inductive Load T_C=125℃	-	35	-	ns
t_r	Turn-on Rise Time		-	60	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	345	-	ns
t_f	Turn-off Fall Time		-	95	-	ns
Eon	Turn-on Switching Loss		-	4.5	-	mJ
Eoff	Turn-off Switching Loss		-	15.5	-	mJ
Ets	Total Switching Loss		-	20	-	mJ
$R_{th\ j\text{-}c}$	Thermal resistance, junction to case				0.23	K/W
Tvj op	Temperature under switching condition		-40		125	℃

Diode Maximum Rated Values (TC=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{RRM}	Repetitive peak reverse voltage	1200	V
I_F	Continuous DC Forward Current	100	A
I_{FRM}	Repetitive Peak Collector Current (tp= 1 ms)	200	A

Diode Characteristics (TC=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	I_F=100A V_{GE}=0V	-			
		T_C=25℃		2.15	2.7	V
		T_C=125℃		1.85		V
I_{RM}	Peak reverse recovery current	I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=25℃		70.5		A
		I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=125℃		98		A

Qr r	Diode Reverse Recovery Charge	I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=25℃	-	6		uC
		I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=125℃		15		uC
E_{rec}	Reverse recovery energy	I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=25℃		2.2		mJ
		I_C=100A V_R=600V -di/dt=1000A/us V_{GE}=-15V TC=125℃		6		mJ
$R_{th\ j\text{-}c}$	Thermal resistance, junction to case				0.64	K/W
$T_{vj\ op}$	Temperature under switching condition		-40		125	℃

Module

Isolation test voltage	RMS, f = 50 Hz, t = 1 min	V_{ISOL}	2.5	kV
Material of module baseplate			Cu	
Internal isolation	basic insulation (class 1, IEC 61140)		Al_2O_3	
Creepage distance	Terminal to terminal		10	mm
Clearance	Terminal to terminal		7.5	mm
Comperative tracking index		CTI	>225	

			min.	typ.		Max.
Thermal resistance, case to heatsink		$R_{th\ c\text{-}H}$		0.01		K/W
Stray inductance module		L_{sCE}		28		nH
Module lead resistance, terminals - chip		Rcc+ee		1.8		mΩ
Storage temperature		Tstg	-40		125	℃
Mounting torque for modul mounting		M	3		6	Nm
Terminal connection torque		M	2.5		5	Nm
Weight		G	150			g

Notes：

1. Repetitive Rating: Pulse width limited by maximum junction temperature

Typical Performance Characteristics

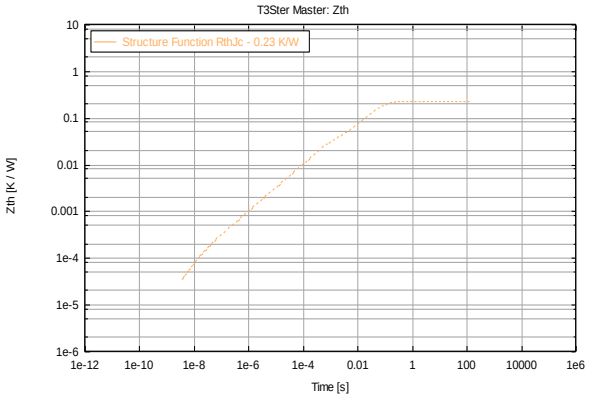


Figure 1. transient thermal impedance IGBT

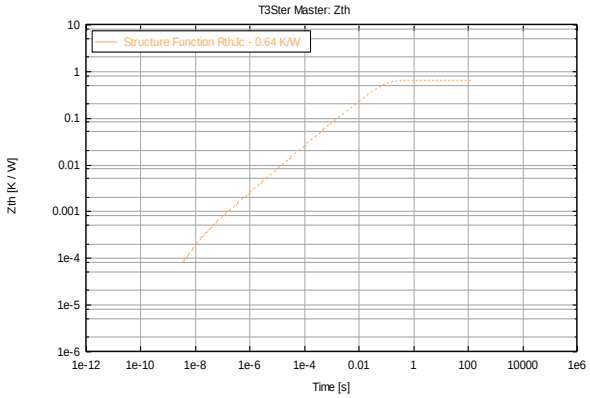
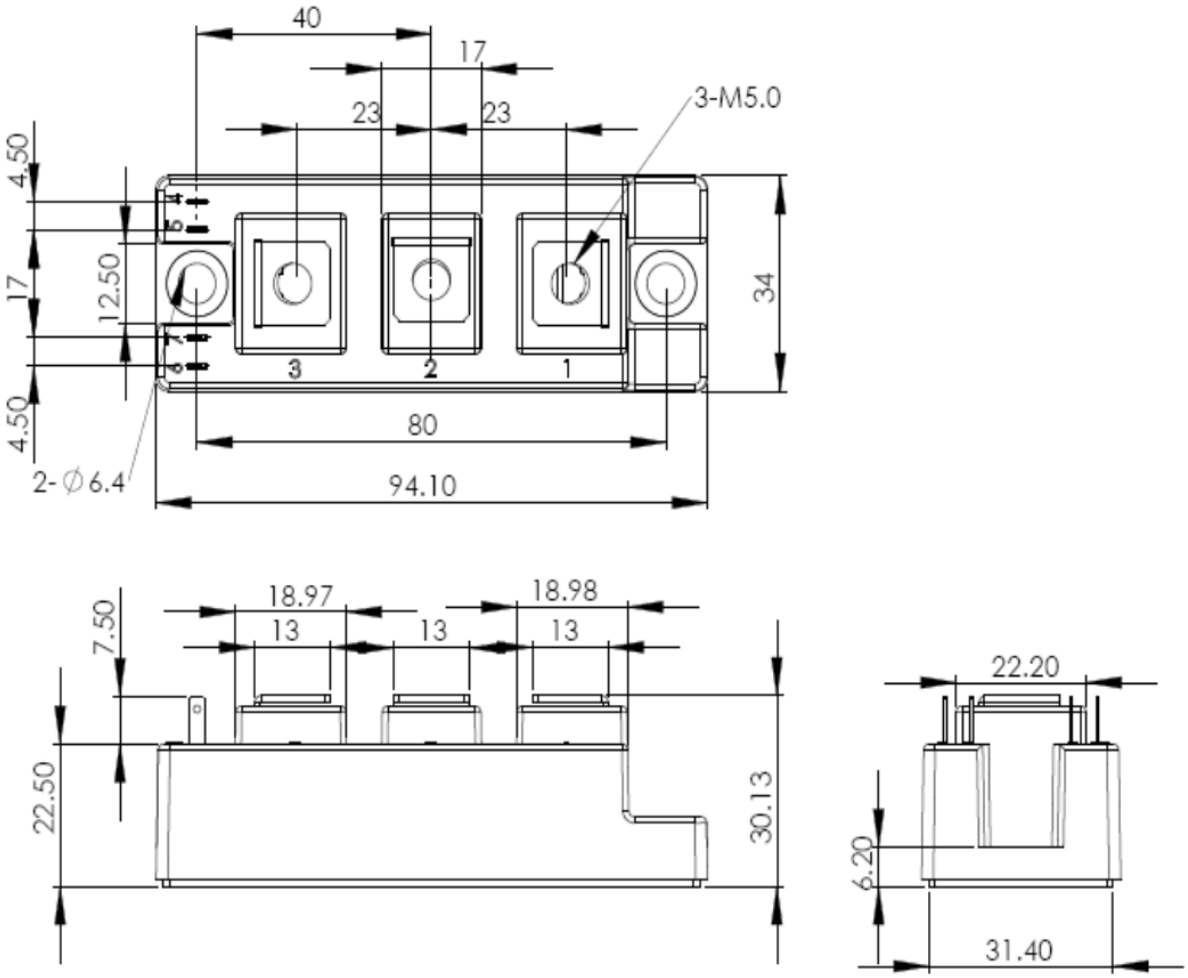


Figure 2. transient thermal impedance Diode

Mechanical Dimensions

尺寸单位：：mm



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