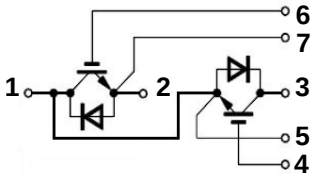
General Description

TRinno IGBT power module provides low conduction and switching losses as well as short circuit ruggedness. It is designed for applications such as Motor Driver, IH , Rectifier and Welder.



Features

- 1200V Field Stop Trench IGBT Technology
- Fast & Soft Recovery Diodes
- Positive Temperature Coefficient
- Short Circuit Withstanding Time : 10μs

Applications

Motor driver, IH(Induction heating), Rectifier, Welder

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±20	V
Continuous Collector Current	T_C = 25 ℃	I_C	200	A
	T_C = 100 ℃		100	A
Pulsed Collector Current (Note 1)		I_{CM}	200	A
Diode Continuous Forward Current	T_C = 100 ℃	I_F	100	A
Power Dissipation	T_C = 25 ℃	P_D	658	W
	T_C = 100 ℃		263	W
Operating Junction Temperature		T_{vj}	-40 ~ 150	℃
Storage Temperature Range		T_{STG}	-40 ~ 150	℃

Notes :
(1) Repetitive rating : Pulse width limited by maximum junction temperature

Thermal Characteristics

Parameter	Symbol	Value	Unit
Maximum Thermal resistance, Junction-to-Case (Per ½ Module)	$R_{\theta JC}$ (IGBT)	0.19	K/W
Maximum Thermal resistance, Junction-to-Case (Per ½ Module)	$R_{\theta JC}$ (DIODE)	0.75	K/W

Electrical Characteristics of the IGBT T_{vj}=25℃, unless otherwise noted

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
OFF						
Collector – Emitter Breakdown Voltage	BV_{CES}	V_{GE} = 0V, I_C = 1mA	1200	--	--	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE} = 1200V, V_{GE} = 0V	--	--	1	mA
Gate – Emitter Leakage Current	I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V	--	--	± 100	nA
ON						
Gate – Emitter Threshold Voltage	$V_{GE(TH)}$	V_{GE} = V_{CE}, I_C = 100mA	5.0	--	8.5	V
Collector – Emitter Saturation Voltage	$V_{CE(SAT)}$	V_{GE} = 15V, I_C = 100A, T_{vj} = 25 ℃	--	2.0	2.5	V
		V_{GE} = 15V, I_C = 100A, T_{vj} = 125 ℃	--	2.3		V
DYNAMIC						
Input Capacitance	C_{IES}	V_{CE} = 25V, V_{GE} = 0V f = 1MHz	--	9.5	--	nF
Output Capacitance	C_{OES}		--	530	--	pF
Reverse Transfer Capacitance	C_{RES}		--	70	--	pF
SWITCHING						
Turn-On Delay Time	$t_{d(on)}$	V_{CC} = 600V, I_C = 100A R_G = 10Ω, V_{GE} = ±15V Inductive Load, T_{vj} = 25 ℃	--	85	--	ns
Rise Time	t_r		--	85	--	ns
Turn-Off Delay Time	$t_{d(off)}$		--	325	--	ns
Fall Time	t_f		--	120	--	ns
Turn-On Switching Loss	E_{ON}		--	8.1	--	mJ
Turn-Off Switching Loss	E_{OFF}		--	3.8	--	mJ
Total Switching Loss	E_{TS}		--	10.7	--	mJ
Turn-On Delay Time	$t_{d(on)}$	V_{CC} = 600V, I_C = 100A R_G = 10Ω, V_{GE} = ±15V Inductive Load, T_{vj} = 125 ℃	--	75	--	ns
Rise Time	t_r		--	78	--	ns
Turn-Off Delay Time	$t_{d(off)}$		--	290	--	ns
Fall Time	t_f		--	170	--	ns
Turn-On Switching Loss	E_{ON}		--	11.8	--	mJ
Turn-Off Switching Loss	E_{OFF}		--	6.3	--	mJ
Total Switching Loss	E_{TS}		--	16.2	--	mJ
Total Gate Charge	Q_g	V_{CC} = 600V, I_C = 100A V_{GE} = 15V	--	730	--	nC
Gate-Emitter Charge	Q_{ge}		--	126	--	nC
Gate-Collector Charge	Q_{gc}		--	327	--	nC
Short Circuit Withstanding Time	t_{SC}	V_{CC} = 600V, V_{GE} = 15V, T_{vj} = 125 ℃	10	--	--	μs

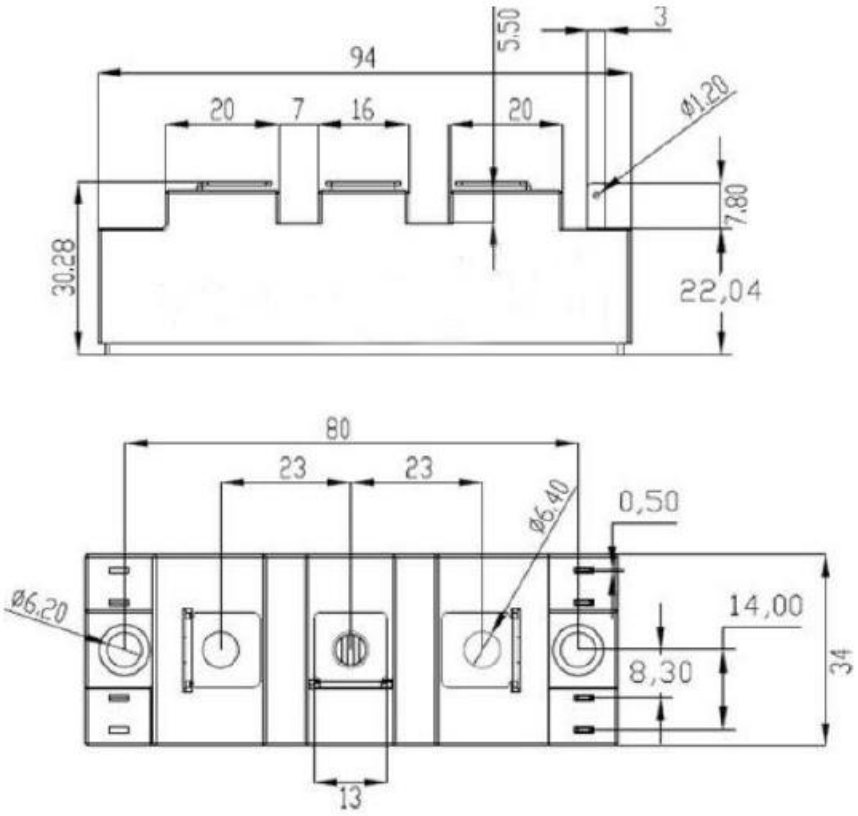
Electrical Characteristics of the DIODE T_{vj}=25℃, unless otherwise noted

Parameter	Symbol	Test condition		Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_{FM}	I_F = 100A	T_{vj} = 25 ℃	--	2.3	2.8	V
			T_{vj} = 125 ℃	--	2.2	2.7	
Reverse Recovery Current	I_{rr}	V_{CC} = 600V, I_F = 100A R_G = 10Ω, V_{GE} = ±15V Inductive Load	T_{vj} = 25 ℃	--	61	--	A
			T_{vj} = 125 ℃	--	74	--	
Reverse Recovery Charge	Q_{rr}		T_{vj} = 25 ℃	--	4.7	--	μC
			T_{vj} = 125 ℃	--	9.8	--	
Reverse Recovery Time	t_{rr}		T_{vj} = 25 ℃	--	130	--	ns
			T_{vj} = 125 ℃	--	175	--	

Characteristics of the Module

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Isolation Voltage	V_{ISO}	RMS, f=50Hz, t=1 minutes	--	2.5	--	kV
Terminal mounting torque (M5)	--		2.5	--	5.0	N.m
Weight	--		--	155	--	g

Package Outline (Dimension in mm)



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