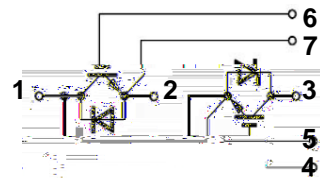


General Description

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 : 10 s



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	I_C	$T_C = 25$	600	A
		$T_C = 100$	300	A
Pulsed Collector Current (Note 1)	I_{CM}	600	A	
Diode Continuous Forward Current	I_F	300	A	
Power Dissipation	P_D	$T_C = 25$	1042	W
		$T_C = 100$	417	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)		0.12	K/W
Maximum Thermal resistance, Junction-to-Case (Per ½ Module)		0.15	K/W

Electrical Characteristics of the IGBT $T_{vj}=25^{\circ}\text{C}$, 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}	$V_{CE} = 1200V, V_{GE} = 0V$	--	--	2	mA
Gate Emitter Leakage Current	I_{GES}	$V_{CE} = 0V, V_{GE} = 20V$	--	--	200	nA
ON						
Gate Emitter Threshold Voltage	$V_{GE(TH)}$	$V_{GE} = V_{CE}, I_C = 200mA$	5.0	--	8.0	V
Collector Emitter Saturation Voltage	$V_{CE(SAT)}$	$V_{GE} = 15V, I_C = 200A, T_{vj} = 25$	--	2.0	2.5	V
		$V_{GE} = 15V, I_C = 200A, T_{vj}$				

Electrical Characteristics of the DIODE $T_{vj}=25^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit	
Diode Forward Voltage	V_{FM}	$I_F = 300\text{A}$	$T_{vj} = 25$	--	2.3	2.8	V
			$T_{vj} = 125$	--	2.2	2.7	
Reverse Recovery Current	I_{rr}	$V_{CC} = 600\text{V}, I_F = 300\text{A}$ $R_G = 2, V_{GE} = 15\text{V}$ Inductive Load	$T_{vj} = 25$	--	136	--	A
			$T_{vj} = 125$	--	168	--	
Reverse Recovery Charge	Q_{rr}	$V_{CC} = 600\text{V}, I_F = 300\text{A}$ $R_G = 2, V_{GE} = 15\text{V}$ Inductive Load	$T_{vj} = 25$	--	12.7	--	C
			$T_{vj} = 125$	--	14.9	--	
Reverse Recovery Time	t_{rr}	$V_{CC} = 600\text{V}, I_F = 300\text{A}$ $R_G = 2, V_{GE} = 15\text{V}$ Inductive Load	$T_{vj} = 25$	--	217	--	ns
			$T_{vj} = 125$	--	246	--	

Characteristics of the Module

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

IGBT Characteristics

Fig. 1 Output characteristics

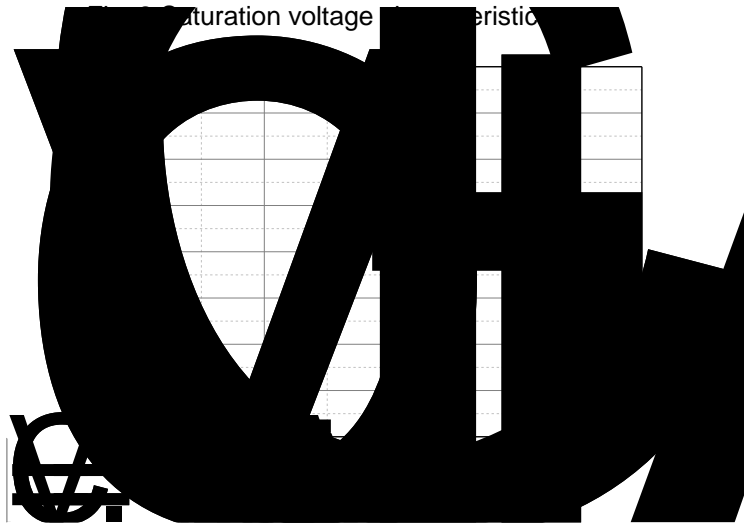
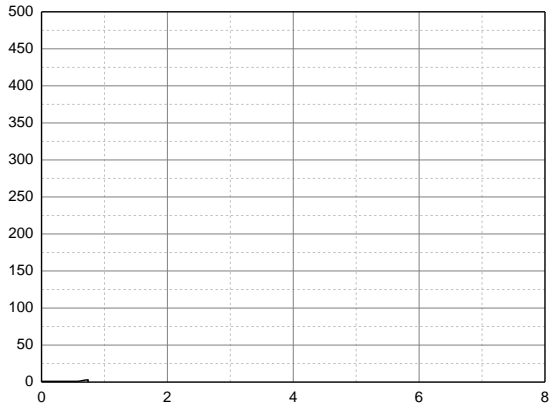


Fig. 3 Switching loss vs. gate resistor



Fig. 4 Switching loss vs. collector current

Fig. 5 Transient thermal impedance of IGBT

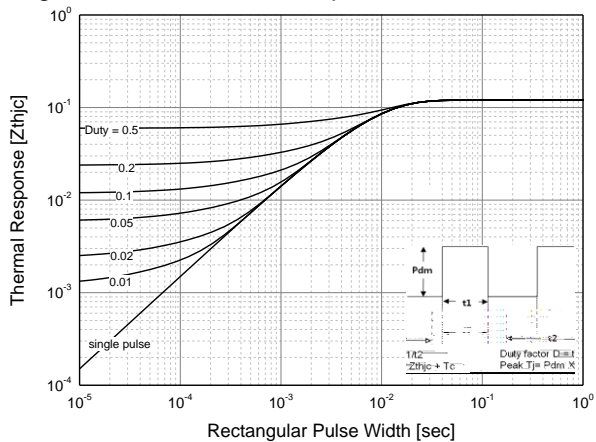
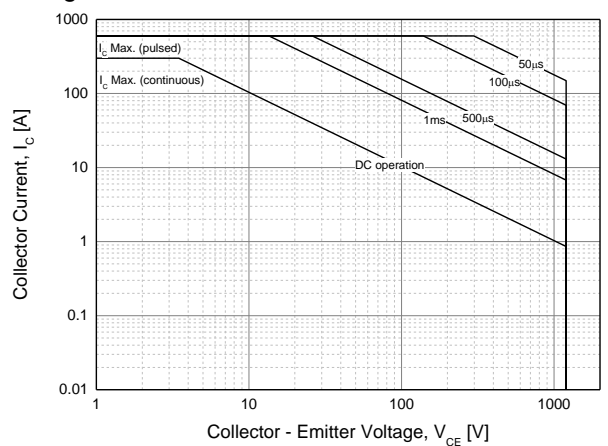


Fig. 6 SOA



IGBT Characteristics

Fig. 7 RBSOA

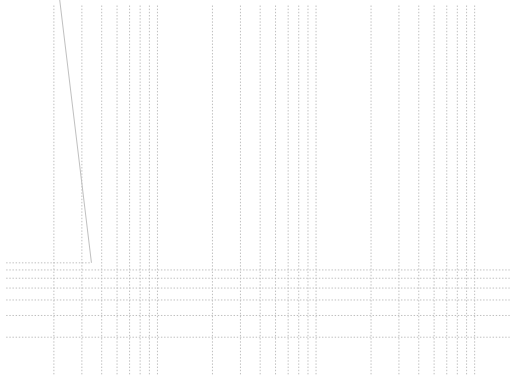


Fig. 8 Load current vs. frequency

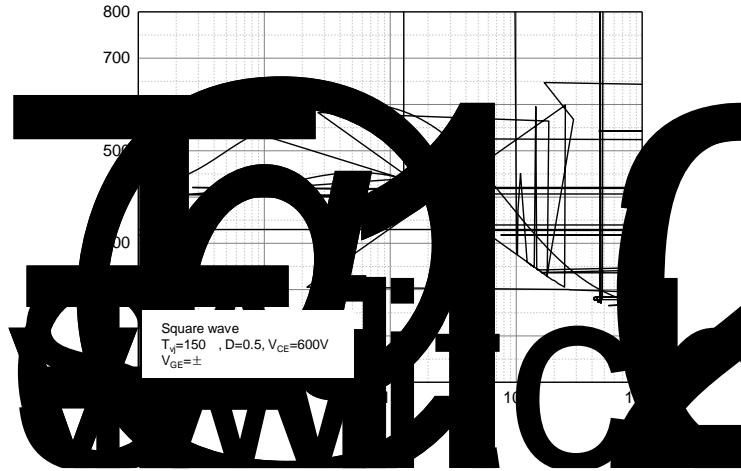
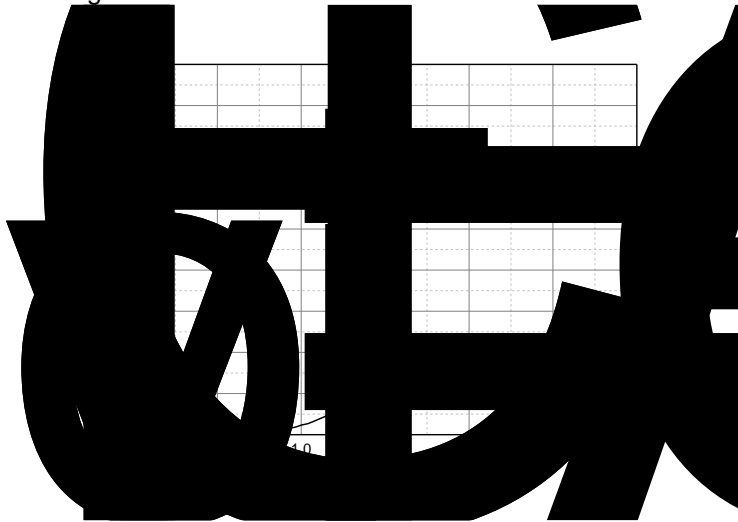
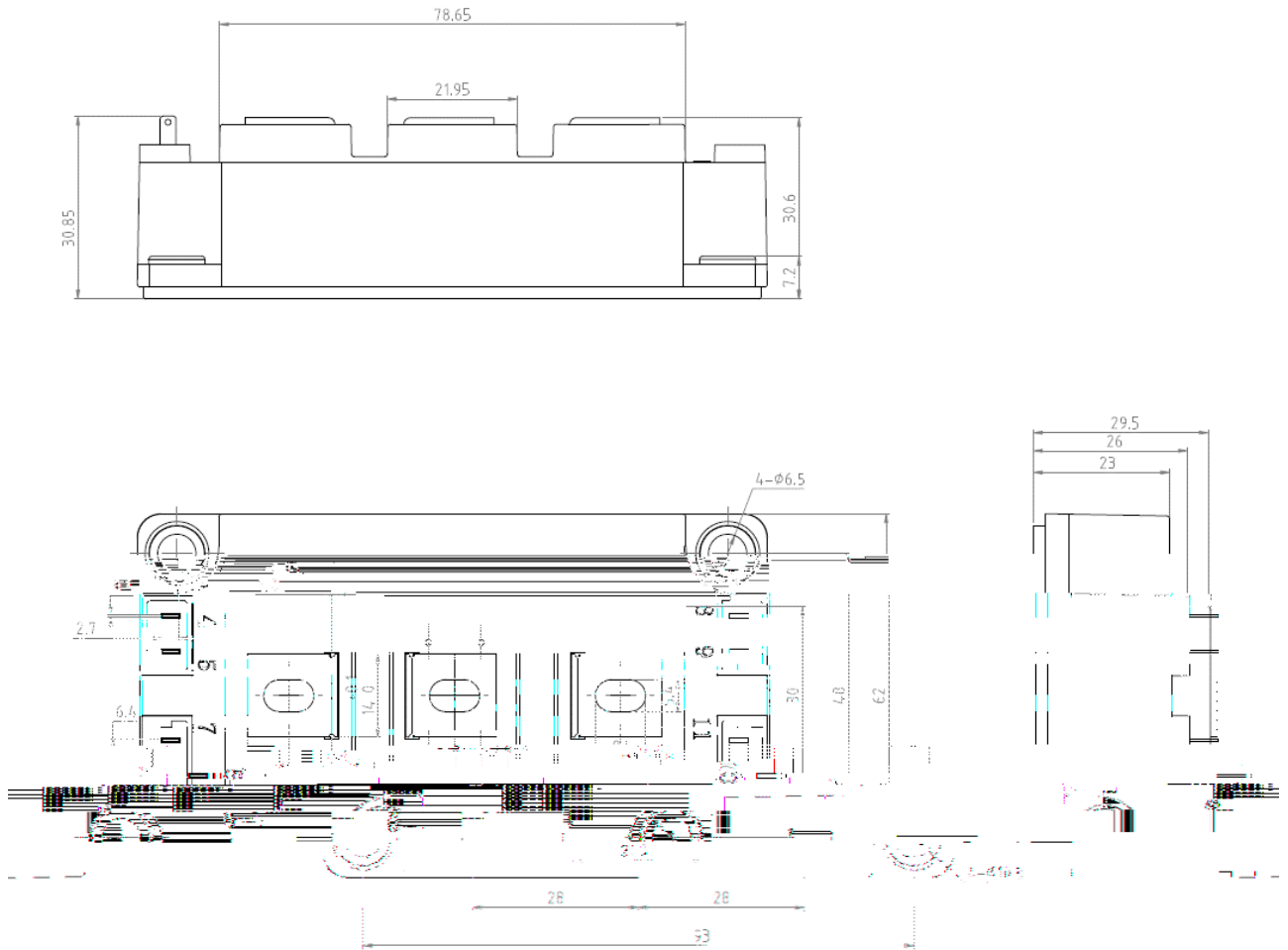


Fig. 9 Conduction characteristics of diode



Package Outline (Dimension in mm)



Disclaimer

TRinno technology reserves the right to make changes without notice to products herein to improve reliability, performance, or design. The information given in this document is believed to be accurate and reliable. However, it shall in no event be regarded as a guarantee of conditions and characteristics. With respect to any information regarding the application of the device, TRinno technology hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of patent rights of any third party.