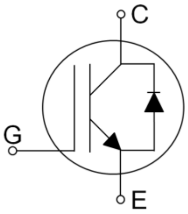
TRINNO TECHNOLOGY

TGH15N120FDR

Field Stop Trench IGBT

Features

- 1200V Field Stop Trench IGBT IGBT Technology
- High Speed Switching
- Low Conduction Loss
- Positive Temperature Coefficient
- Easy Parallel Operation
- Short Circuit Withstanding Time 5 s
- RoHS Compliant
- JEDEC Qualification



Applications

UPS, Welder, Inverter, Solar

Device	Package	Marking	Remark
TGH15N120FDR	TO-247	TGH15N120FDR	RoHS

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±25	V
Continuous Collector Current	T_C = 25 ℃	I_C	30	A
	T_C = 100 ℃		15	A
Pulsed Collector Current (Note 1)		I_{CM}	45	A
Diode Continuous Forward Current	T_C = 100 ℃	I_F	15	A
Power Dissipation	T_C = 25 ℃	P_D	227	W
	T_C = 100 ℃		91	W
Operating Junction Temperature		T_{vj}	-55 ~ 150	℃
Storage Temperature Range		T_{STG}	-55 ~ 150	℃
Maximum lead temperature for soldering purposes,		T_L	300	℃

Notes :

(1) Repetitive rating : Pulse width limited by maximum junction temperature, During production, high current switching capability is 100% verified with the inductive load single-pulse switching test. (Ic=45A)

Thermal Characteristics

Parameter	Symbol	Value	Unit
Maximum Thermal resistance, Junction-to-Case	R_{JC} (IGBT)	0.55	℃/W
Maximum Thermal resistance, Junction-to-Case	R_{JC} (DIODE)	3	℃/W
Maximum Thermal resistance, Junction-to-Ambient	R_{JA}	40	℃/W

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 = 15A	T_{vj} = 25 ℃	--	2.00	--	V
			T_{vj} = 150 ℃	--	2.26	--	
Reverse Recovery Time	t_{rr}	I_F = 15A, di/dt = 200A/µs	T_{vj} = 25 ℃	--	200	--	ns
			T_{vj} = 150 ℃	--	270	--	
Reverse Recovery Current	I_{rr}		T_{vj} = 25 ℃	--	22	--	A
			T_{vj} = 150 ℃	--	26	--	
Reverse Recovery Charge	Q_{rr}		T_{vj} = 25 ℃	--	2230	--	nC
			T_{vj} = 150 ℃	--	4300	--	

IGBT Characteristics

Fig. 1 IGBT Output Characteristics

Fig. 2 IGBT Output Characteristics

Fig. 3 IGBT Saturation Voltage vs. Junction Temperature

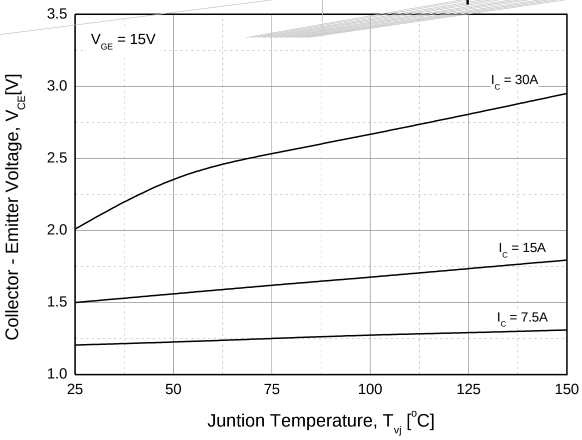


Fig. 4 IGBT Saturation Voltage vs. Gate Bias

Fig. 5 IGBT Saturation Voltage vs. Gate Bias

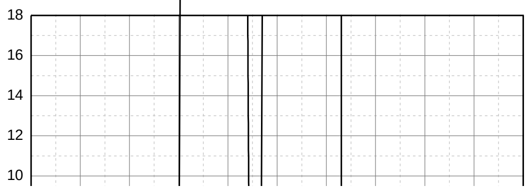
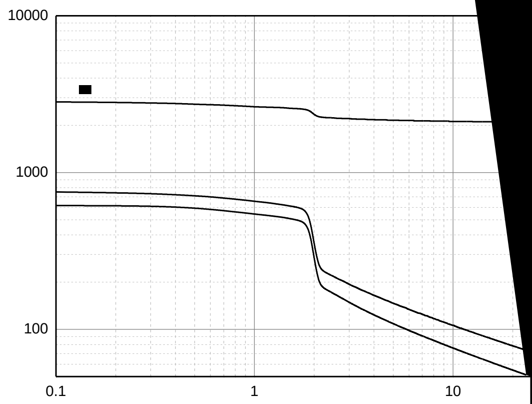


Fig. 6 IGBT Capacitance Characteristics



IGBT Characteristics

Fig. 7 [illegible] ate Resistor

Fig. 8 Turn-off Time vs. Gate Resistor

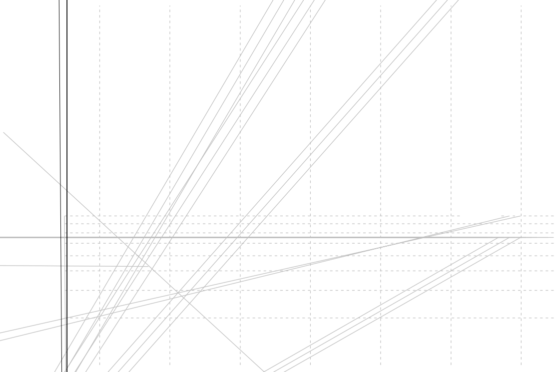


Fig. 9 Sw[illegible]

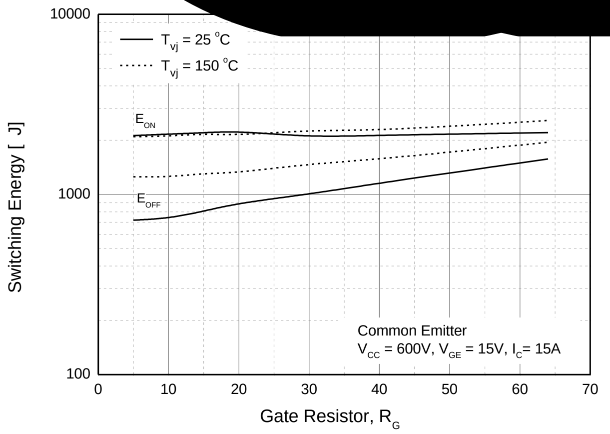


Fig. 10 [illegible]n Time vs. Collector Current

Fig. 11 Turn-off Time vs. Collector Current

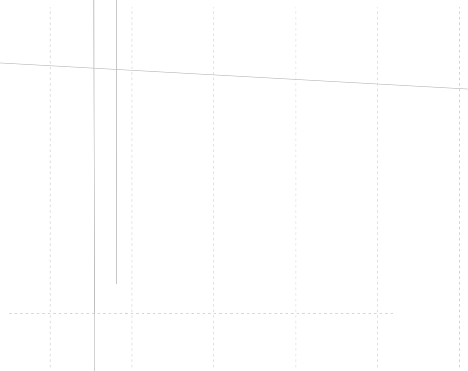
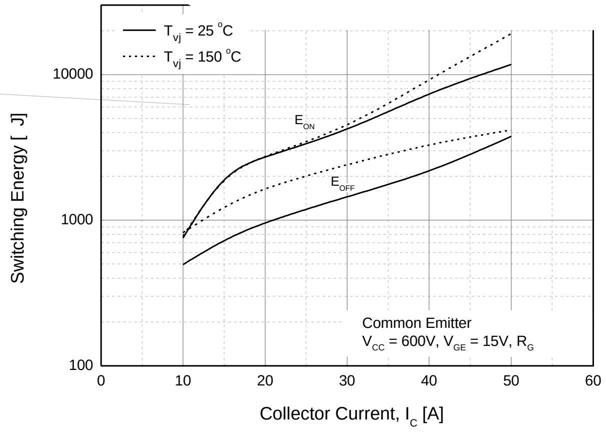


Fig. 12 Switching Loss vs. Collector Current



IGBT Characteristics

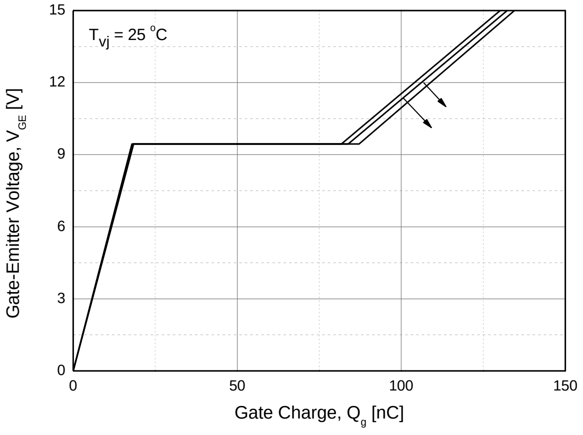


Fig. 13 Gate Charge characteristics

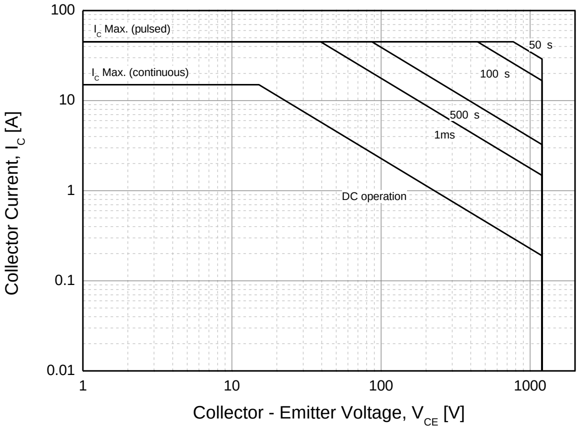


Fig. 14 SOA

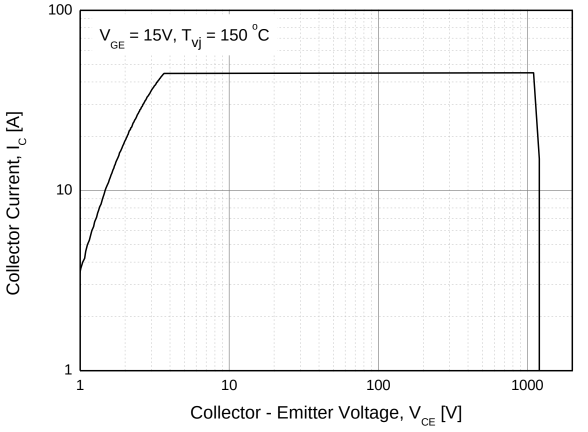


Fig. 15 RBSOA

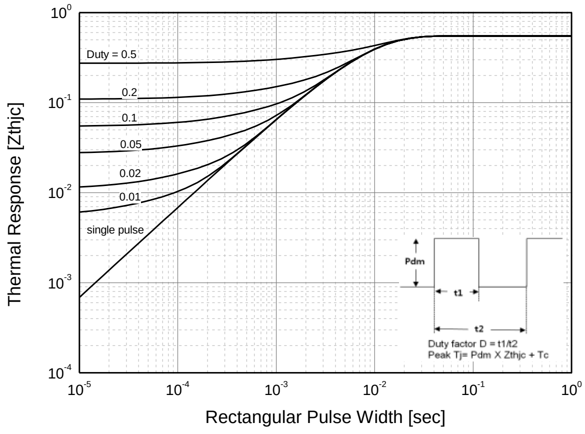


Fig. 16 Transient Thermal Impedance of IGBT

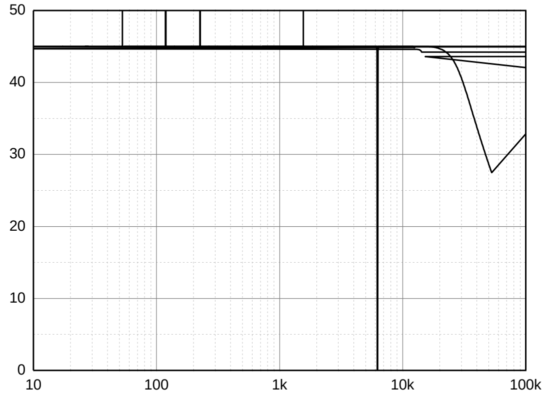


Fig. 17 Load Current vs. Frequency

Diode Characteristics

Fig. 18 Diode Conduction Characteristics

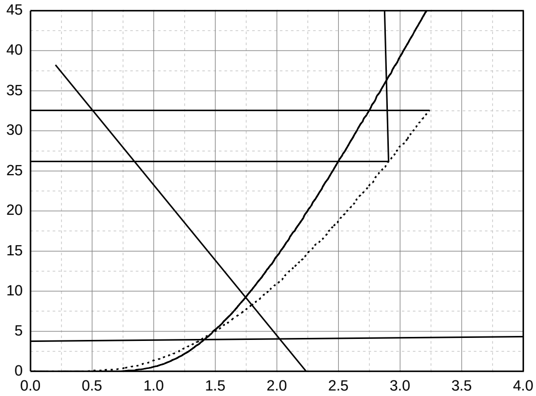


Fig. 19 Reverse Recovery Current vs. Forward Current

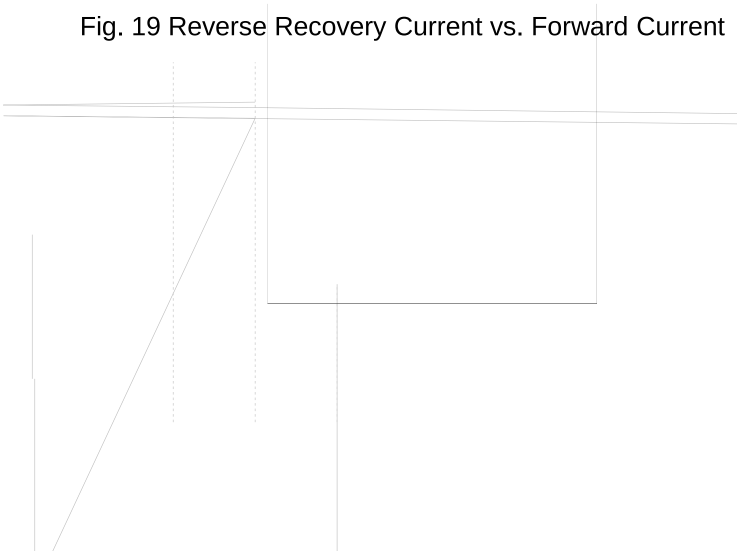


Fig. 20 Reverse Recovery Charge vs. Forward Current

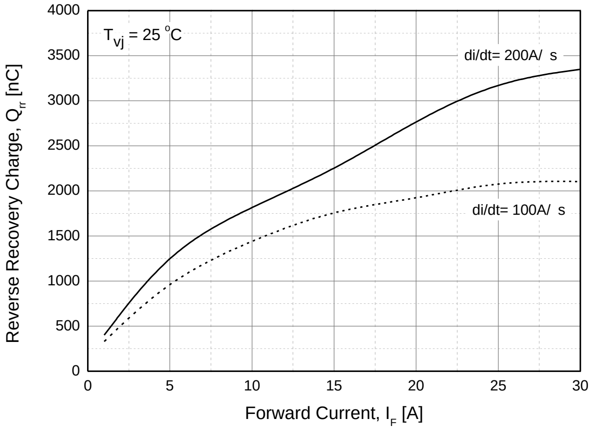
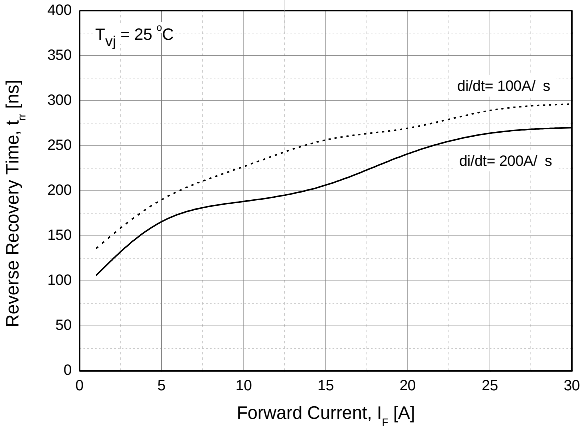


Fig. 21 Reverse Recovery Time vs. Forward Current



TO-247 MECHANICAL DATA

SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.80	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
P	3.40	3.60	3.80
P1	-	-	7.30
S	6.15BSC		

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