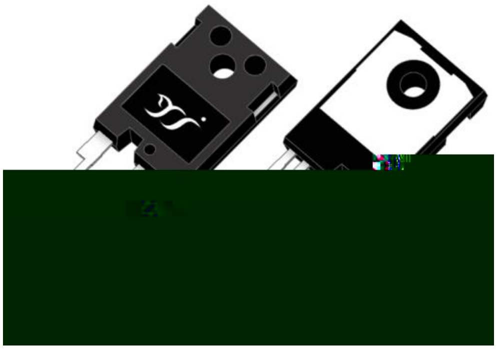
[redacted]

DGZ75N65CTH2A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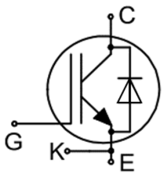
IGBT Discrete

V_{CE}	**650**	**V**
I_C	**75**	**A**
$V_{CE(SAT)}$ I_C=75A	**1.65**	**V**

Circuit



Applications

- Solar converters
- Uninterruptible power supplies
- Welding converters
- Mid to high range switching frequency converters

Features

- High speed smooth switching device for hard & soft switching
- Maximum junction temperature 175
- Positive temperature coefficient
- High ruggedness, temperature stable

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	650	V
DC Collector Current, limited by T_{jmax} T_C= 25°C value limited by bondwire T_C= 100°C	I_C	85 80	A
Diode Forward Current, limited by T_{jmax} T_C= 25°C value limited by bondwire T_C= 100°C	I_F	85 80	A
Continuous Gate-Emitter Voltage	V_{GE}	± 20	V
Transient Gate-Emitter Voltage ($t_p \leq 10\mu s$,D<0.010)	V_{GE}	± 30	V
Turn off Safe Operating Area V_{CE} 650V, T_j		300	A
Pulsed Collector Current, V_{GE}=15V, tp limited by T_{jmax}	I_{CM}	300	A
Diode Pulsed Current, tp limited by T_{jmax}	I_{Fpuls}	300	A
Power Dissipation , Tj=175°C, Tc=25°C	P_{tot}	428	W

Operating Junction Temperature	T_j	-40...+175	°C
Storage Temperature	T_s	-55...+150	°C
Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s		260	°C

Electrical Characteristics of the IGBT T_j= 25 unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Collector-Emitter Breakdown Voltage	BV_{CES}	V_{GE}=0V, I_C	650		-	V
Gate Threshold Voltage	$V_{GE(th)}$	V_{GE}=V_{CE}, I_C=0.75mA	3.2	4.0	4.8	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=75A T_j=25°C, T_j=125°C T_j=150°C	1.20	1.65 1.95 2.05	2.10	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=650V, V_{GE}=0V T_j= 25°C, T_j=150°C			0.25 3.00	mA
Gate-Emitter Leakage Current	I_{GES}	V_{CE}= 0V, V_{GE}= ± 20V			100	nA

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic						
Input Capacitance	C_{ies}	V_{CE}= 25V, V_{GE}= 0V, f = 1MHz	-	4.59	-	nF
Reverse Transfer Capacitance	C_{res}		-	0.03	-	
Gate Charge	Q_G	V_{CC}=520V,I_C=75A, V_{GE}=15V	-	0.17	-	uC

Electrical Characteristics of the Diode T_j= 25 unless otherwise specified

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
	Static						
Diode Forward Voltage		V_F					

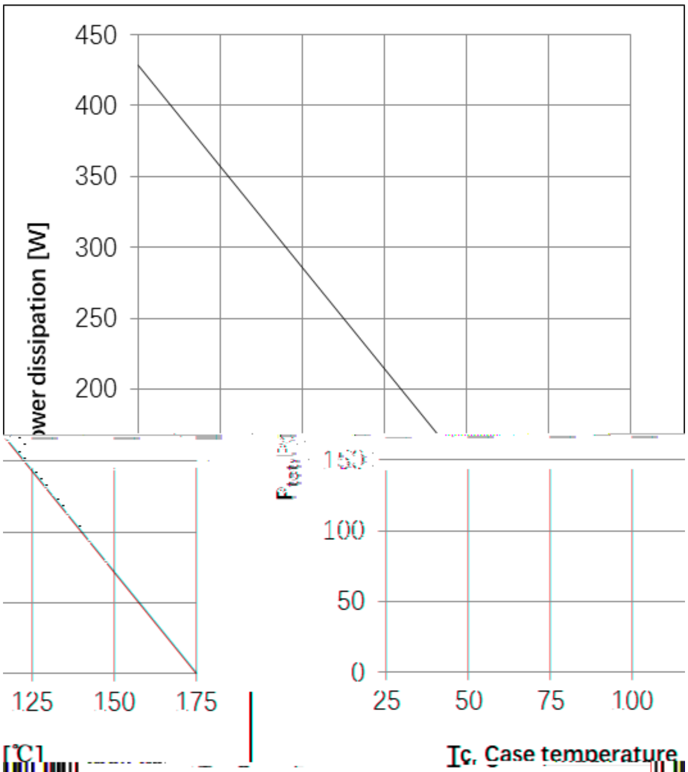
F

Electrical Characteristics of the DIODE

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T_j= 25						
Reverse Recovery Current	I_{rr}	I_F=75A,V_R=400V -di/dt=440	-	10	-	A
Reverse Recovery Charge	Q_{rr}		-	0.98	-	uC
Diode reverse recovery time	trr		-	160	-	ns
Reverse Recovery Energy	Erec		-	0.14	-	mJ
Dynamic , at Tj= 125						
Reverse Recovery Current	I_{rr}	I_F=75A,V_R=400V -di/dt=440	-	17	-	A
Reverse Recovery Charge	Q_{rr}		-	2.97	-	uC
Diode reverse recovery time	trr		-	188	-	ns
Reverse Recovery Energy	Erec		-	0.47	-	mJ
Dynamic , at Tj= 150						
Reverse Recovery Current	I_{rr}	I_F=75A,V_R=400V -di/dt=440	-	20	-	A
Reverse Recovery Charge	Q_{rr}		-	3.26	-	uC
Diode reverse recovery time	trr		-	212	-	ns
Reverse Recovery Energy	Erec		-	0.54	-	mJ

Thermal Resistance

Parameter	Symbol	Max. Value	Unit
IGBT Thermal Resistance, Junction - Case	R_{th}(j-c)	0.35	K/W
Diode Thermal Resistance, Junction - Case	R_{th}(j-c)	0.45	K/W
Thermal Resistance, Junction - Ambient	R_{th}(j-a)	40	K/W



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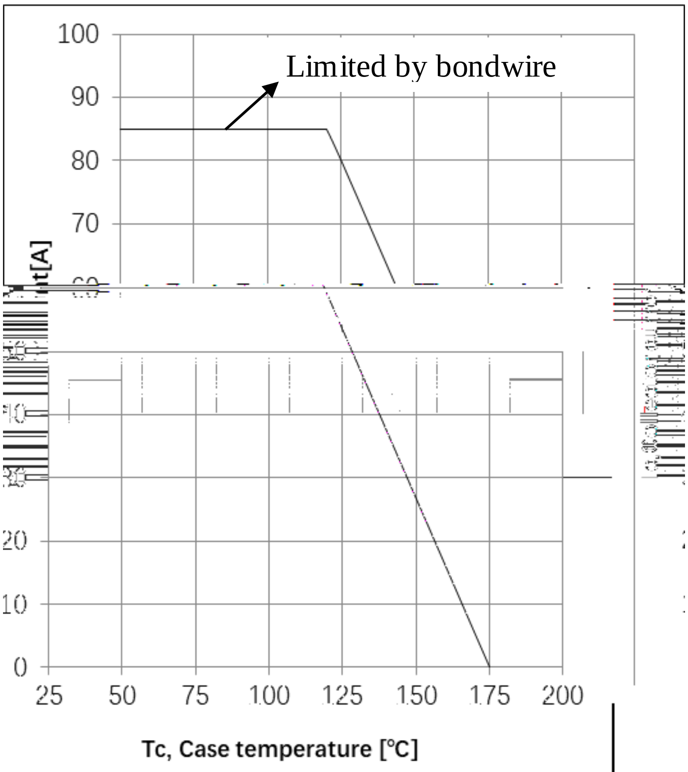


Fig2. Collector current as a function of case temperature(Vge ≥ 15V, Tj ≤ 175℃)

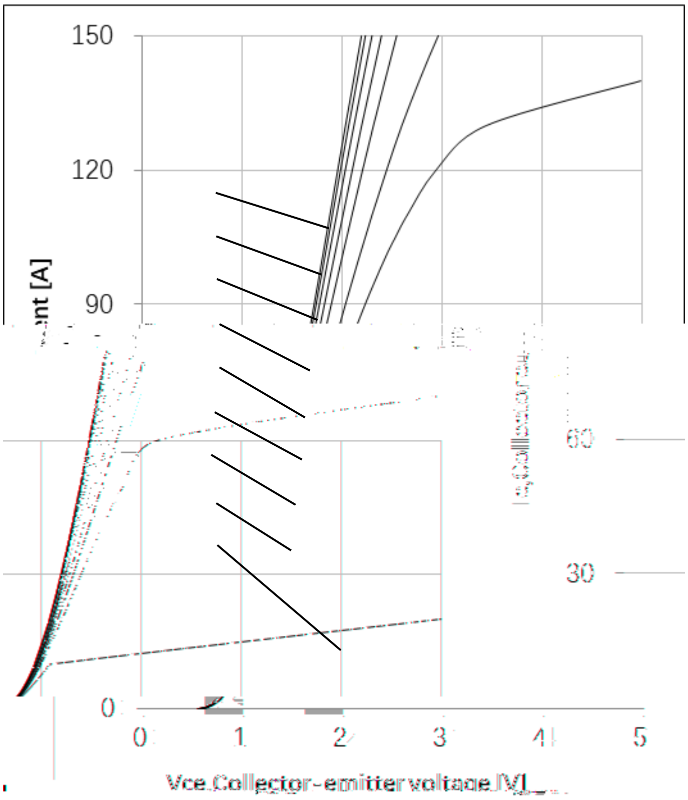
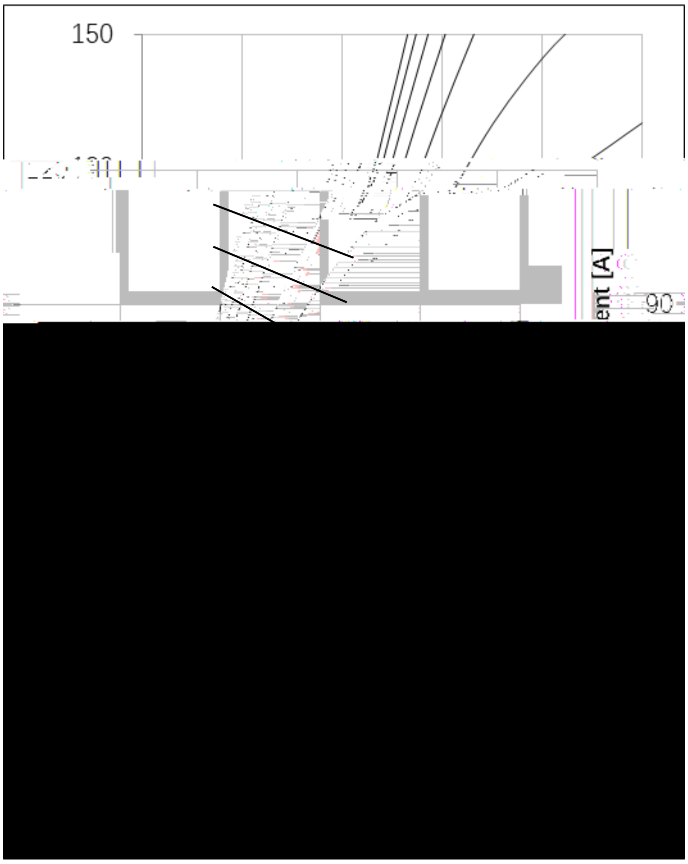


Fig3. Typical output characteristics (Tj=25℃)



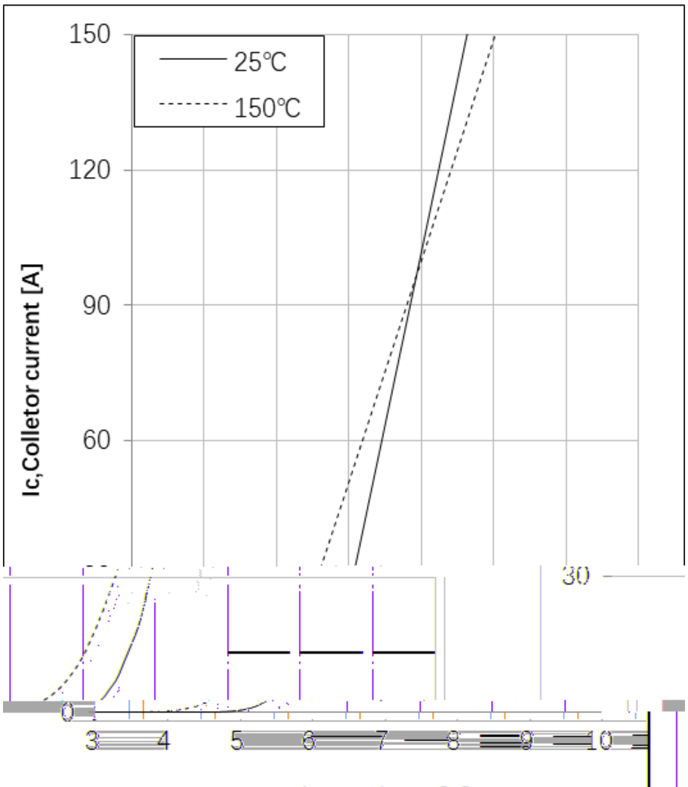


Fig5. Typical transfer characteristic (Vce=20V)

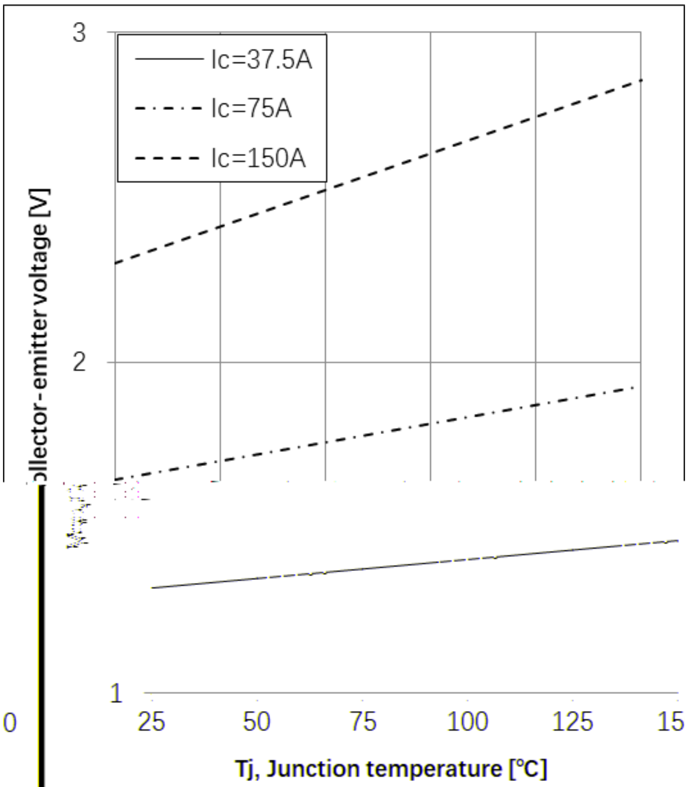
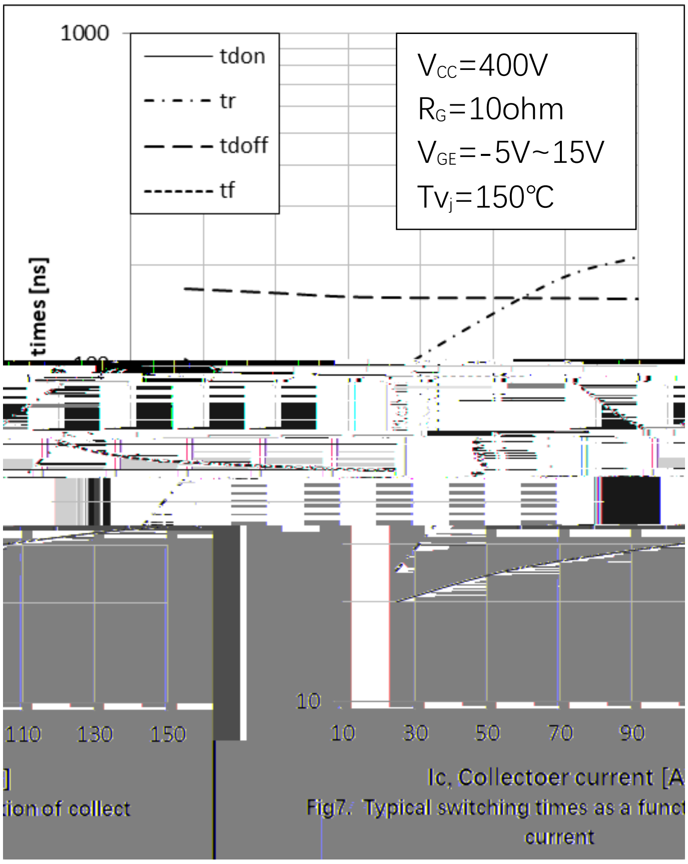


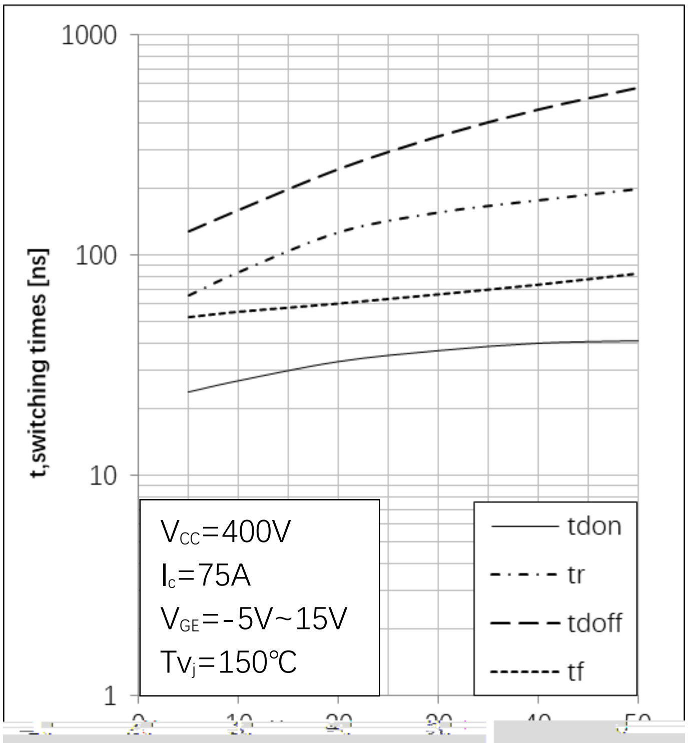
Fig6. Typical collector-emmitor saturation voltage as a [illegible]



tion of collect

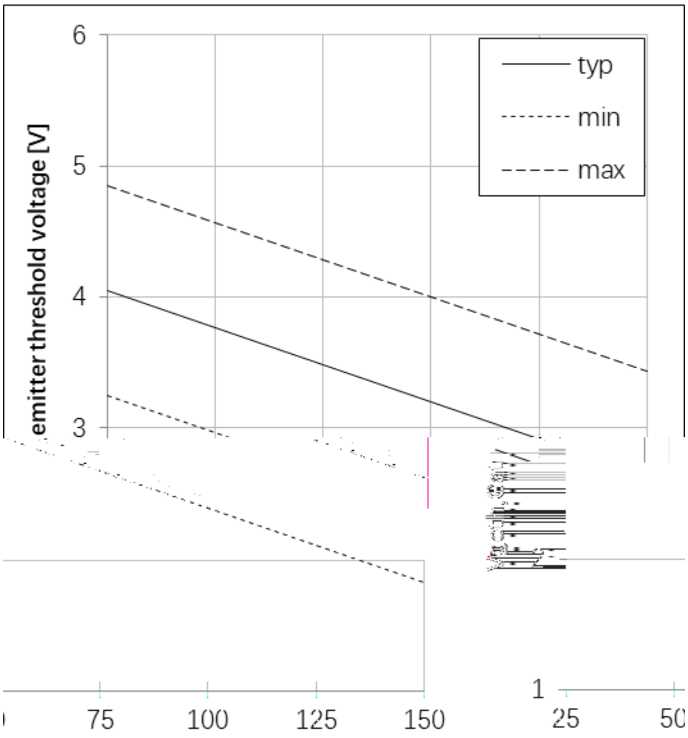
Fig7. Typical switching times as a funct

current



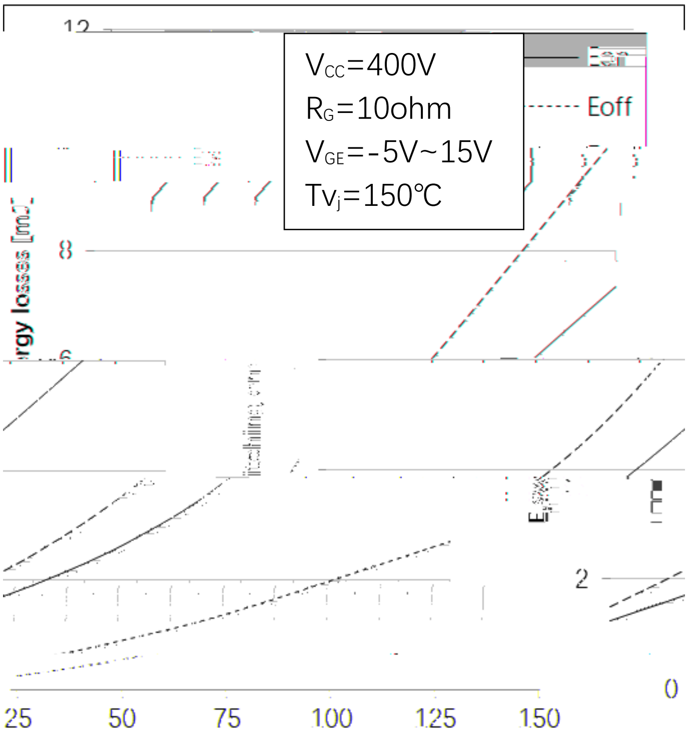
ical switching times as a fuction of gate resistance

Fig8. Typ



mitter threshold voltage as a fuction of
tion temperature(Ic=0.75mA)

Fig9. Gate-e
junc



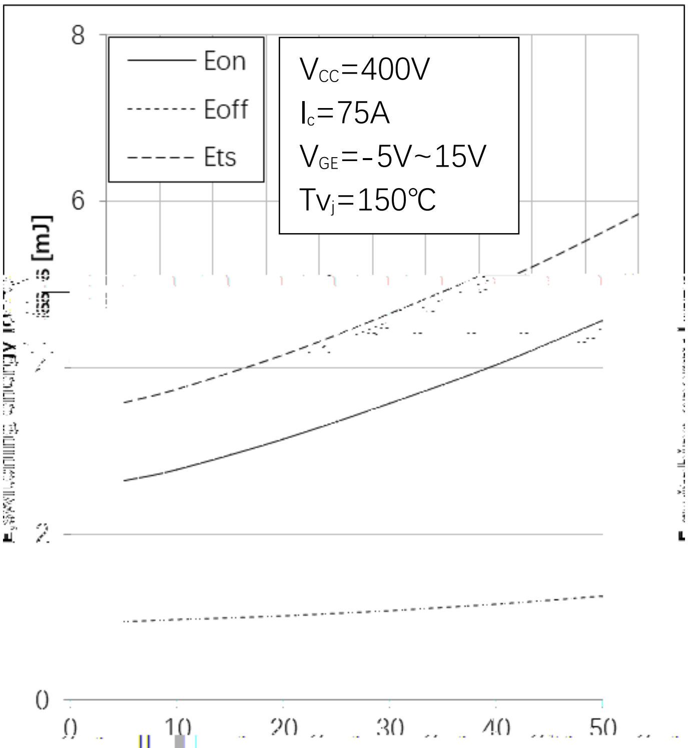


Fig11. Typical switching energy losses as fuction of gate resistance

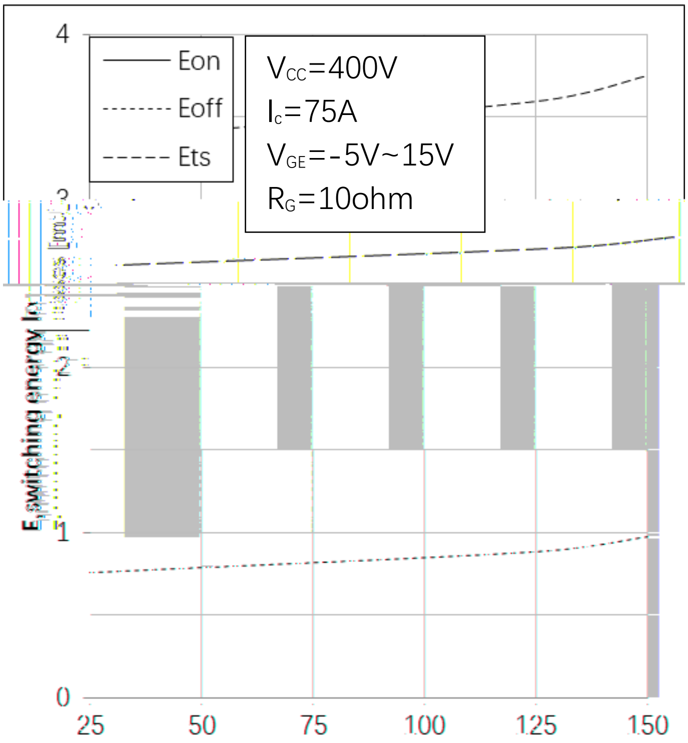


Fig12. Typical switching energy losses as a fuction of junction temperature

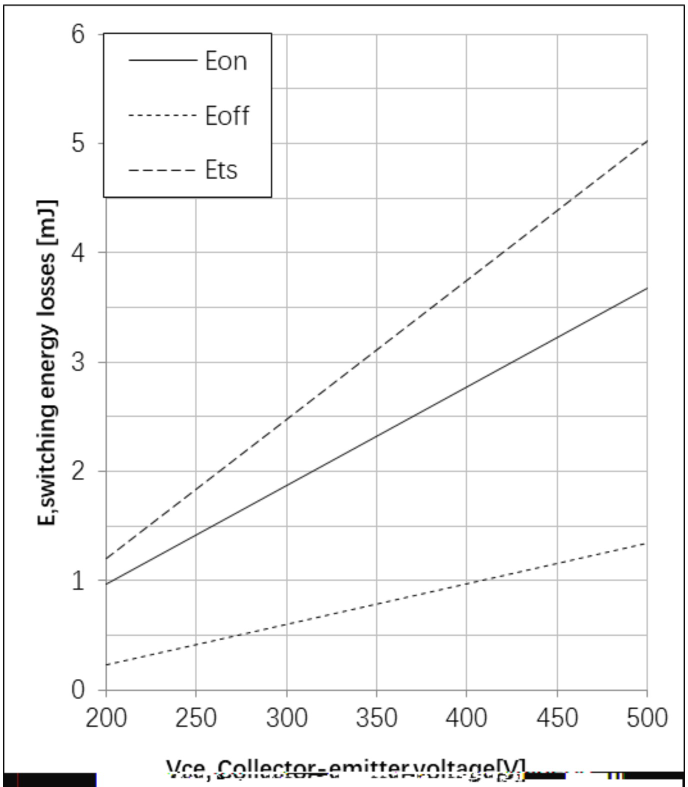


Fig.13. Typical switching energy losses as a fuction of collector-emitter voltage

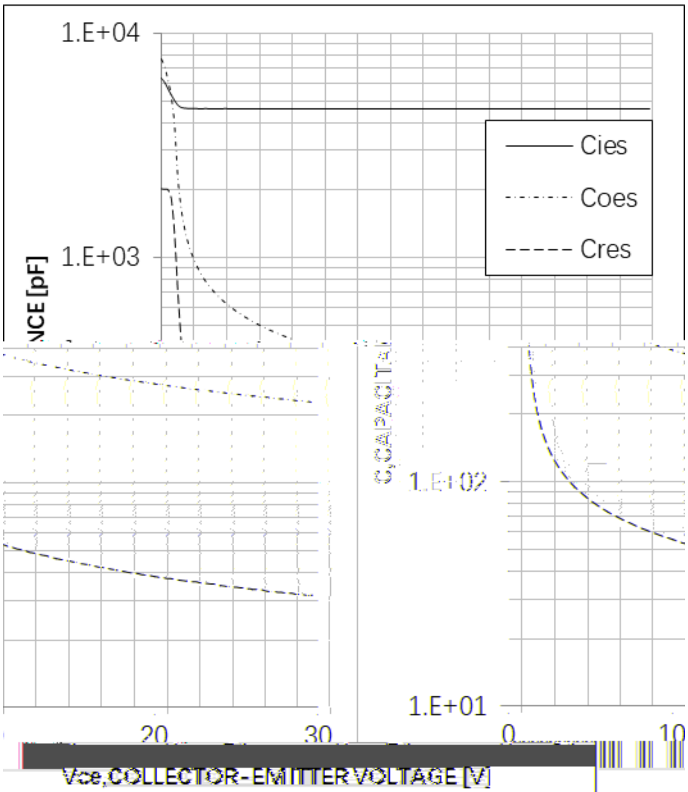
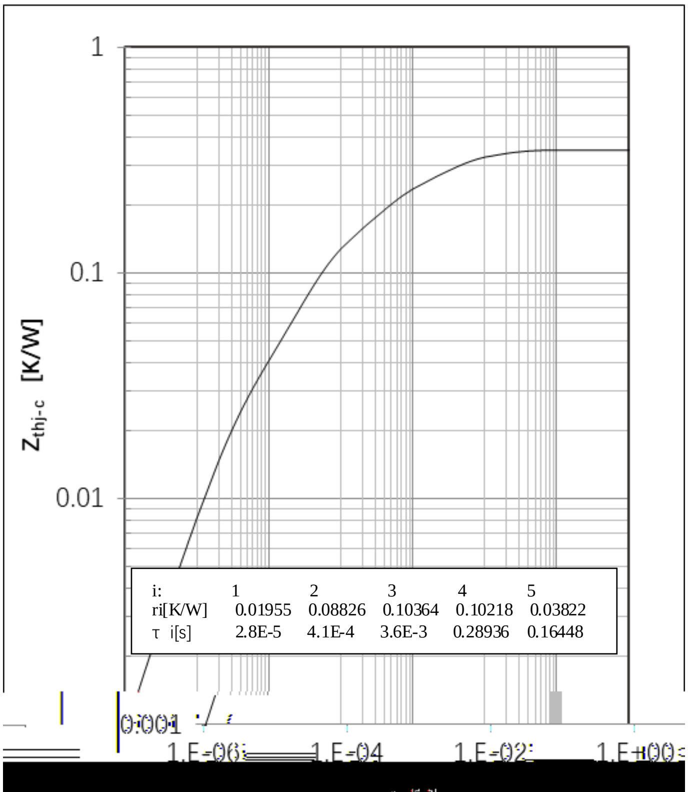
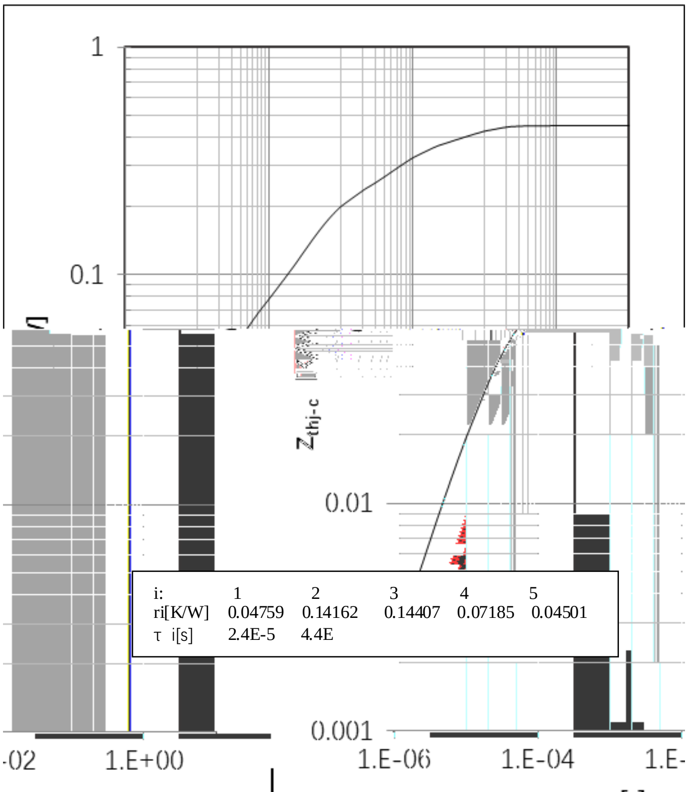


Fig.14. Typical capacitance as a function of collector-emitter voltage



i:	1	2	3	4	5
ri[K/W]	0.01955	0.08826	0.10364	0.10218	0.03822
τ i[s]	2.8E-5	4.1E-4	3.6E-3	0.28936	0.16448

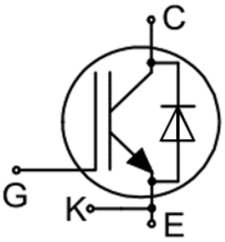
Fig.15. IGBT Transient Thermal Impedance



i:	1	2	3	4	5
ri[K/W]	0.04759	0.14162	0.14407	0.07185	0.04501
τ i[s]	2.4E-5	4.4E			

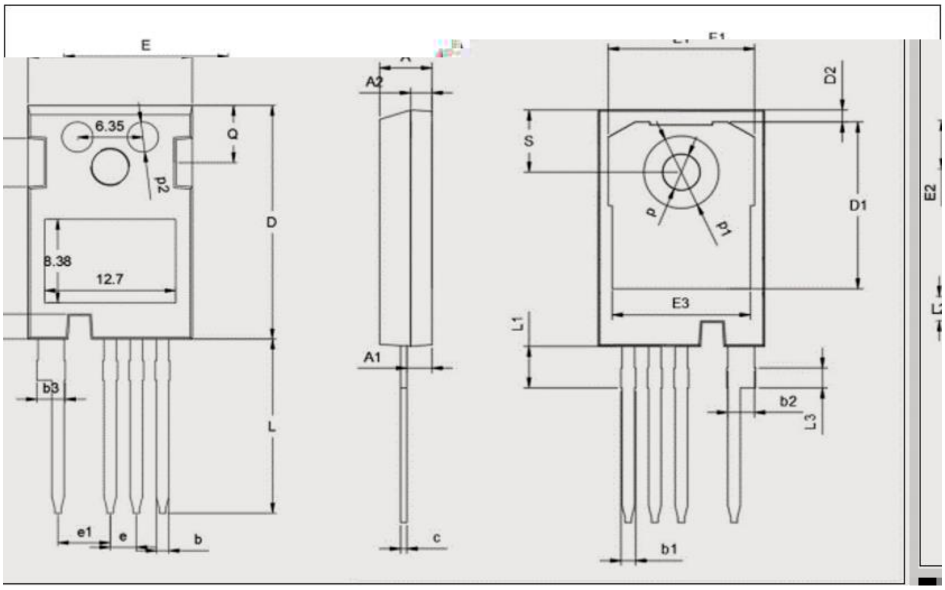
mal Impedance

Fig 16. Diode Transient Ther



Package Outline Information

CASE: TO 247-4L



TO247-4L			
Dim	Min	Norm	Max
A	4.80	5.00	5.20
A1	2.30	2.40	2.50
A2	1.88	1.98	2.08
b	1.10	1.20	1.30
b1	1.20	/	1.50
b2	2.35	2.55	2.75
b3	2.45	/	2.85
c	0.55	0.60	0.65
D	23.3	23.45	23.6
D1	16.25	16.55	16.85
D2	1.00	/	1.30
e	TYP2.54		
e1	TYP5.06		
E	15.75	15.90	16.05
E1	13.80	/	14.20
E2	4.40	4.75	5.10
E3	13.00	/	13.45
L	17.34	17.49	17.64
L1	4.00	/	4.30
L2	2.35	/	2.65
L3	TYP1.98		
Q	5.60	5.80	6.00
S	6.05	/	6.30
p	TYP3.58		
p1	TYP7.18		
p2	TYP3.00		