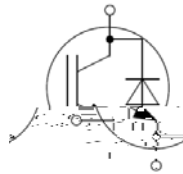




IGBT Discrete

V_{CE}	1200	V
I_C	25	A
$V_{CE(SAT)}$ $I_C=25A$	1.85	V

Circuit



Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply

Features

- Low $V_{CE(sat)}$ Trench-FS IGBT technology
- Maximum junction temperature 175
- Positive temperature coefficient
- Including fast & soft recovery anti-parallel FWD
- High short circuit capability(10us)

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	1200	V
DC Collector Current, limited by T_{jmax} $T_C=25^\circ C$ $T_C=100^\circ C$	I_C	50 25	A
Diode Forward Current, limited by T_{jmax} $T_C=25^\circ C$ $T_C=100^\circ C$	I_F	50 25	A
Continuous Gate-Emitter Voltage	V_{GE}	± 20	V
Transient Gate-Emitter Voltage	V_{GE}	± 30	V
Turn off Safe Operating Area $V_{CE} 1200V$, $T_j 150^\circ C$		100	A
Pulsed Collector Current, $V_{GE}=15V$, tp limited by T_{jmax}	I_{CM}	100	A
Diode Pulsed Current, tp limited by T_{jmax}	I_{Fpuls}	100	A
Short Circuit Withstand Time, $V_{GE}=15V$, $V_{CC}=900V$ $V_{CEM} 1200V$	T_{sc}	10	μs
Power Dissipation , $T_j=175^\circ C$, $T_C=25^\circ C$	P_{tot}	326	W
Operating Junction Temperature	T_j	-40...+175	$^\circ C$
Storage Temperature	T_s	-55...+150	$^\circ C$
Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s		260	$^\circ C$



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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}	$V_{GE}=0V, I_C=250\mu A$	1200		-	V
Gate Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=0.8mA$	5.1	5.8	6.4	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=25A$ $T_j=25^\circ C,$ $T_j=125^\circ C$ $T_j=150^\circ C$		1.85 2.20 2.30	2.35	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V$ $T_j=25^\circ C,$ $T_j=150^\circ C$			0.25 5.00	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V, V_{GE}=\pm 20V$			100	nA

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic						
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz$	-	1.45	-	nF
Reverse Transfer Capacitance	C_{res}		-	0.05	-	
Gate Charge	Q_G	$V_{CC}=960V, I_C=25A, V_{GE}=15V$	-	0.20	-	μC
Short Circuit Collector Current	I_{SC}	$V_{GE}=15V, t_{sc} 10\mu s,$ $V_{CC}=900V, T_j 150^\circ C$	-	110	-	A

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



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Electrical Characteristics of the Diode $T_j=25$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Diode Forward Voltage	V_F	$I_F=25A$ $T_j=25^\circ C$, $T_j=125^\circ C$ $T_j=150^\circ C$		2.00 1.80 1.70		V

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at $T_j=25^\circ C$						
Turn-on Delay Time	$t_d(on)$	$V_{CC}=600V, I_C=25A,$ $V_{GE}=-15V\sim 15V,$ $R_g=18$	-	158	-	ns
Rise Time	t_r		-	32	-	ns
Turn-on Energy	E_{on}		-	1.8	-	mJ
Turn-off Delay Time	$t_d(off)$		-	331	-	ns
Fall Time	t_f		-	83	-	ns
Turn-off Energy	E_{off}		-	1.4	-	mJ
Dynamic , at $T_j=125^\circ C$						
Turn-on Delay Time	$t_d(on)$	$V_{CC}=600V, I_C=25A,$ $V_{GE}=-15V\sim 15V,$ $R_g=18$	-	172	-	ns
Rise Time	t_r		-	45	-	ns
Turn-on Energy	E_{on}		-	2.4	-	mJ
Turn-off Delay Time	$t_d(off)$		-	154	-	ns
Fall Time	t_f		-	212	-	ns
Turn-off Energy	E_{off}		-	2.2	-	mJ
Dynamic , at $T_j=150^\circ C$						
Turn-on Delay Time	$t_d(on)$	$V_{CC}=600V, I_C=25A,$ $V_{GE}=-15V\sim 15V,$ $R_g=18$	-	190	-	ns
Rise Time	t_r		-	48	-	ns
Turn-on Energy	E_{on}		-	2.8	-	mJ
Turn-off Delay Time	$t_d(off)$		-	165	-	ns
Fall Time	t_f		-	230	-	ns
Turn-off Energy	E_{off}		-	2.4	-	mJ



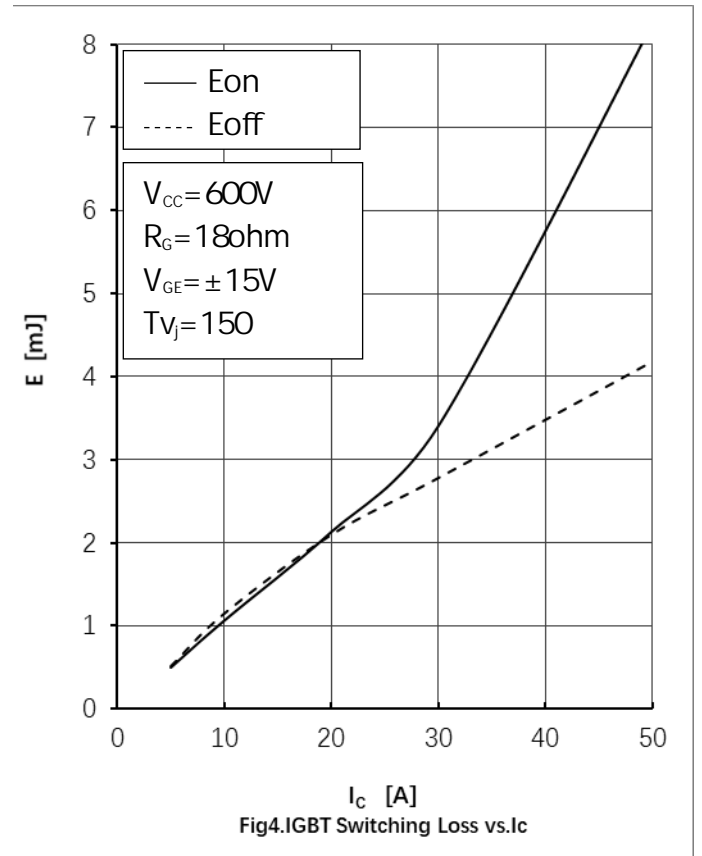
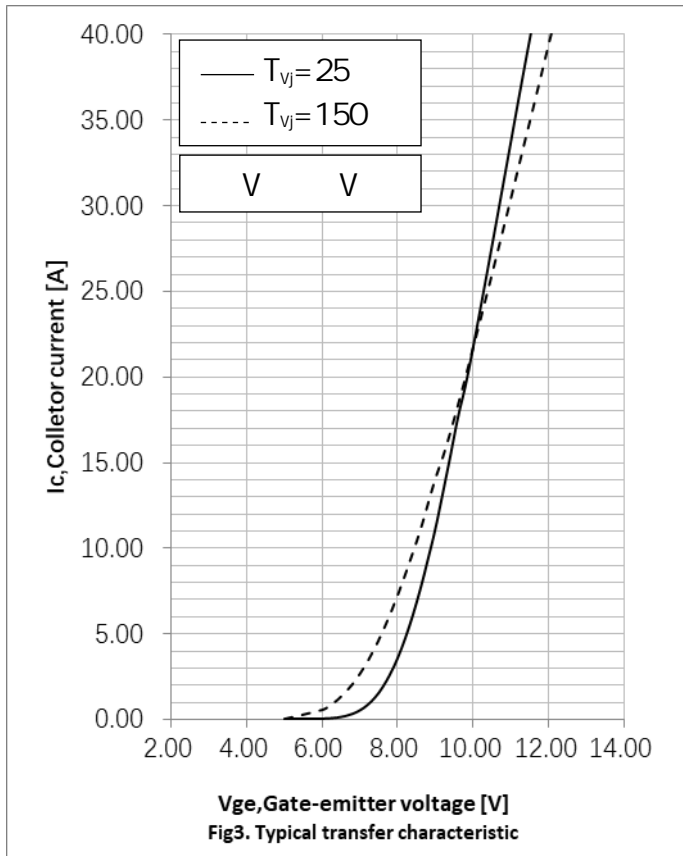
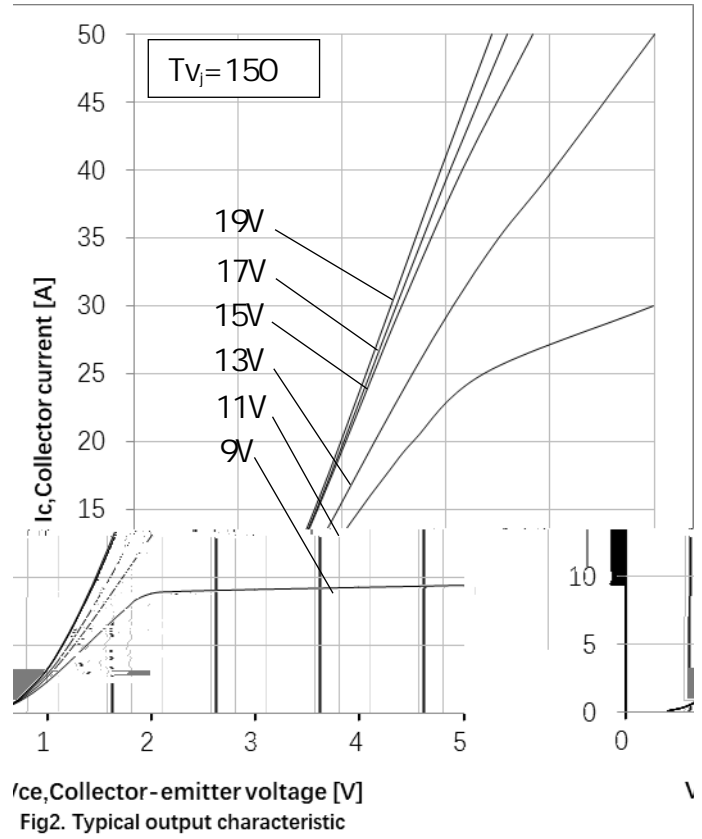
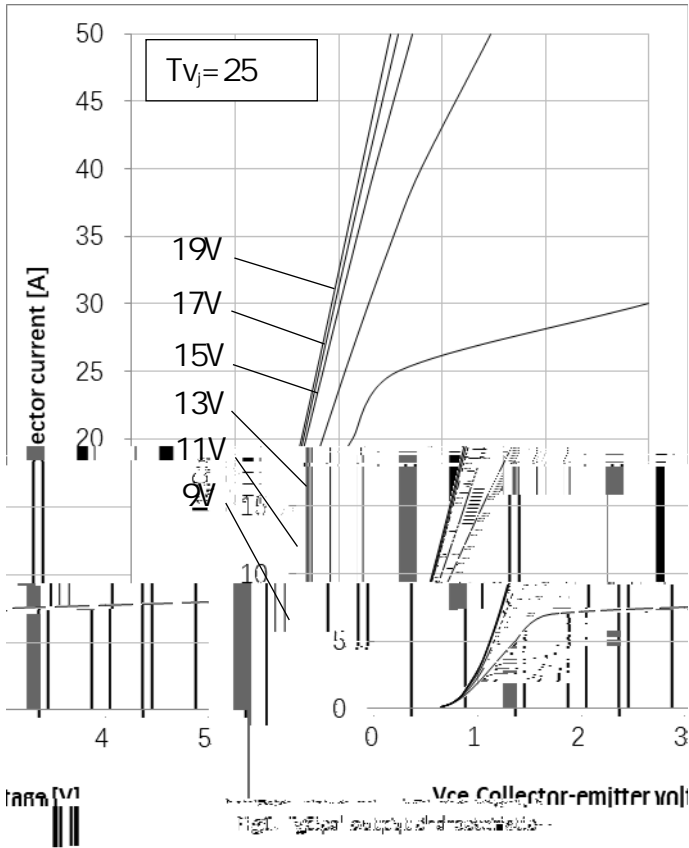
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Electrical Characteristics of the DIODE

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at $T_j = 25^\circ\text{C}$						

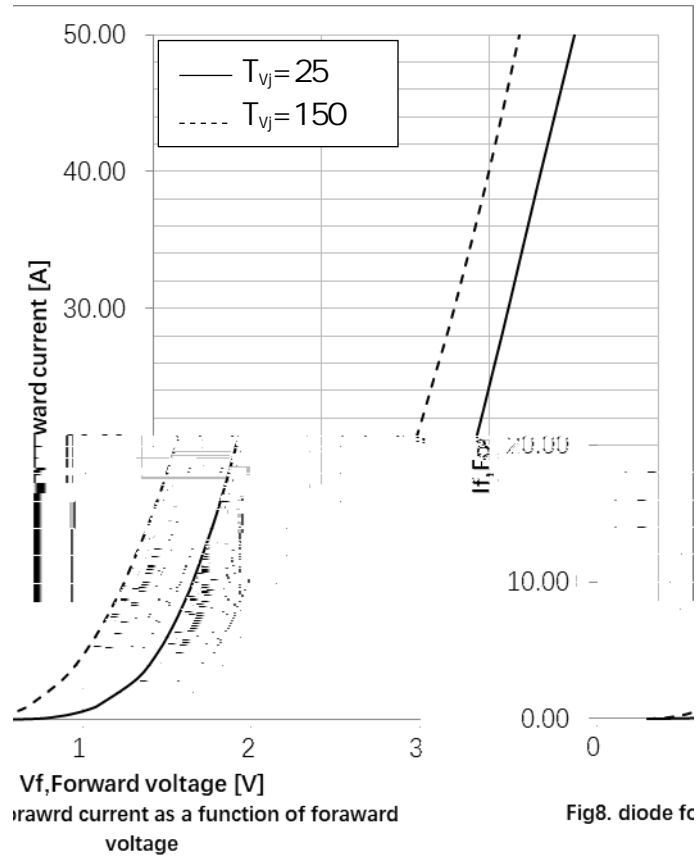
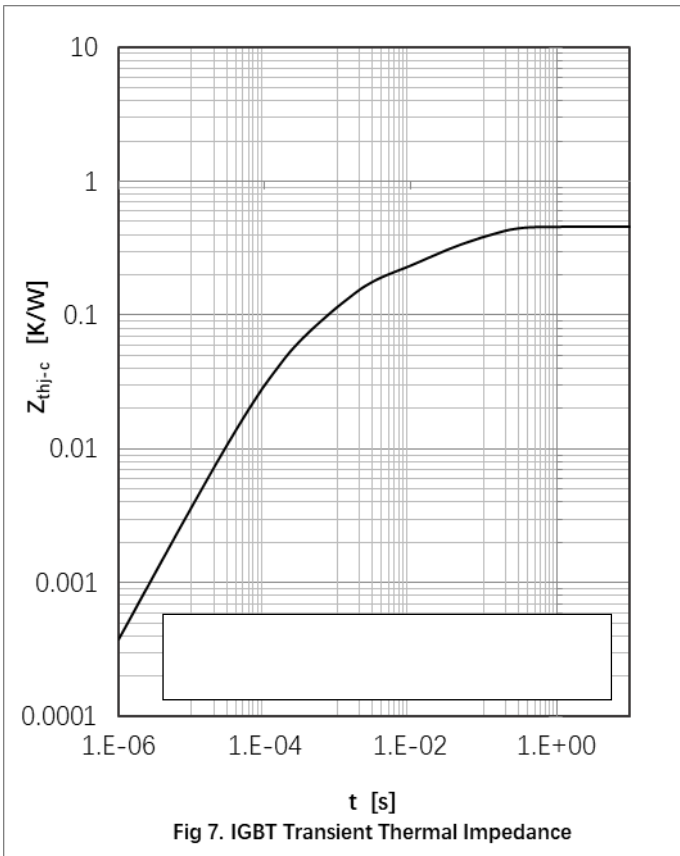
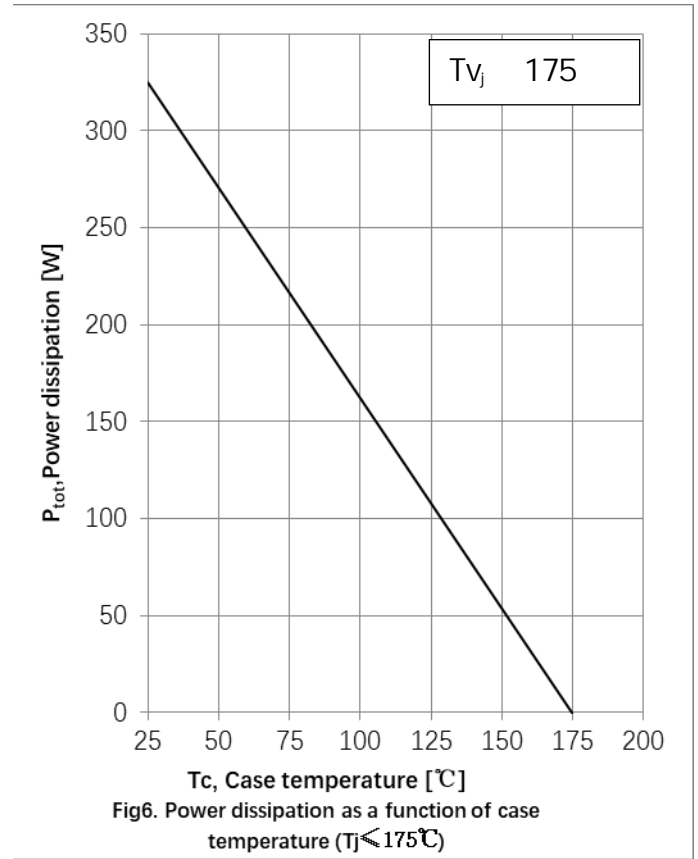
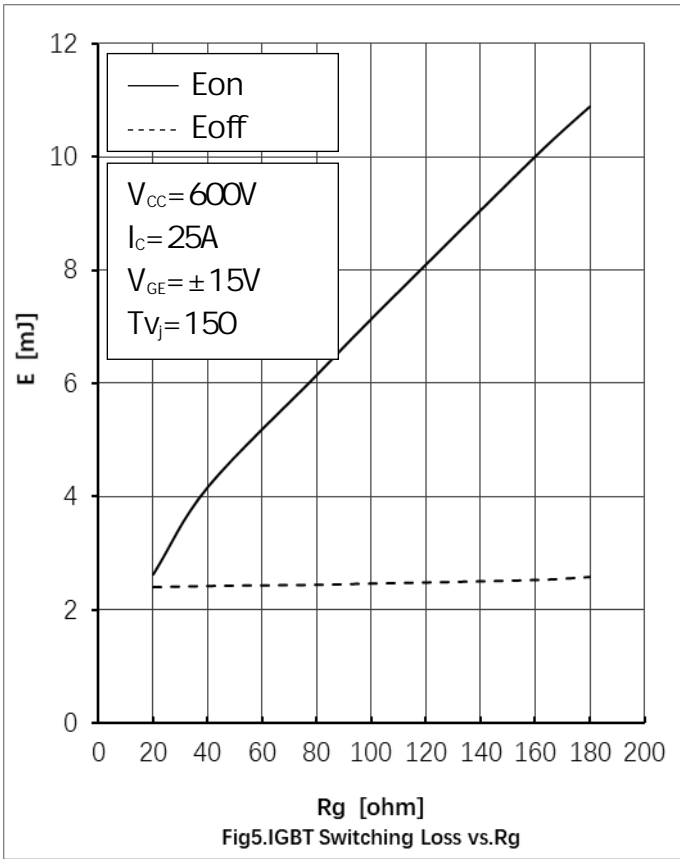


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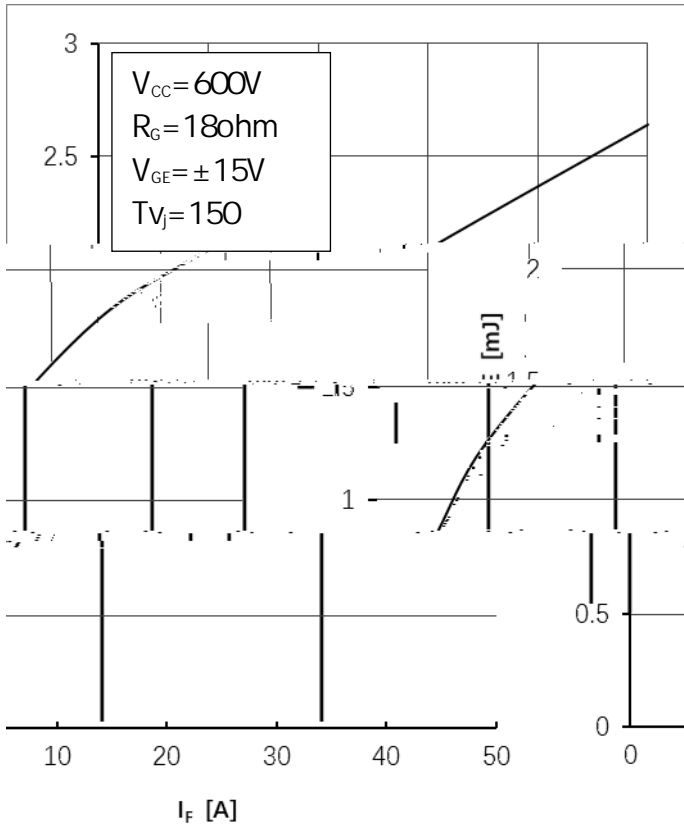


Fig9.Diode Switching Loss(Erec) vs.If

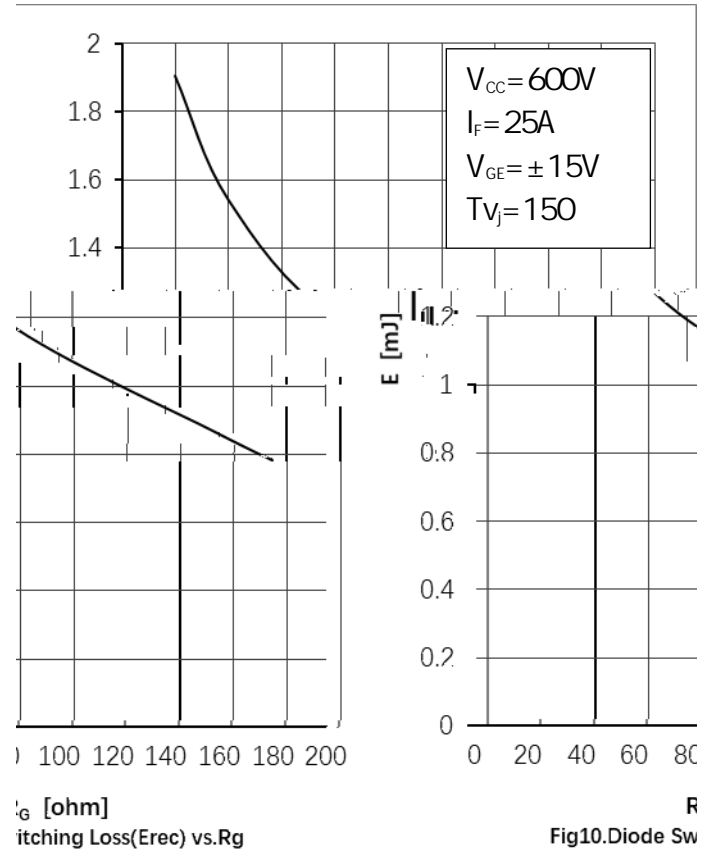


Fig10.Diode Sw

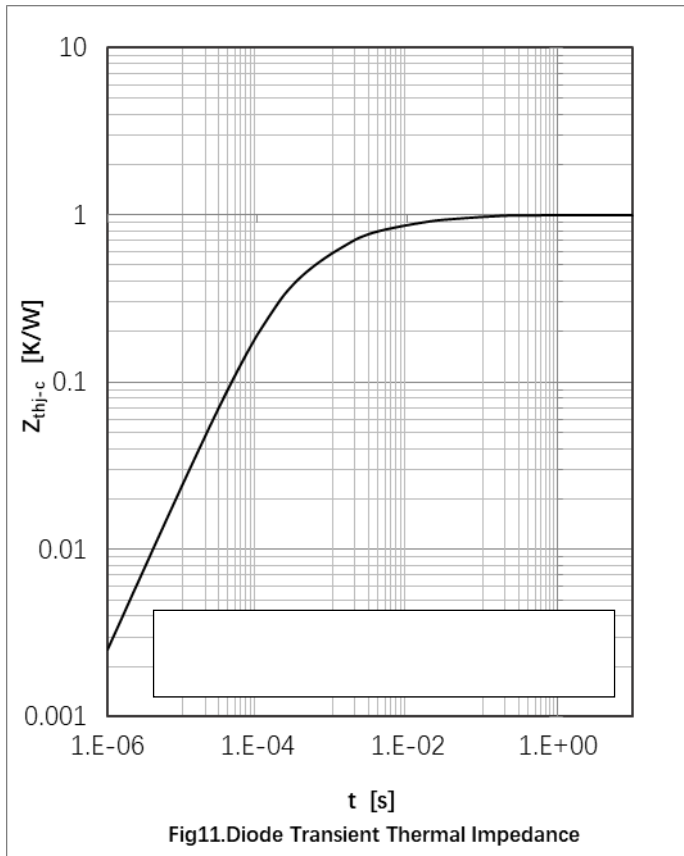
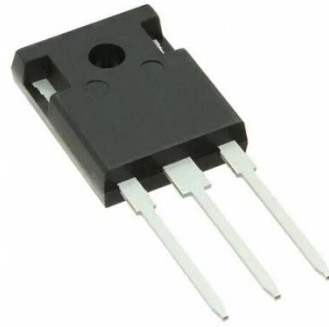
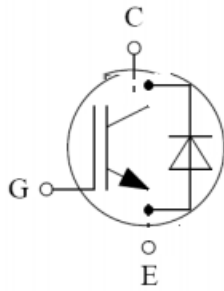


Fig11.Diode Transient Thermal Impedance



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Circuit Diagram



Package Outline Information

CASE: TO 247

