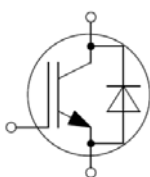




IGBT Discrete

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°C
- 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 $V_{CE} \leq 1200V$, $T_j \leq 150^{\circ}C$		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, $V_{GE}=15V$, $V_{CC}=900V$, $V_{CEM} \leq 1200V$	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	$^{\circ}C$

■Electrical Characteristics of the IGBT (T_j= 25°C unless otherwise specified):

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Collector-Emitter Breakdown Voltage	BV _{CES}	V _{GE} =0V, I _C =250μA	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°C, T _j =125°C T _j =150°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°C, T _j =150°C			0.25 5.00	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	-	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} ≤10μs, V _{CC} =900V, T _j ≤150°C	-	110	-	A

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 Diode (T_J= 25°C unless otherwise specified):

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Diode Forward Voltage	V _F	I _F = 25A T _J = 25°C, T _J = 125°C T _J = 150°C		2.00 1.80 1.70		V

■Switching Characteristic, Inductive Load

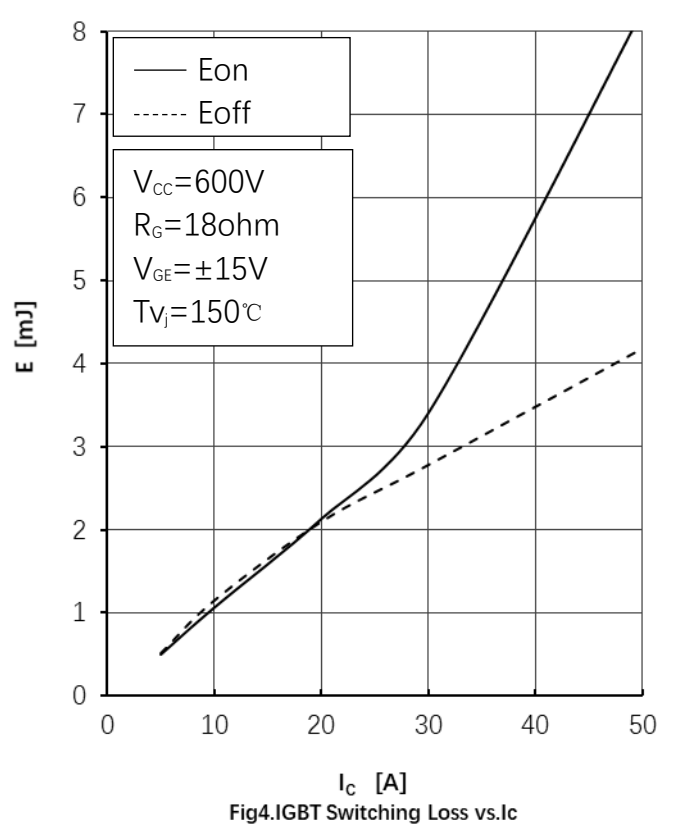
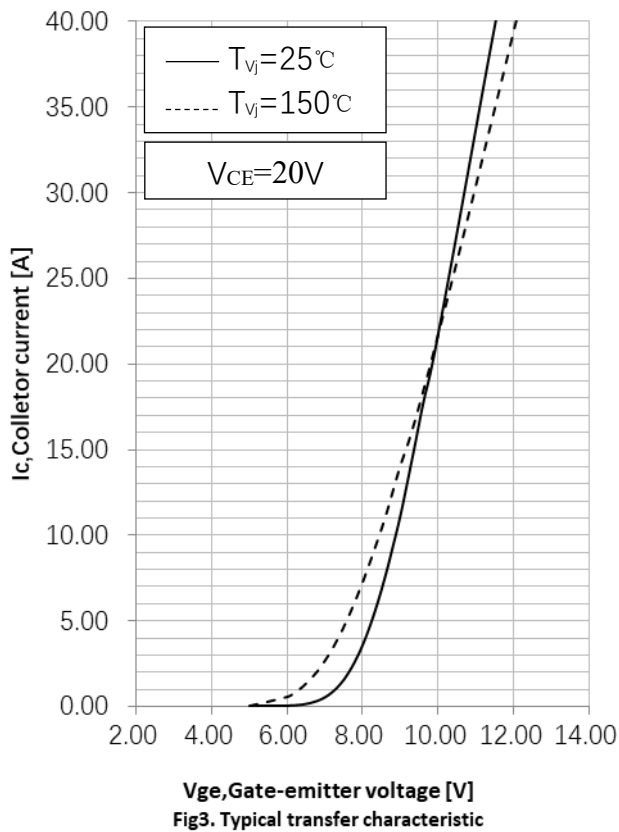
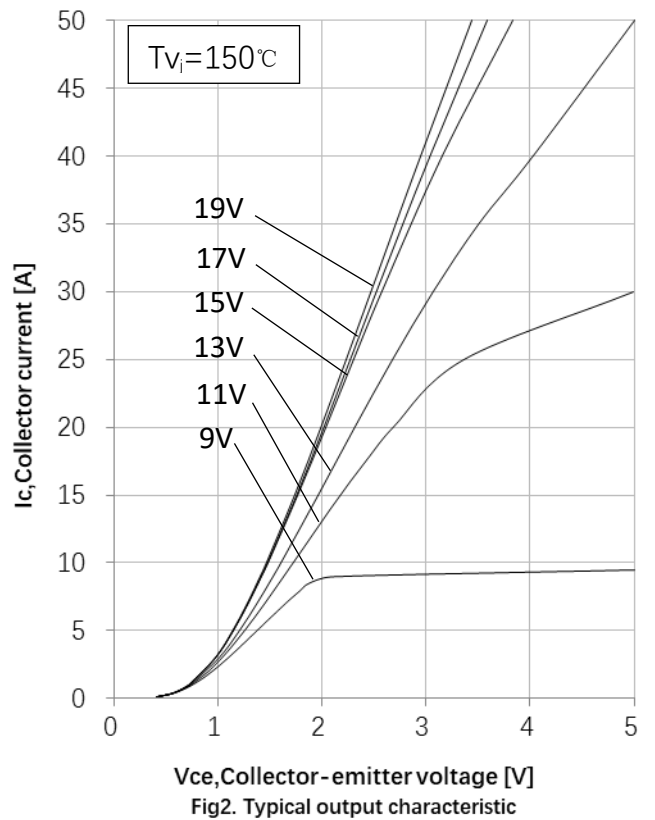
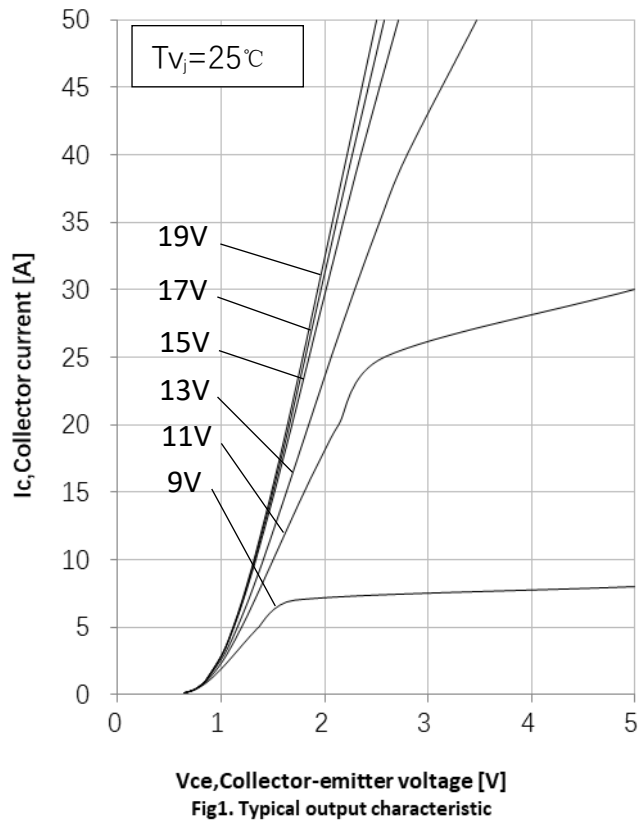
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T _j = 25°C						
Turn-on Delay Time	t _d (on)	V _{CC} = 600V, I _C =25A, V _{GE} = -15v~15V, R _g =18Ω	-	158	-	ns
Rise Time	t _r		-	32	-	ns
Turn-on Energy	E _{on}		-	1.8	-	mJ
Turn-off Delay Time	t _d (off)		-	331	-	ns
Fall Time	t _f		-	83	-	ns
Turn-off Energy	E _{off}		-	1.4	-	mJ
Dynamic , at T _j = 125°C						
Turn-on Delay Time	t _d (on)	V _{CC} = 600V, I _C =25A, V _{GE} = -15v~15V, R _g =18Ω	-	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°C						
Turn-on Delay Time	t _d (on)	V _{CC} = 600V, I _C =25A, V _{GE} = -15v~15V, R _g =18Ω	-	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

■Electrical Characteristics of the DIODE

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T _j = 25°C						
Diode Forward Voltage	V _{FM}	I _F = 25A	-	2.10	-	V
Reverse Recovery Current	I _{rr}	I _F =25A, V _R =600V, -di/dt=1700A/μs,	-	48.5	-	A
Reverse Recovery Charge	Q _{rr}		-	2.52	-	uC
Reverse Recovery Energy	E _{rec}		-	0.94		mJ
Dynamic , at T _j = 125°C						
Reverse Recovery Current	I _{rr}	I _F =25A, V _R =600V, -di/dt=1700A/μs,	-	50.0	-	A
Reverse Recovery Charge	Q _{rr}		-	5.08	-	uC
Reverse Recovery Energy	E _{rec}		-	1.75		mJ
Dynamic , at T _j = 150°C						
Reverse Recovery Current	I _{rr}	I _F =25A, V _R =600V, -di/dt=1700A/μs,	-	51.2	-	A
Reverse Recovery Charge	Q _{rr}		-	5.25	-	uC
Reverse Recovery Energy	E _{rec}		-	1.96		mJ

■Thermal Resistance

Parameter	Symbol	Max. Value	Unit
IGBT Thermal Resistance, Junction - Case	R _{th(j-c)}	0.46	K/W
Diode Thermal Resistance, Junction - Case	R _{th(j-c)}	1.00	K/W
Thermal Resistance, Junction - Ambient	R _{th(j-a)}	40	K/W



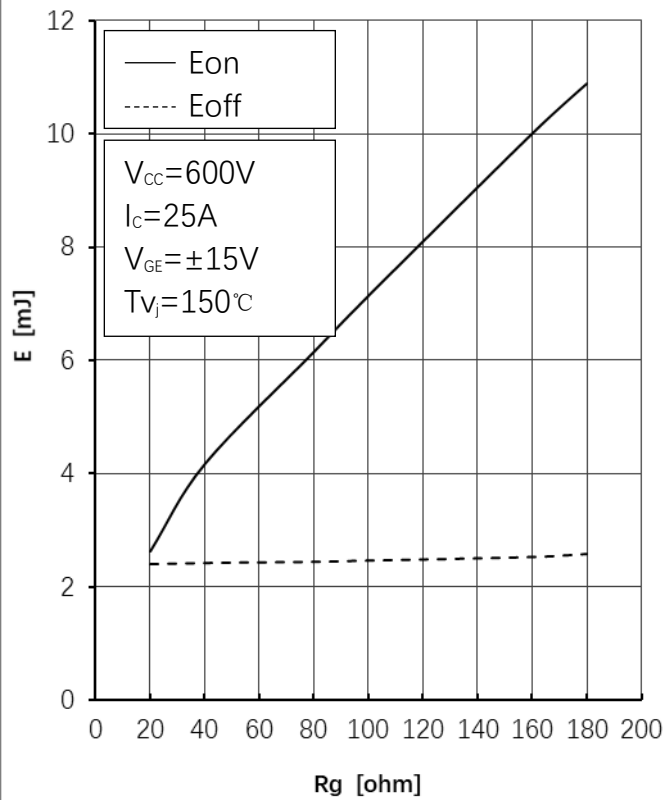


Fig5.IGBT Switching Loss vs.Rg

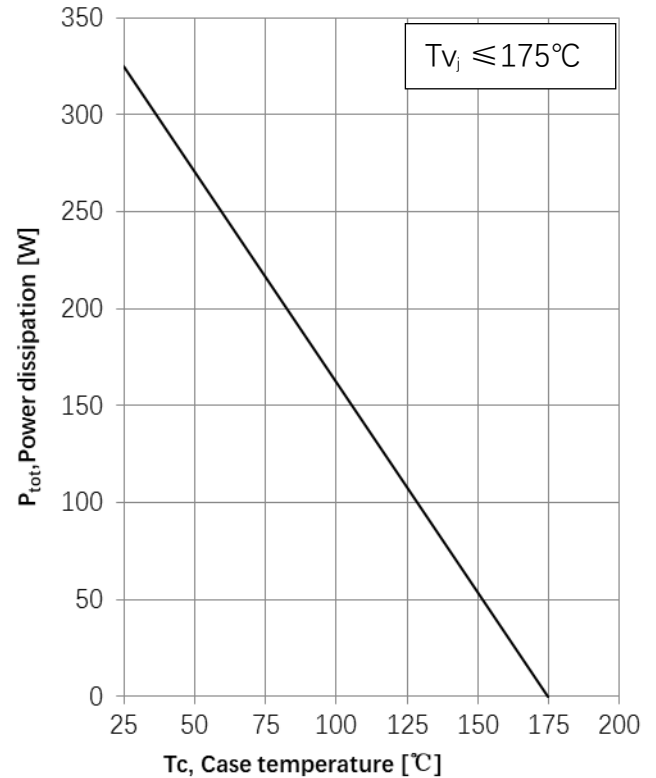


Fig6. Power dissipation as a function of case temperature ($T_j \leq 175^\circ C$)

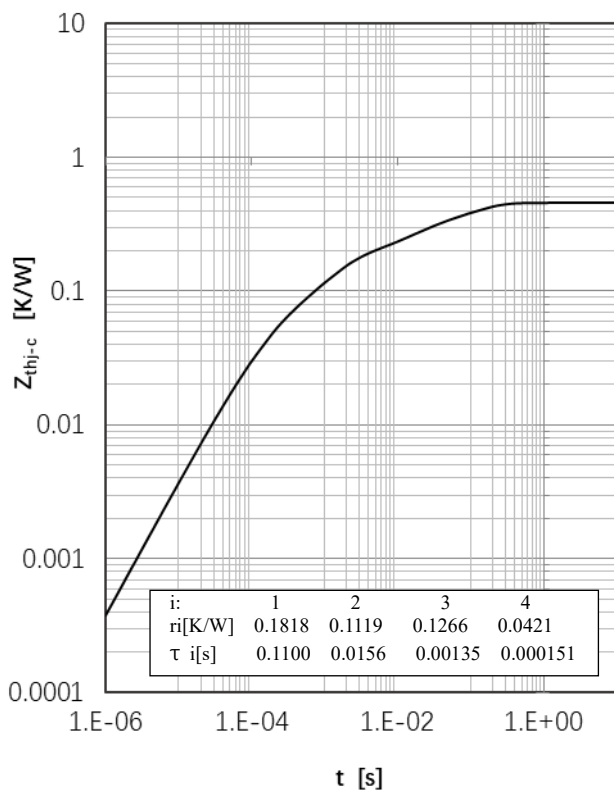


Fig 7. IGBT Transient Thermal Impedance

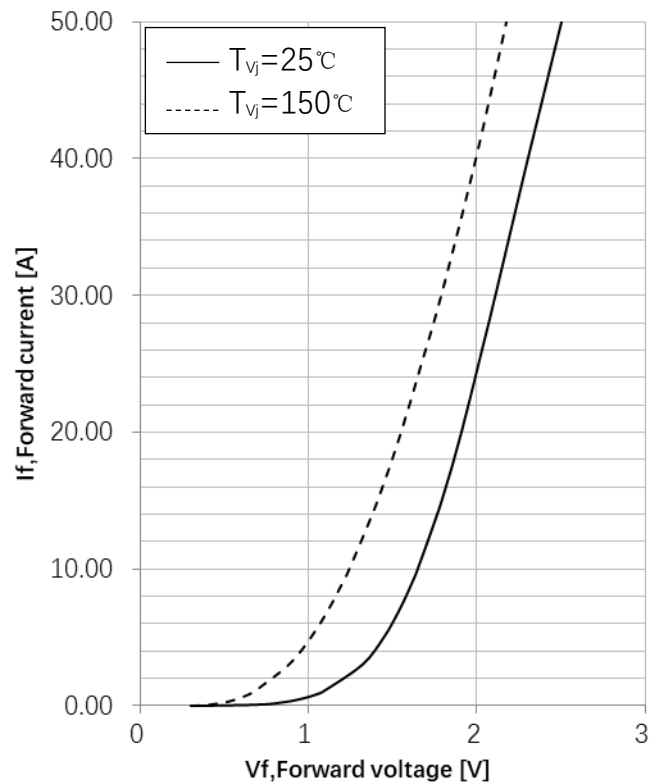
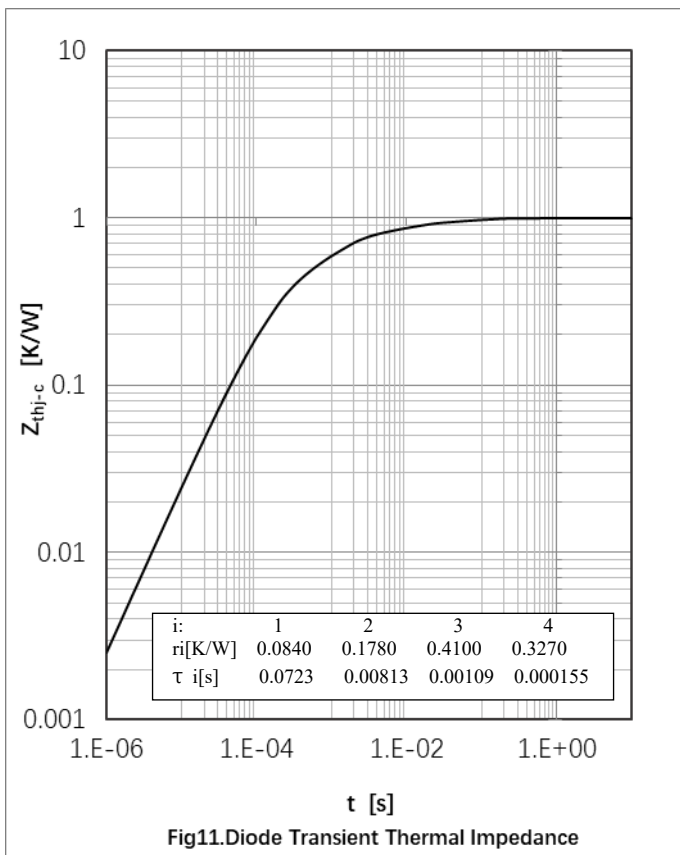
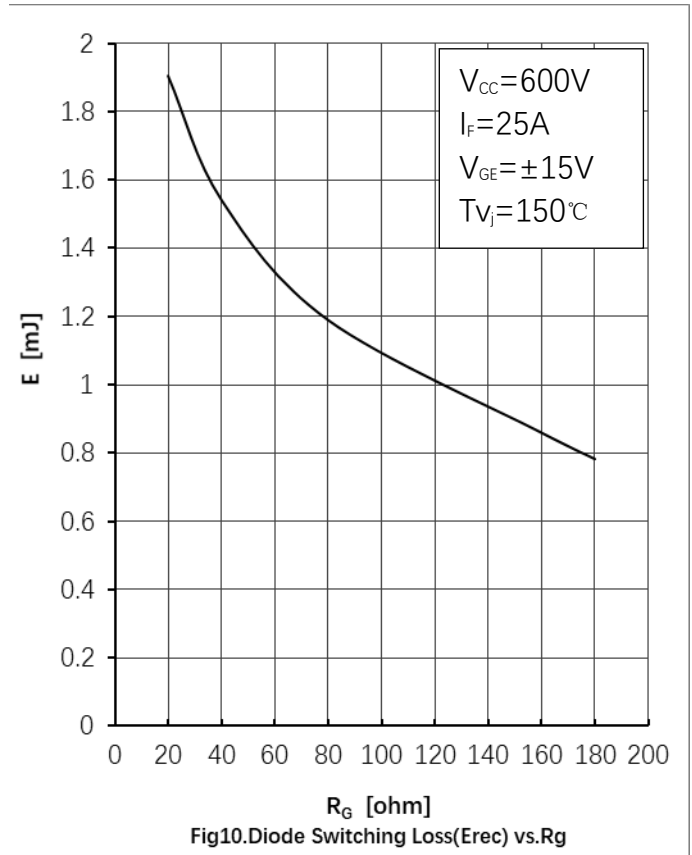
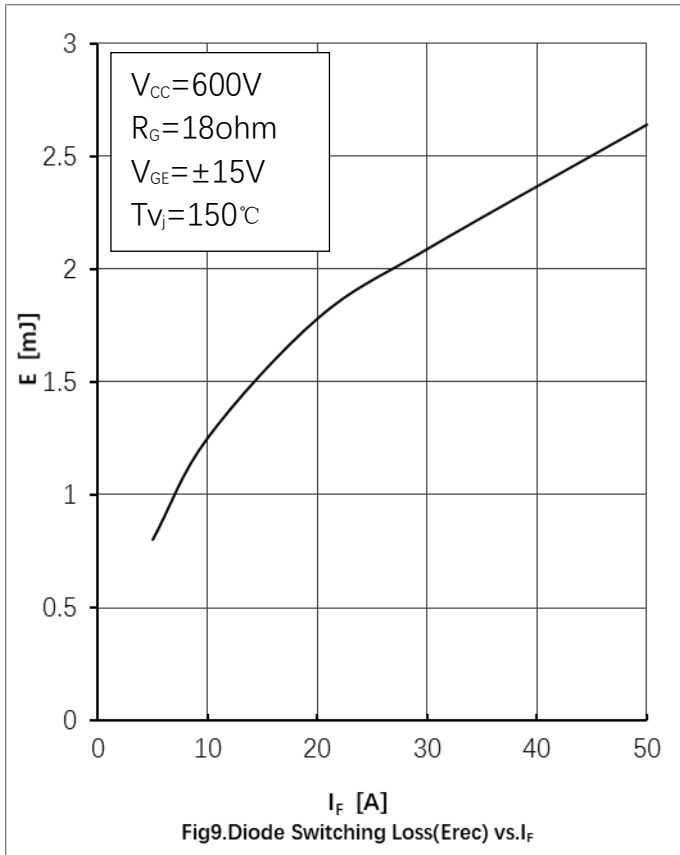
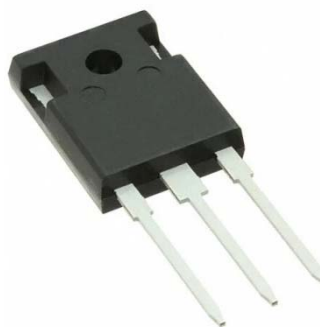
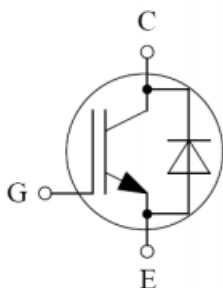


Fig8. diode forward current as a function of forward voltage



■Circuit Diagram



■Package Outline Information

CASE: TO 247

