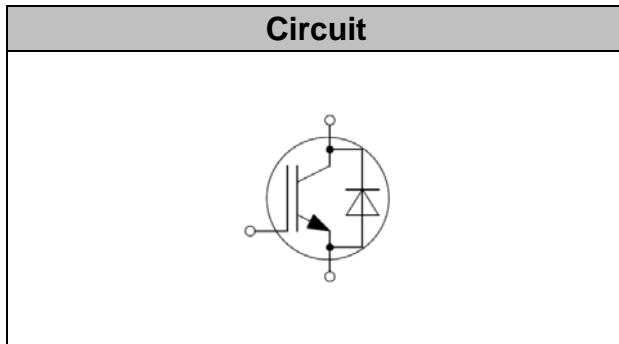




IGBT Discrete



Applications

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Features

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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	30 15	A
Diode Forward Current, limited by T_{jmax} $T_C=25^{\circ}C$ $T_C=100^{\circ}C$	I_F	30 15	A
Continuous Gate-Emitter Voltage	V_{GE}	20	V
Transient Gate-Emitter Voltage	V_{GE}	30	V
Turn off Safe Operating Area $V_{CE} 1200V$, $T_j 150^{\circ}C$		60	A
Pulsed Collector Current, $V_{GE}=15V$, t_p limited by T_{jmax}	I_{CM}	60	A
Diode Pulsed Current, t_p limited by T_{jmax}	I_{Fpuls}	60	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}	200	W

$T_j = 25$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$V_{GE}=0V, I_C=250\mu A$	1200		-	V
Gate Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=0.5mA$	5.1	5.8	6.4	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=15A$ $T_j=25^\circ C,$ $T_j=125^\circ C$ $T_j=150^\circ C$		1.85 2.20 2.30	2.35	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V$ $T_j=25^\circ C,$ $T_j= \uparrow$				

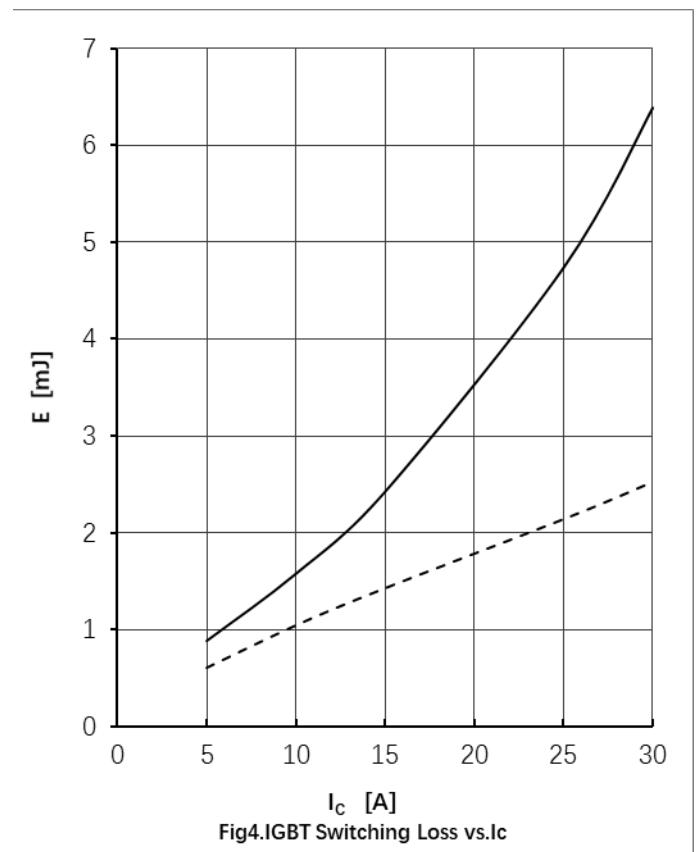
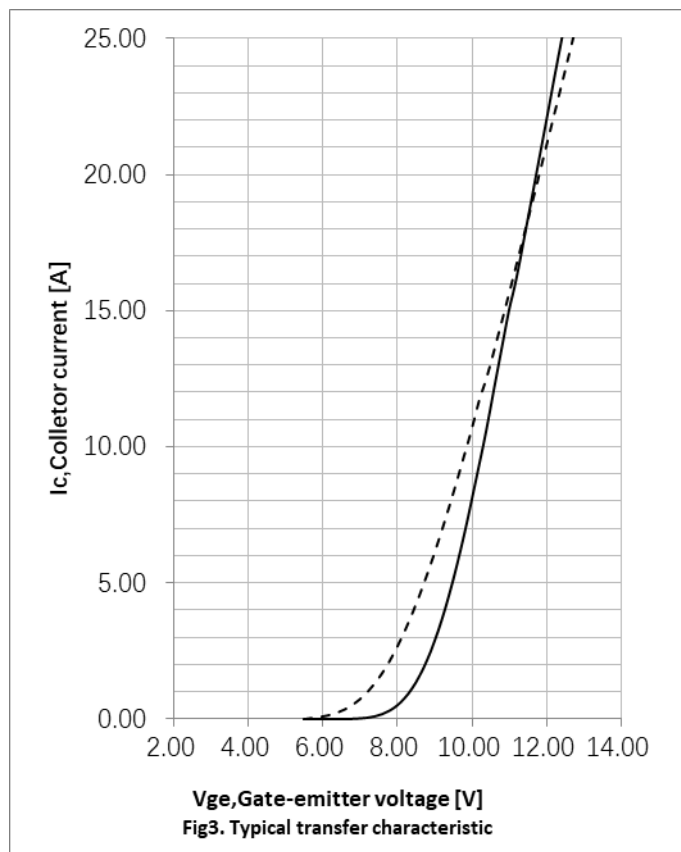
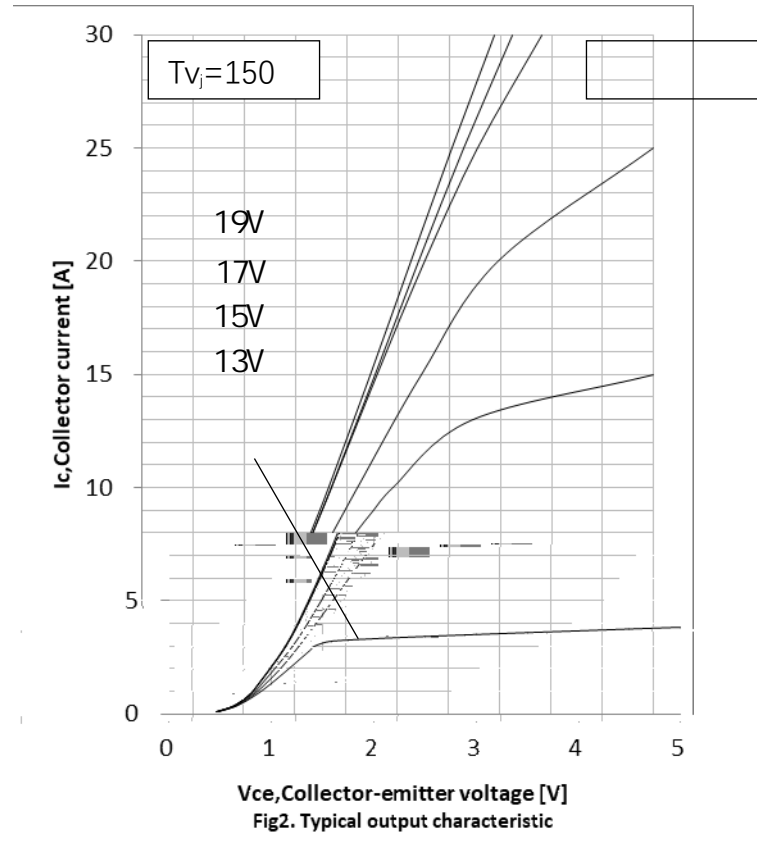
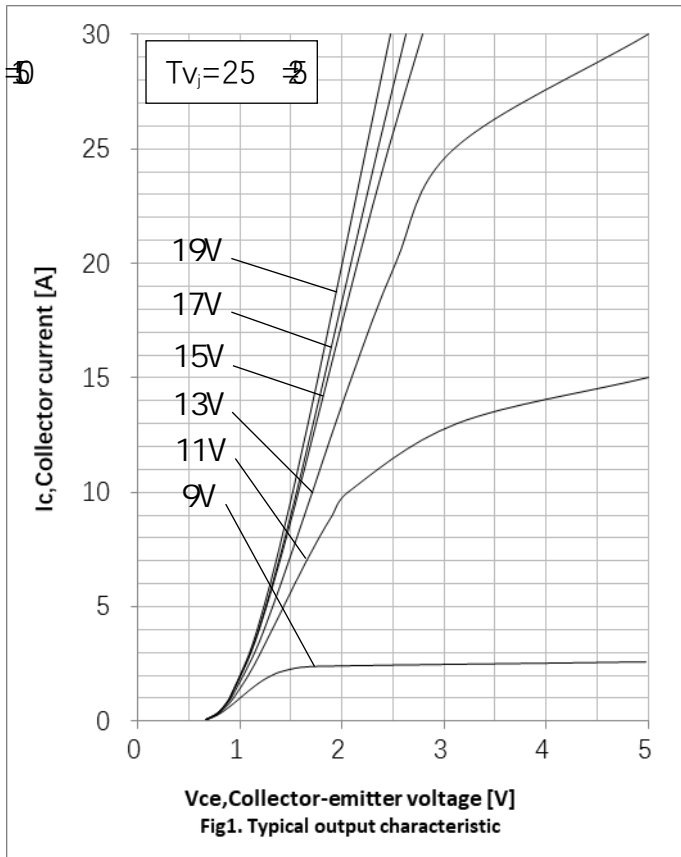
$T_j = 25$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_F	$I_F = 15A$ $T_j = 25^\circ C$, $T_j = 125^\circ C$ $T_j = 150^\circ C$		2.00 1.80 1.70	2.40	V

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Turn-on Delay Time	$t_{d(on)}$	$V_{CC} = 600V, I_C = 15A,$ $V_{GE} = -15V \sim 15V,$ $R_g = 33$	-	45	-	ns
Rise Time	t_r		-	52	-	ns
Turn-on Energy	E_{on}		-	1.5	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	128	-	ns
Fall Time	t_f		-	186	-	ns
Turn-off Energy	E_{off}		-	0.9	-	mJ
Turn-on Delay Time	$t_{d(on)}$	$V_{CC} = 600V, I_C = 15A,$ $V_{GE} = -15V \sim 15V,$ $R_g = 33$	-	50	-	ns
Rise Time	t_r		-	55	-	ns
Turn-on Energy	E_{on}		-	2.2	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	160	-	ns
Fall Time	t_f		-	135	-	ns
Turn-off Energy	E_{off}		-	1.3	-	mJ
Turn-on Delay Time	$t_{d(on)}$	$V_{CC} = 600V, I_C = 15A,$ $V_{GE} = -15V \sim 15V,$ $R_g = 33$	-	52	-	ns
Rise Time	t_r		-	58	-	ns
Turn-on Energy	E_{on}		-	2.4	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	170	-	ns
Fall Time	t_f		-	138	-	ns
Turn-off Energy	E_{off}		-	1.45	-	mJ

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_{FM}	$I_F=15A$	-	1.90	-	V
Reverse Recovery Current	I_{rr}	$I_F=15A, V_R=600V,$ $-di/dt=240A/\mu s,$	-	7.5	-	A
Reverse Recovery Charge	Q_{rr}		-	1.8	-	μC
Reverse Recovery Energy	E_{rec}		-	0.60		mJ
Reverse Recovery Current	I_{rr}	$I_F=15A, V_R=600V,$ $-di/dt=240A/\mu s,$	-	9	-	A
Reverse Recovery Charge	Q_{rr}		-	2.4	-	μC
Reverse Recovery Energy	E_{rec}		-	0.9		mJ
Reverse Recovery Current	I_{rr}	$I_F=15A, V_R=600V,$ $-di/dt=240A/\mu s,$	-	9.5	-	A
Reverse Recovery Charge	Q_{rr}		-	2.6	-	μC
Reverse Recovery Energy	E_{rec}		-	1.0		mJ

Parameter	Symbol	Max. Value	Unit
IGBT Thermal Resistance, Junction - Case	$R_{th(j-c)}$	0.75	K/W
Diode Thermal Resistance, Junction - Case	$R_{th(j-c)}$	1.35	K/W
Thermal Resistance, Junction - Ambient	$R_{th(j-a)}$	40	K/W



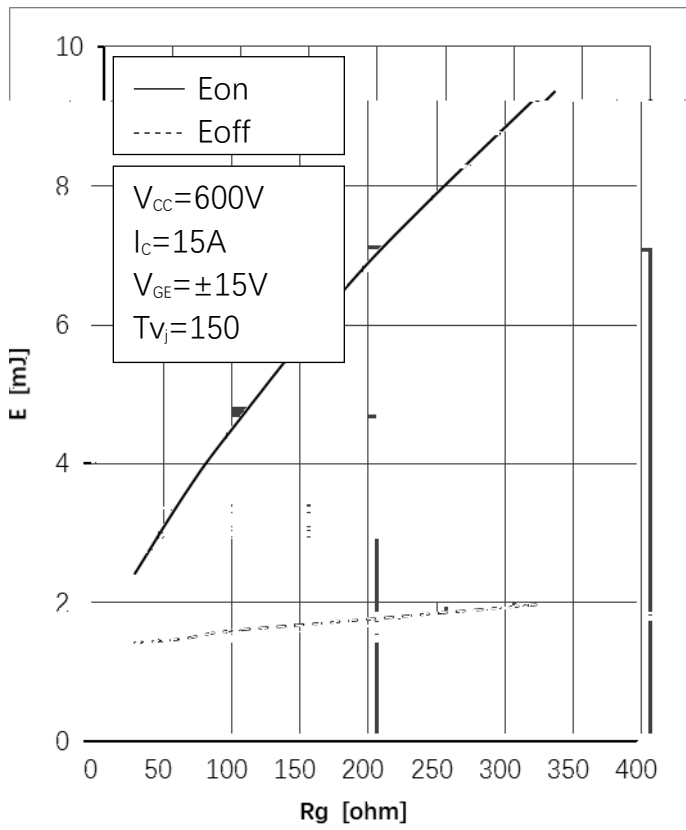


Fig5.IGBT Switching Loss vs.Rg

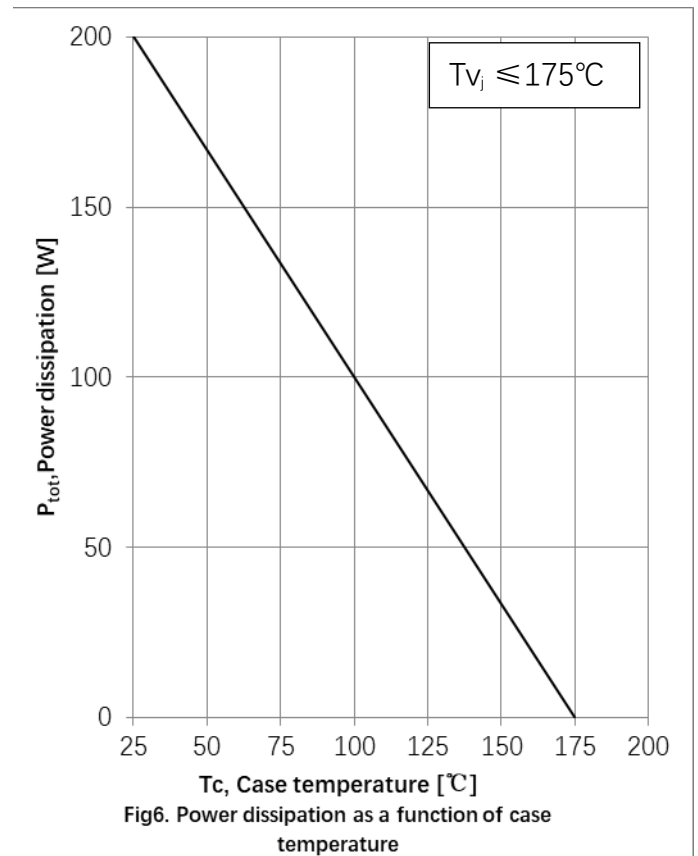


Fig6. Power dissipation as a function of case temperature

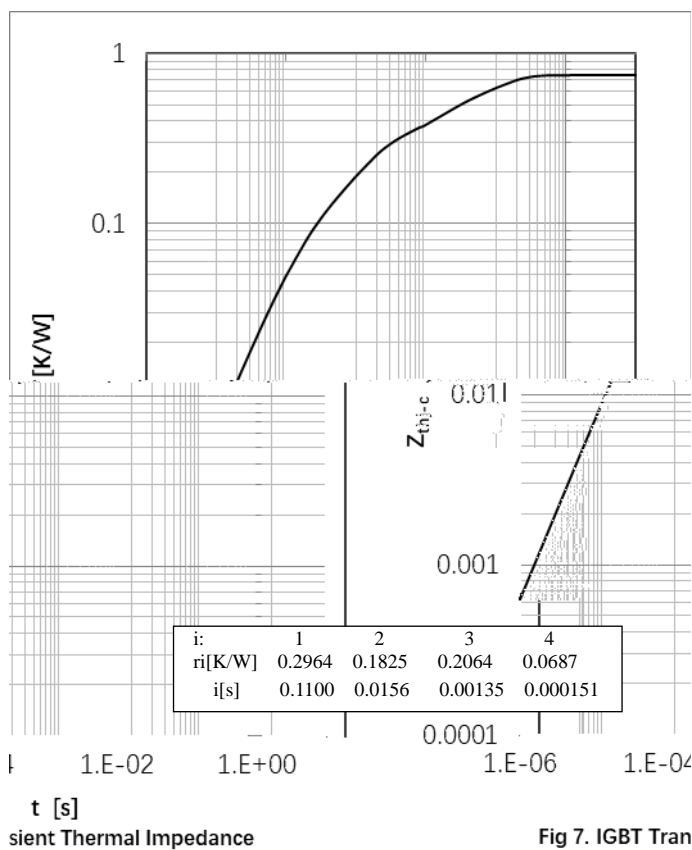


Fig 7. IGBT Tran

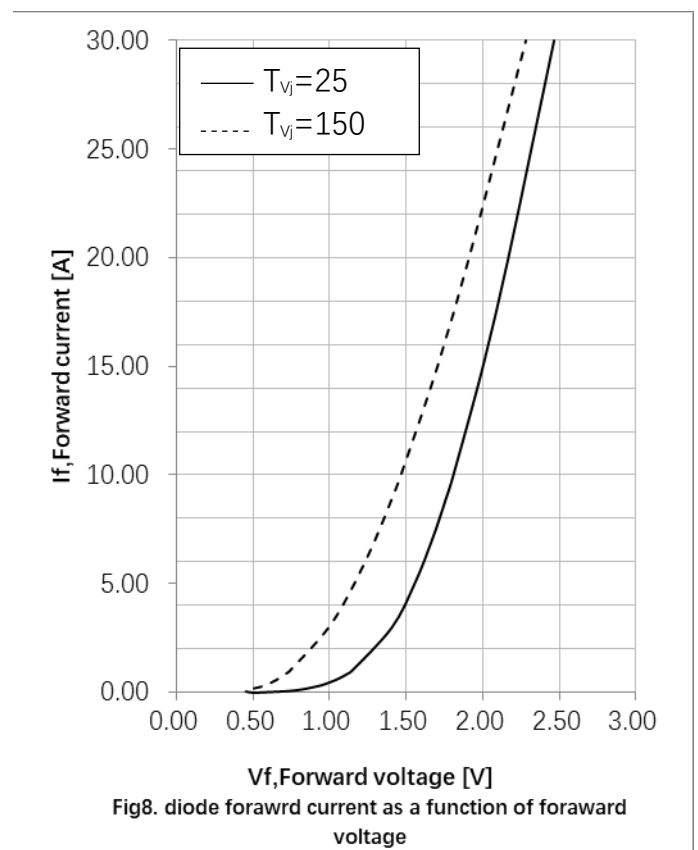
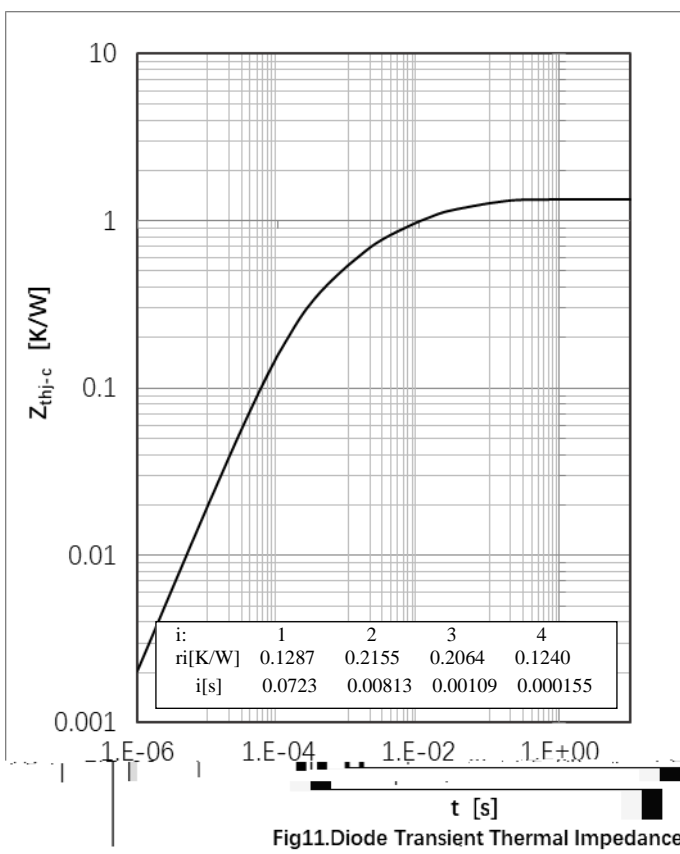
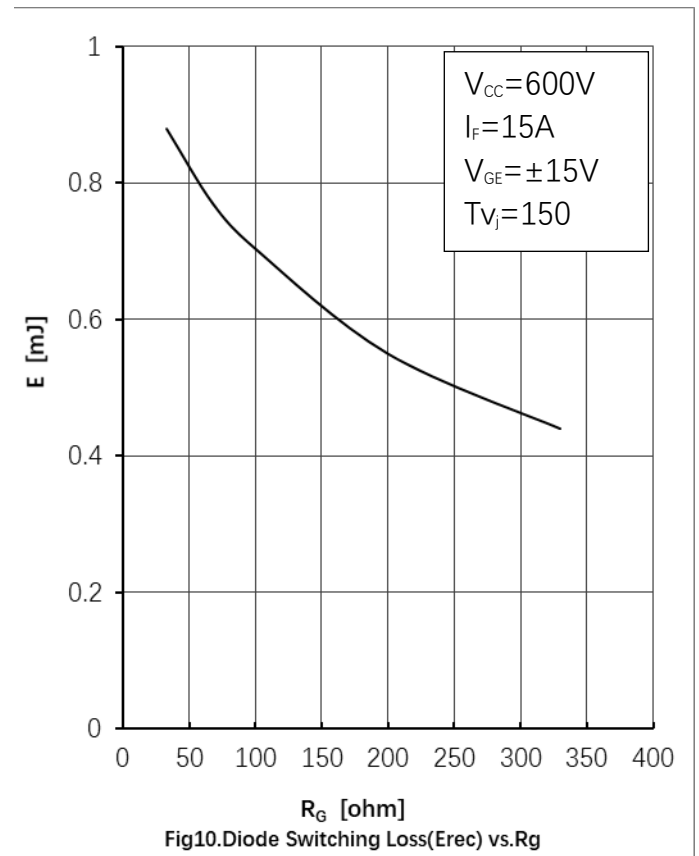
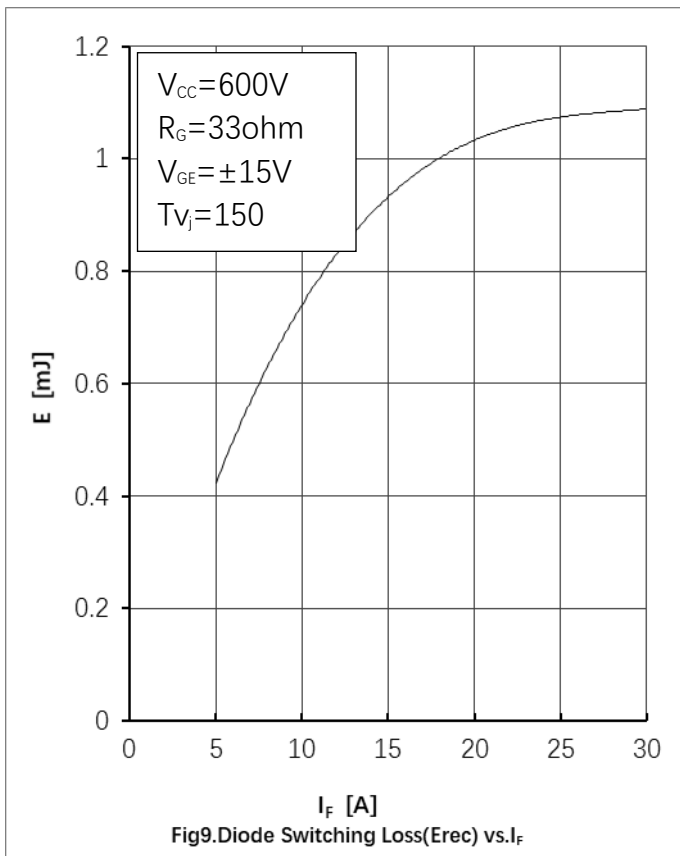
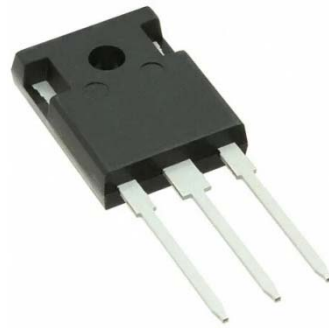
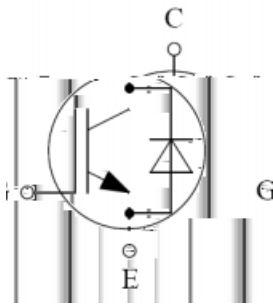


Fig8. diode forward current as a function of forward voltage



● Circuit Diagram



● Package Outline Information

CASE: TO 247

