

Maximum Ratings



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}	$V_{GE}=0V, I_C=250\mu A$	1200		-	V
Gate Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=1.0mA$	5.1	5.8	6.4	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=40A$ $T_j=25^\circ C,$ $T_j=125^\circ C$ $T_j=150^\circ C$		1.85 2.20 2.30	2.30	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}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz$	-	4.20	-	nF
Reverse Transfer Capacitance	C_{res}		-	0.18	-	
Gate Charge	Q_G	$V_{CC}=960V, I_C=40A,$ $V_{GE}=15V$	-	0.33	-	uC
Short Circuit Collector Current	I_{SC}	$V_{GE}=15V, t_{sc} 10\mu s,$ $V_{CC}=900V, T_j 150^\circ C$	-	140	-	A



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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Diode Forward Voltage	V_F	$I_F=40A$ $T_j=25^\circ C$, $T_j=125^\circ C$ $T_j=150^\circ C$		2.00 1.80 1.70		V

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at $T_j=25$						
Turn-on Delay Time	$t_{d(on)}$	$V_{CC}=600V, I_C=40A,$ $V_{GE}=-15V\sim 15V,$ $R_g=12$	-	45	-	ns
Rise Time	t_r		-	56	-	ns
Turn-on Energy	E_{on}		-	3.8	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	180	-	ns
Fall Time	t_f		-	80	-	ns
Turn-off Energy	E_{off}		-	1.7	-	mJ
Dynamic , at $T_j=125$						
Turn-on Delay Time	$t_{d(on)}$	$V_{CC}=600V, I_C=40A,$ $V_{GE}=-15V\sim 15V,$ $R_g=12$	-	50	-	ns
Rise Time	t_r		-	58	-	ns
Turn-on Energy	E_{on}		-	5.4	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	240	-	ns
Fall Time	t_f		-	85	-	ns
Turn-off Energy	E_{off}		-	2.7	-	mJ
Dynamic , at $T_j=150$						
Turn-on Delay Time	$t_{d(on)}$	$V_{CC}=600V, I_C=40A,$ $V_{GE}=-15V\sim 15V,$ $R_g=12$	-	53	-	ns
Rise Time	t_r		-	60	-	ns
Turn-on Energy	E_{on}		-	5.8	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	260	-	ns
Fall Time	t_f		-	90	-	ns
Turn-off Energy	E_{off}		-	3.0	-	mJ

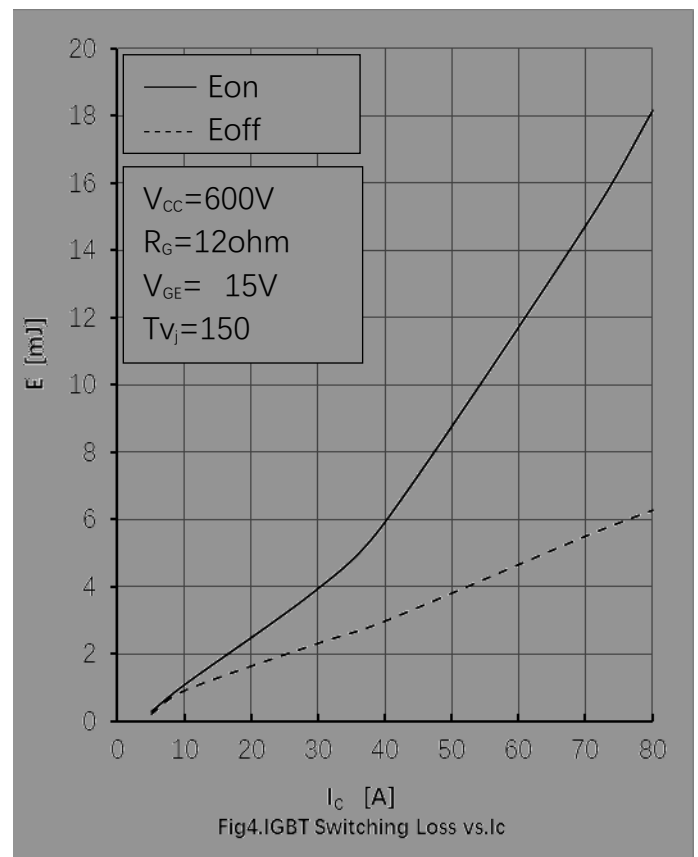
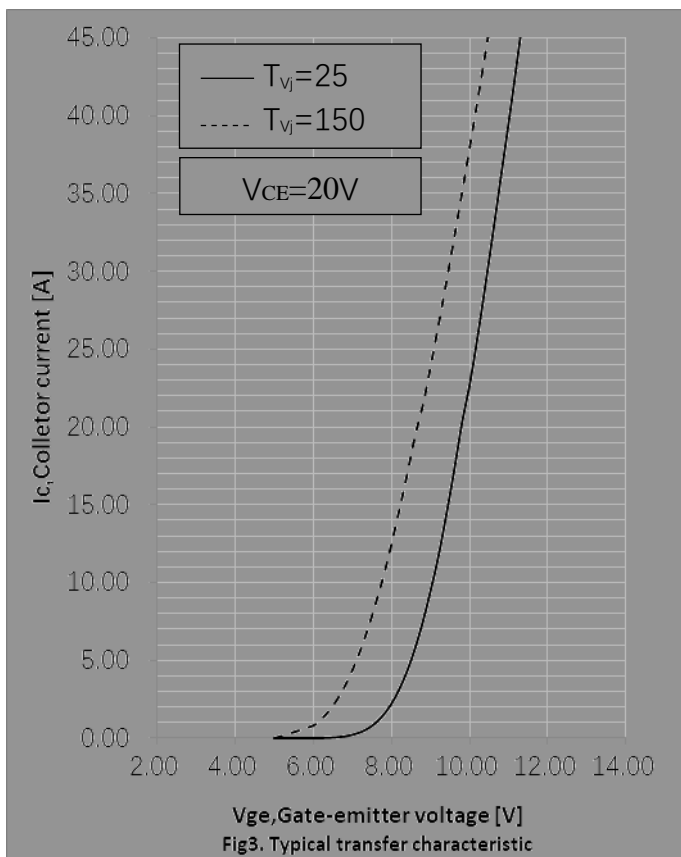
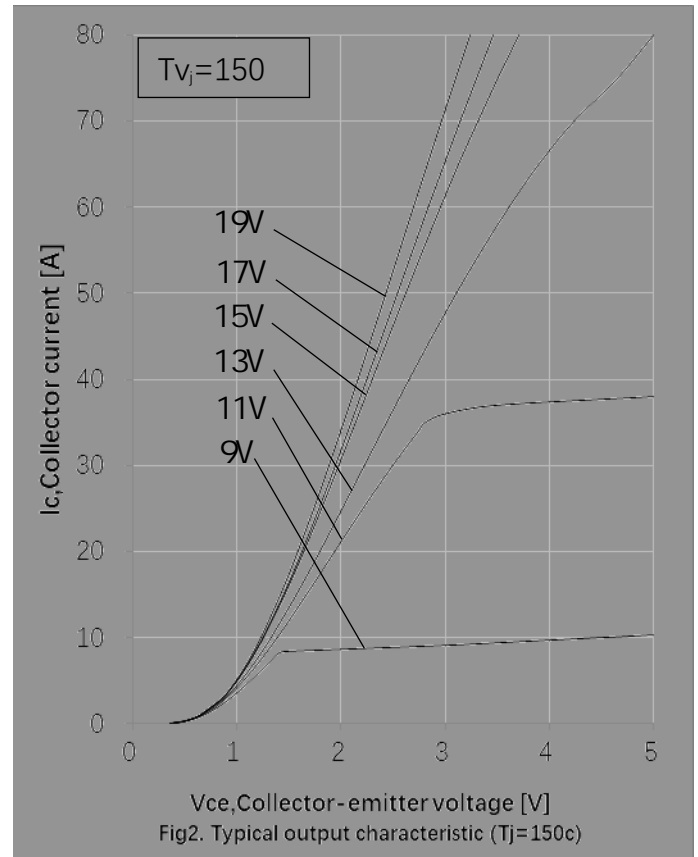
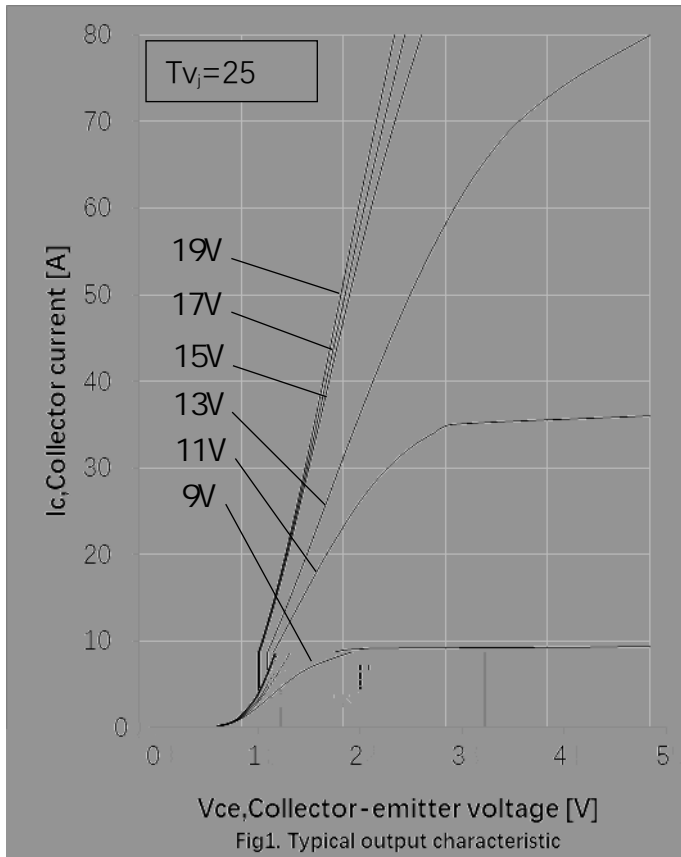


Electrical Characteristics of the DIODE

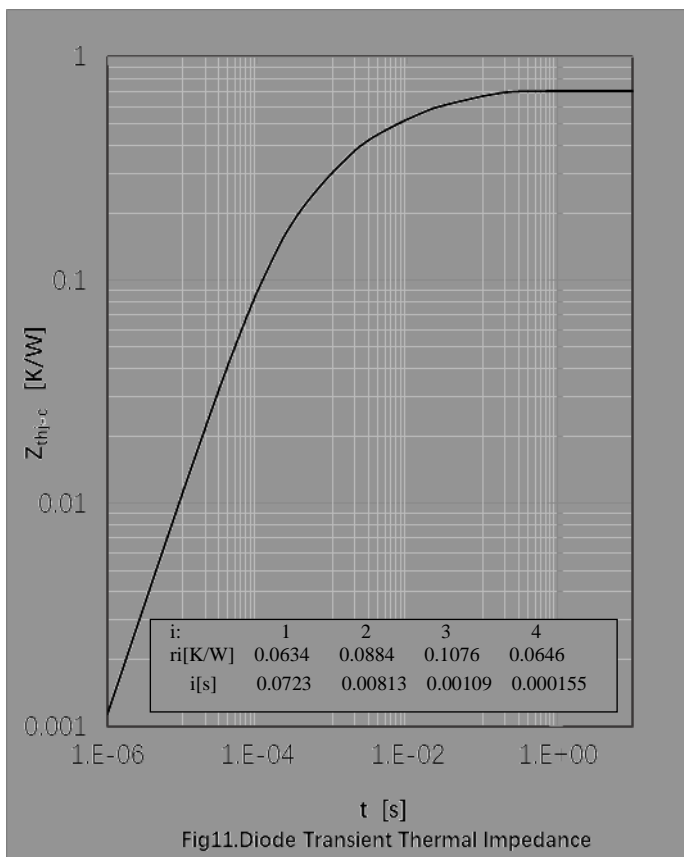
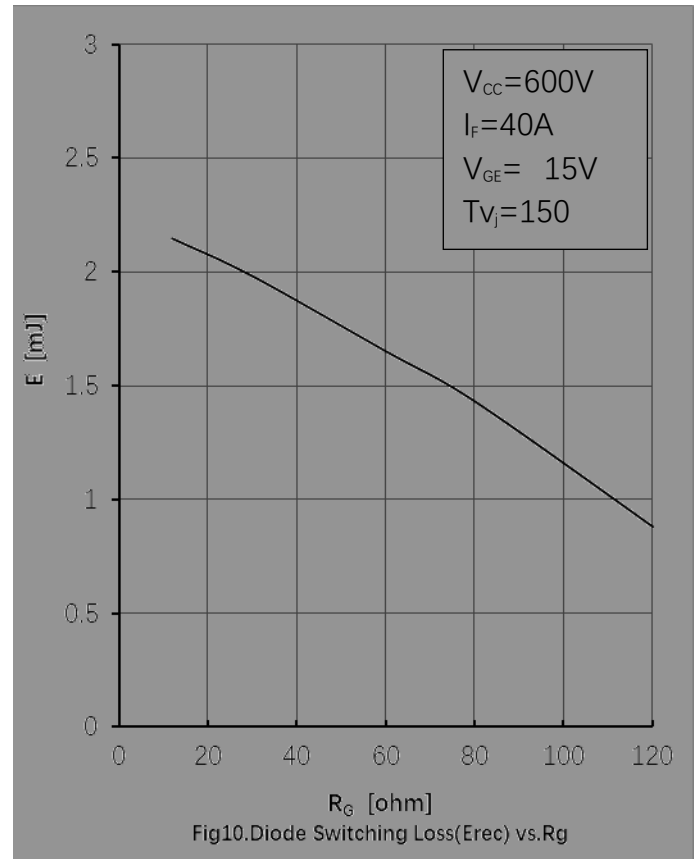
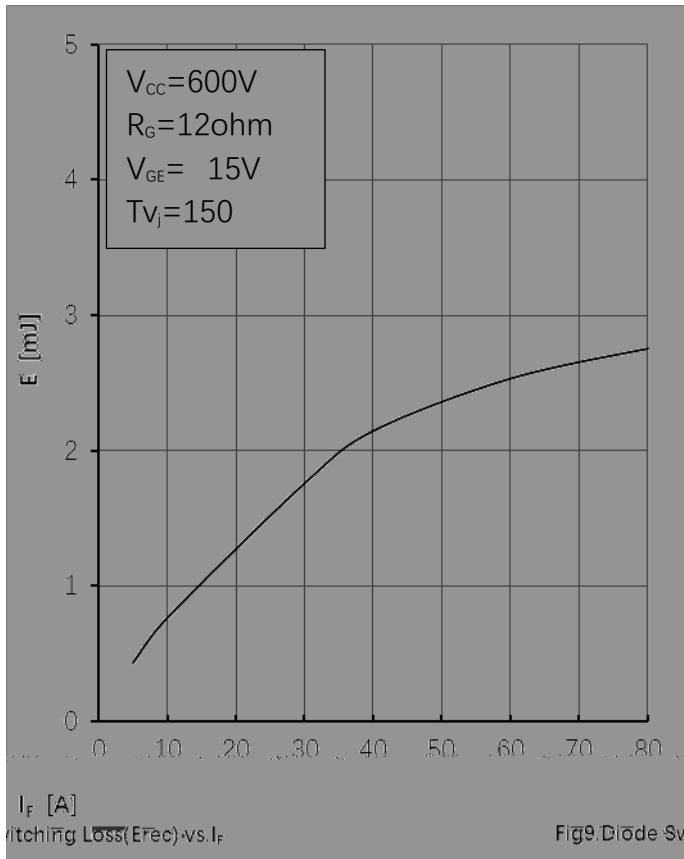
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T_j= 25						
Diode Forward Voltage	V _{FM}	I _F = 40A	-	1.90	-	V
Reverse Recovery Current	I _{rr}	I _F =40A, V _R =600V, di/dt= -1800A/μs,	-	21	-	A
Reverse Recovery Charge	Q _{rr}		-	2.40	-	uC
Reverse Recovery Energy	E _{rec}		-	1.00		mJ
Dynamic , at T_j= 125						
Reverse Recovery Current	I _{rr}	I _F =40A, V _R =600V di/dt= -1800A/μs,	-	25	-	A
Reverse Recovery Charge	Q _{rr}		-	4.8	-	uC
Reverse Recovery Energy	E _{rec}		-	1.95		mJ
Dynamic , at T_j= 150						
Reverse Recovery Current	I _{rr}	I _F =40A, V _R =600V di/dt= -1800A/μs,	-	28	-	A
Reverse Recovery Charge	Q _{rr}		-	5.4	-	uC
Reverse Recovery Energy	E _{rec}		-	2.25		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)}	0.65	K/W
Thermal Resistance, Junction - Ambient	R _{th(j-a)}	40	K/W









- Circuit Diagram

