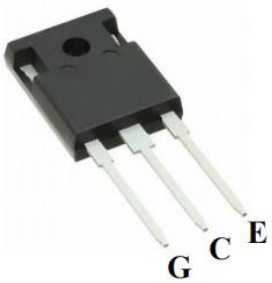
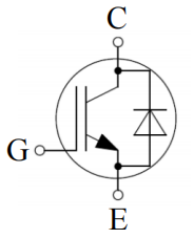
DGW25N120CTL1A



IGBT Discrete

V_{CE}	1200	V
I_C	25	A
$V_{CE(SAT)}$ I_C=25A	1.60	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°C T_C= 100°C	I_C	 50 25	A
Diode Forward Current, limited by T_{jmax} T_C= 25°C T_C= 100°C	I_F	 50 25	A
Continuous Gate-Emitter Voltage	V_{GE}	20	V
Transient Gate-Emitter Voltage (tp 10µs,D<0.010)	V_{GE}	30	V
Turn off Safe Operating Area V_{CE} T_j		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}=600V, V_{CEM} 1200V	T_{sc}	10	
Power Dissipation , Tj=175°C, Tc=25°C	P_{tot}	226	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	1200		-	V
Gate Threshold Voltage	$V_{GE(th)}$	V_{GE}=V_{CE}, I_C=1mA	5.2	5.8	6.5	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		1.60 1.90 2.00	2.10	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	-	2.69	-	nF
Reverse Transfer Capacitance	C_{res}		-	0.03	-	
Gate Charge	Q_G	V_{CC}=600V,I_C=25A, V_{GE}=15V	-	0.19	-	uC
Short Circuit Collector Current	I_{SC}	V_{GE}=15V, tsc , Vcc=600V,Tj 150°C	-	120	-	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= 25A T_j= 25°C, T_j= 125°C T_j= 150°C		2.15 1.95 1.85	2.75	V

Switching Characteristic, Inductive Load

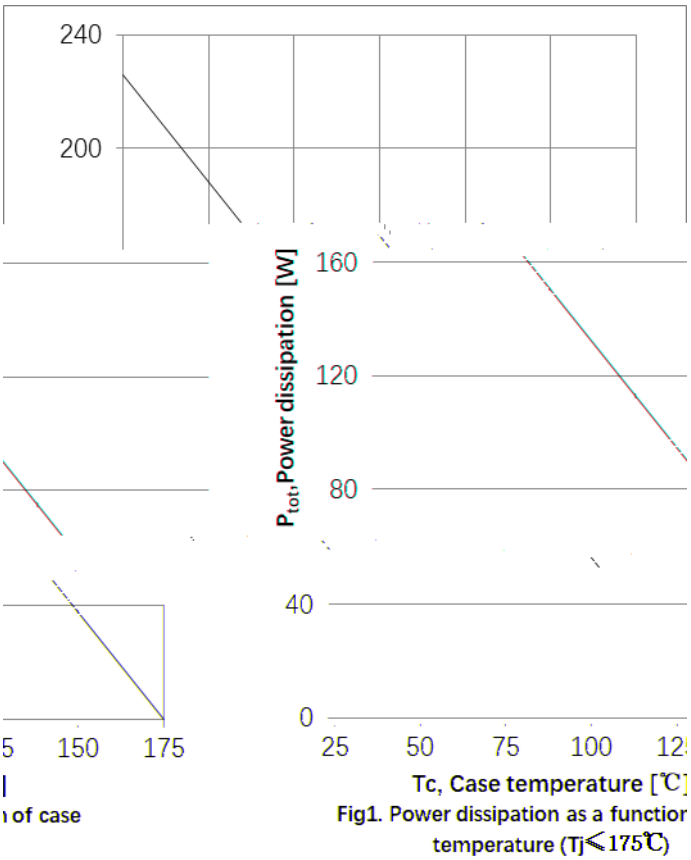
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T_j= 25						
Turn-on Delay Time	$t_{d(on)}$	V_{CC}= 600V, I_C=25A, V_{GE}= -5v~15V, R_g=20	-	75	-	ns
Rise Time	t_r		-	70	-	ns
Turn-on Energy	E_{on}		-	1.8	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	223	-	ns
Fall Time	t_f		-	216	-	ns
Turn-off Energy	E_{off}		-	1.7	-	mJ
Dynamic , at T_j= 125						
Turn-on Delay Time	$t_{d(on)}$	V_{CC}= 600V, I_C=25A, V_{GE}= -5v~15V, R_g=20	-	72	-	ns
Rise Time	t_r		-	70	-	ns
Turn-on Energy	E_{on}		-	1.9	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	251	-	ns
Fall Time	t_f		-	304	-	ns
Turn-off Energy	E_{off}		-	2.2	-	mJ
Dynamic , at T_j= 150						
Turn-on Delay Time	$t_{d(on)}$	V_{CC}= 600V, I_C=25A, V_{GE}= -5v~15V, R_g=20	-	71	-	ns
Rise Time	t_r		-	70	-	ns
Turn-on Energy	E_{on}		-	2.0	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	264	-	ns
Fall Time	t_f		-	342	-	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						
Reverse Recovery Current	I_{rr}	I_F=25A, V_R=600V, -di/dt=300	-	9	-	A
Reverse Recovery Time	Trr		-	175	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.95	-	uC
Reverse Recovery Energy	Erec		-	0.30	-	mJ
Dynamic , at Tj= 125℃						
Reverse Recovery Current	I_{rr}	I_F=25A, V_R=600V, -di/dt=300	-	14	-	A
Reverse Recovery Time	Trr		-	250	-	ns
Reverse Recovery Charge	Q_{rr}		-	2.10	-	uC
Reverse Recovery Energy	Erec		-	0.75	-	mJ
Dynamic , at Tj= 150℃						
Reverse Recovery Current	I_{rr}	I_F=25A, V_R=600V, -di/dt=300A	-	16	-	A
Reverse Recovery Time	Trr		-	280	-	ns
Reverse Recovery Charge	Q_{rr}		-	2.60	-	uC
Reverse Recovery Energy	Erec		-	0.95	-	mJ

Thermal Resistance

Parameter	Symbol	Max. Value	Unit
IGBT Thermal Resistance, Junction - Case	R_{th}(j-c)	0.65	K/W
Diode Thermal Resistance, Junction - Case	R_{th}(j-c)	1.15	K/W
Thermal Resistance, Junction - Ambient	R_{th}(j-a)	40	K/W



of case

Fig1. Power dissipation as a function of case temperature (Tj≤175℃)

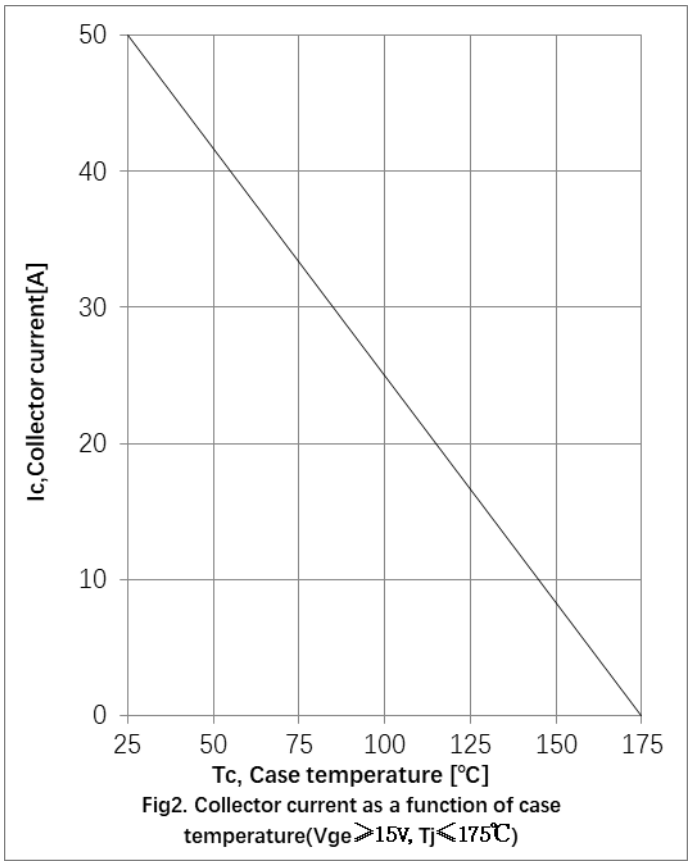
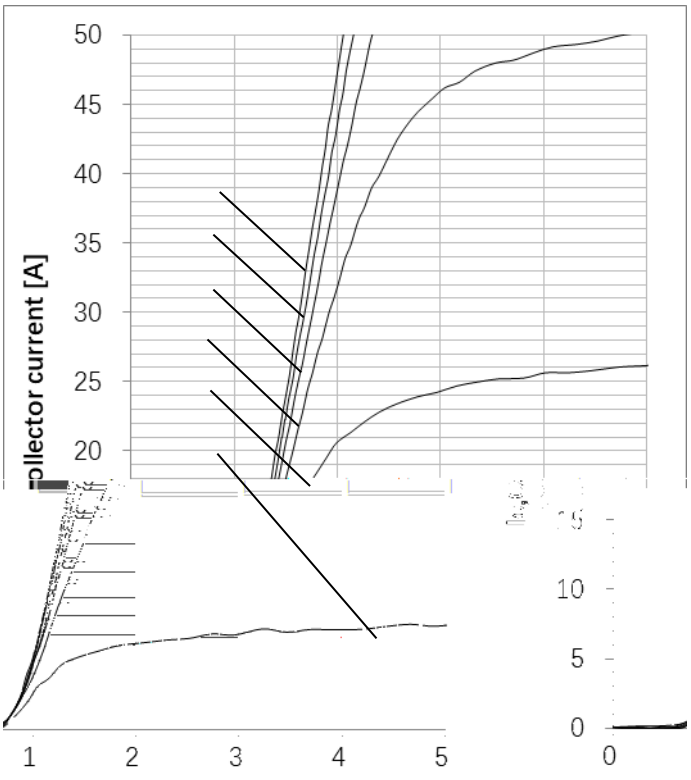


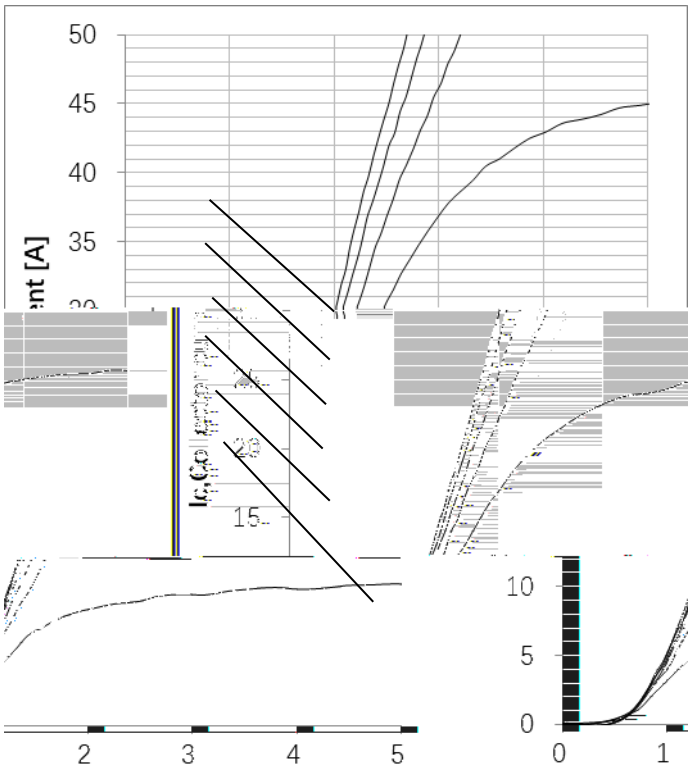
Fig2. Collector current as a function of case temperature(Vge≥15V, Tj≤175℃)



pical output characteristic (Tj=25℃)

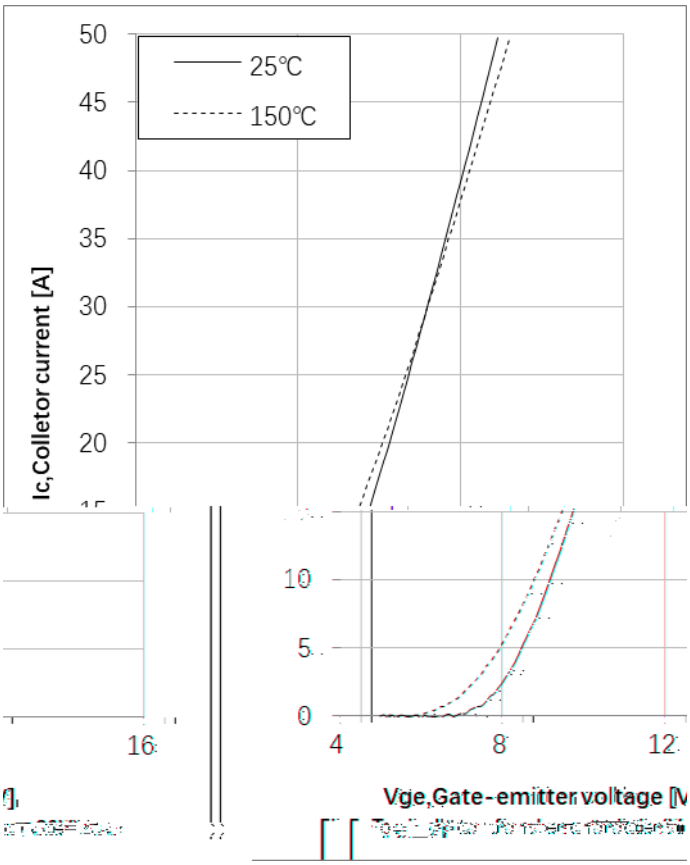
Vce

Fig3. Ty



output characteristic (Tj=150℃)

Fig4. Typical



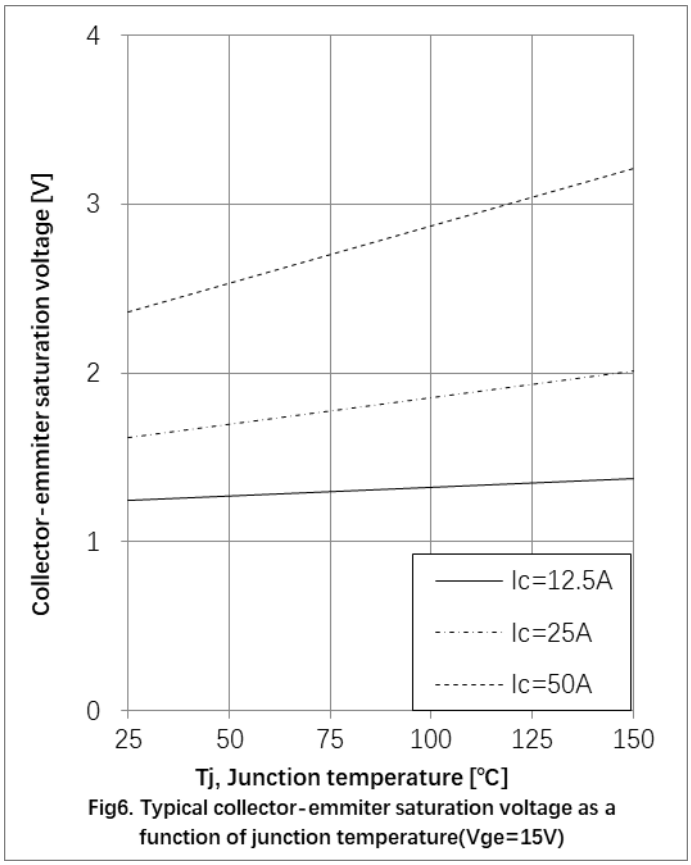


Fig6. Typical collector-emmiter saturation voltage as a function of junction temperature(Vge=15V)

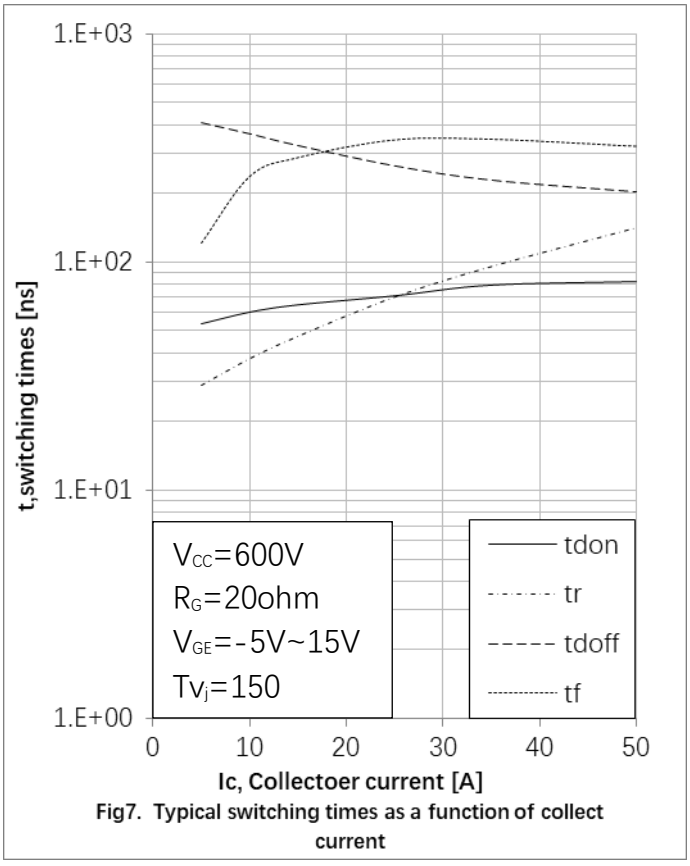
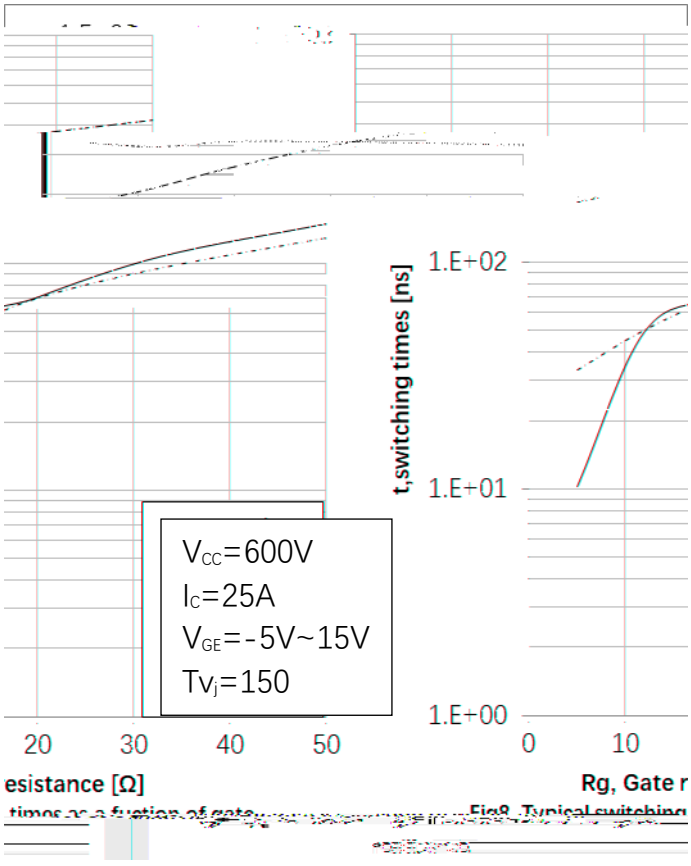
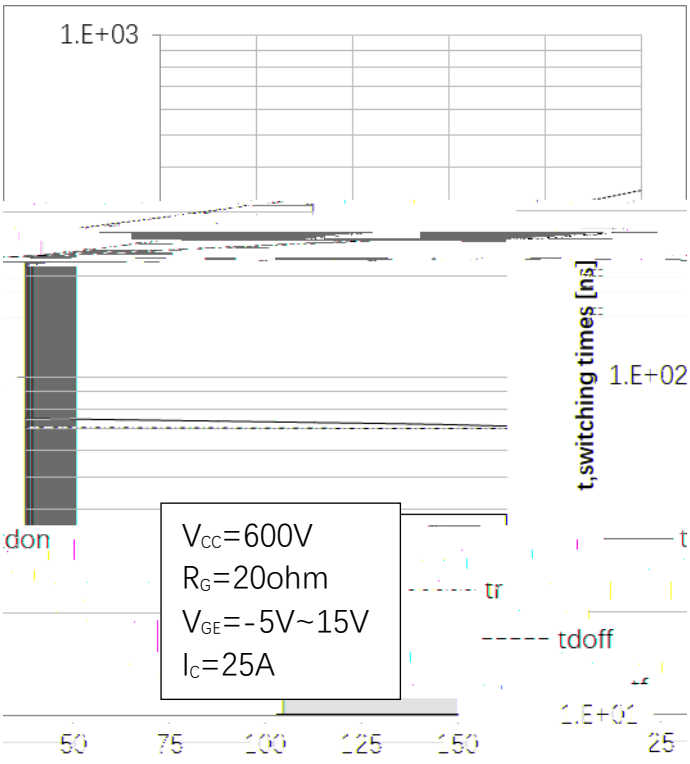


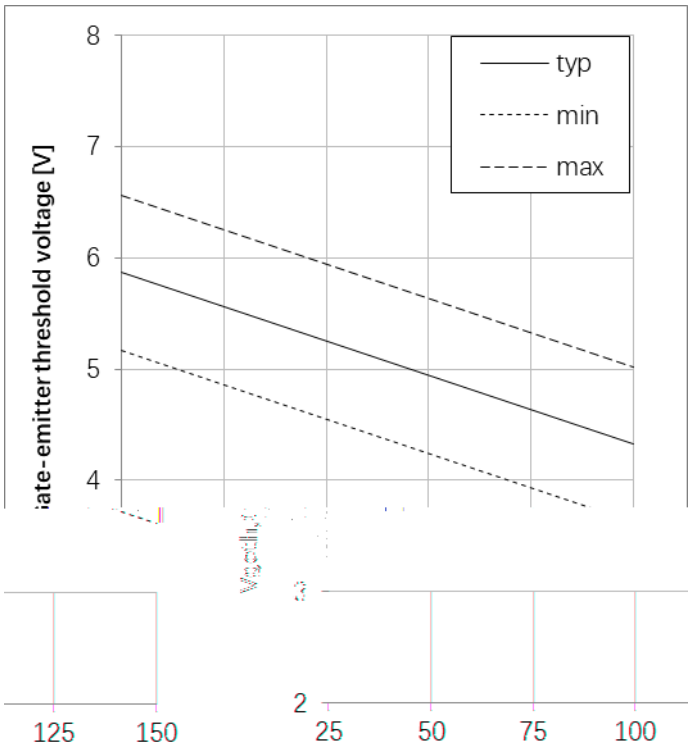
Fig7. Typical switching times as a function of collect current





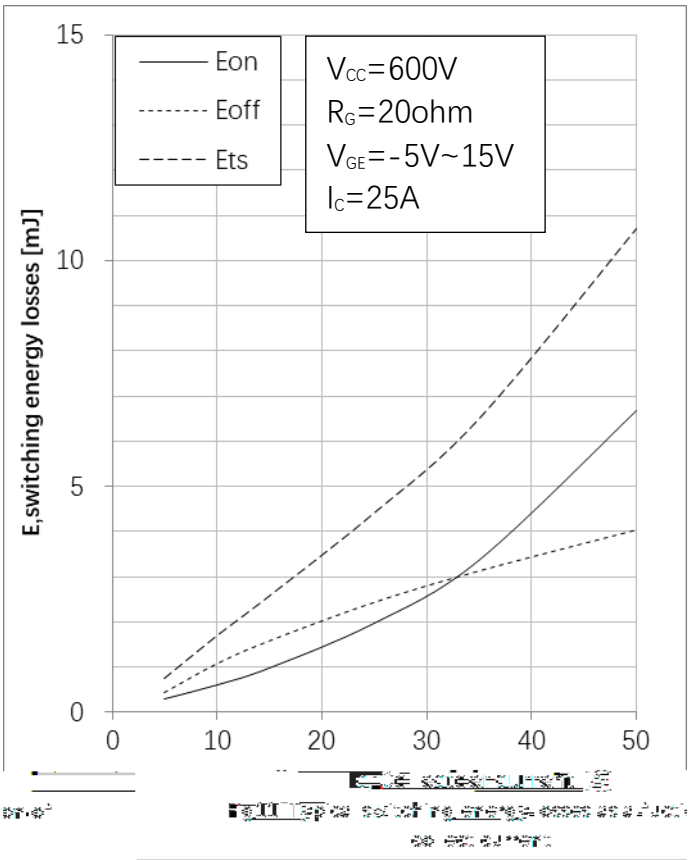
cal switching times as a fuction of junction temperature

Fig9. Typi



C]
a fuction of

Fig10. Gate-emitter threshold voltage as junction temperature



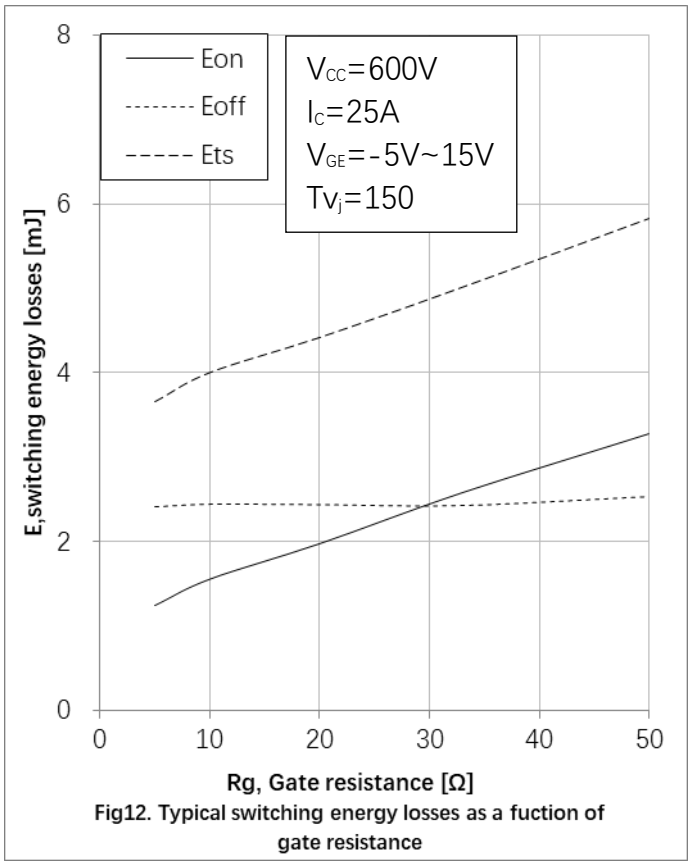


Fig12. Typical switching energy losses as a fuction of gate resistance

DGW25N120CTL1A

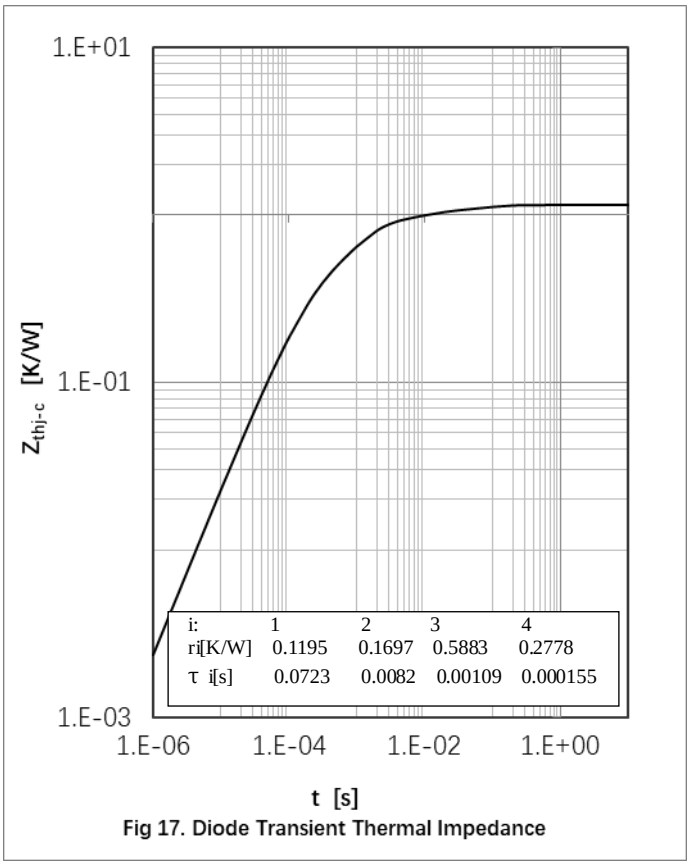


Fig 17. Diode Transient Thermal Impedance

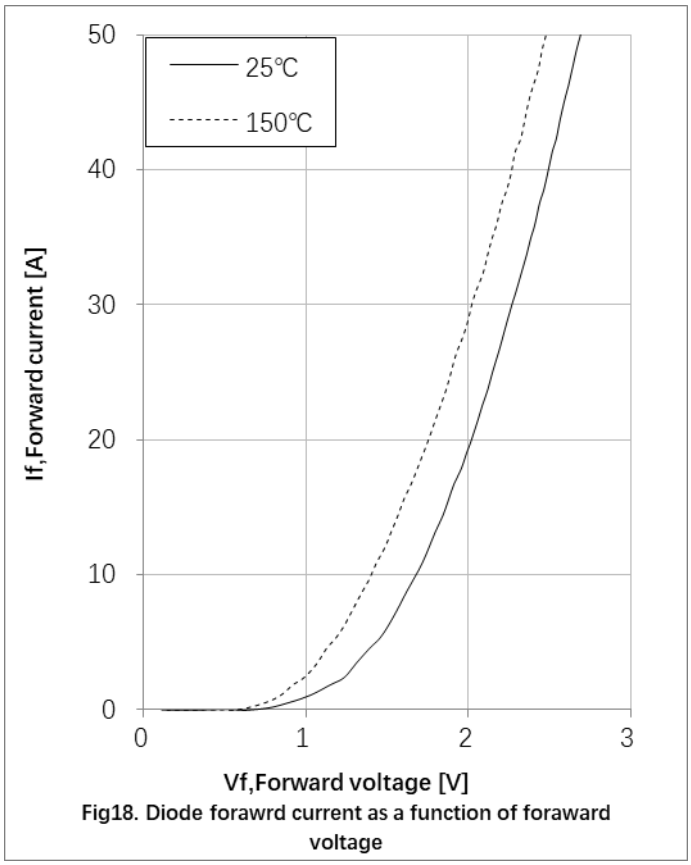


Fig18. Diode forawrd current as a function of foraward voltage

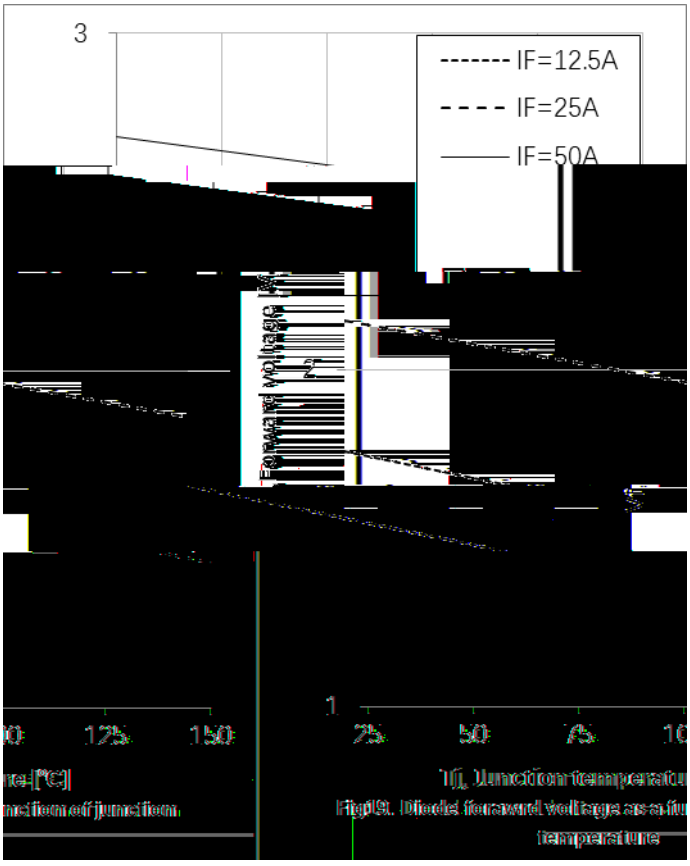
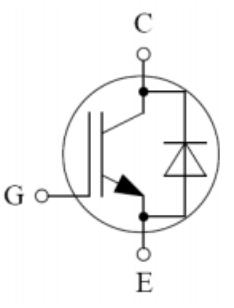


Fig19. Diode forawrd voltage as a function of junction temperature





Package Outline Information

TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b		

P N R