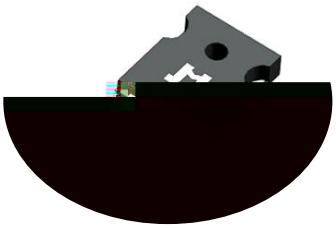
JJMICROELECTRONICS

1200V 40A T F S IGBT

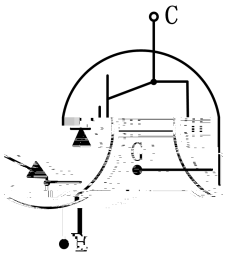
JJT40N120HE

- $_{CE}$ =1200V
- $_{C}$=40A@ $_{C}$=100
- $_{CE(sat)}$=1.9V

TO-247



- Trench and field-stop technology



V_{CES}	Collector-emitter voltage	1200	V
V_{GES}	Gate-emitter voltage	±20	V
I_C	Continuous collector current (T_C=25)	80	A
	Continuous collector current (T_C=100)	40	A
I_{CM}	Pulsed collector current, t_p limited by T_{vjmax}	160	A
I_F	Diode co		

CES	Collector-emitter breakdown voltage	GE=0V, I_C=250μA	1200	-	-	V
CES	Collector-emitter leakage current	CE=1200V, GE=0V	-	-	100	μA
GES	Gate leakage current, forward	GE=20V, CE=0V	-	-	100	nA
	Gate leakage current, reverse	GE=-20V, CE=0V	-	-	-100	nA
GE(th)	Gate-emitter threshold voltage	GE= CE, C=1mA	5.0	6.0	7.0	V
CE(sat)	Collector-emitter saturation voltage	GE=15 V, C=40A	-	1.9	-	V
		GE=15V, C=40A, vj=175	-	2.2	-	V

ies	Input capacitance	CE=30V GE=0V =1MHz	-	9900	-	pF
oes	Output capacitance		-	189	-	pF
res	Reverse transfer capacitance		-	40	-	pF
g	Total gate charge	CC=960V =15V =40A	-	263	-	nC

$t_{d(on)}$	Turn-on delay time		-	85	-	ns
t_r	Rise time		-	76	-	ns
$t_{d(off)}$	Turn-off delay time	V_{CC}=600V V_{GE}=0/15V I_C=40A R_G=10 Inductive load	-	307	-	ns
t_f	Fall time		-	69	-	ns
E_{on}	Turn-on energy		-	2.5	-	mJ
E_{off}	Turn-off energy		-	1.4	-	mJ
E_{ts}	Total switching energy		-	3.9	-	mJ
$t_{d(on)}$	Turn-on delay time		-	76	-	ns
t_r	Rise time		-	75	-	ns
$t_{d(off)}$	Turn-off delay time	V_{CC}=600V V_{GE}=0/15V I_C=40A R_G=10 Inductive load T_{vj}=175	-	360	-	ns
t_f	Fall time		-			

($_{vj}$=25 unless otherwise specified)

$_{F}$	Diode forward voltage	$_{F}$=40A	-	2.0	-	V
		$_{F}$=40A $_{vj}$=175	-	1.6	-	V
$_{rr}$	Diode reverse recovery time	$_{R}$=600V $_{F}$=40A d $_{F}$/d =-750A/μs	-	175	-	ns
$_{rrm}$	Diode peak reverse recovery current		-	24	-	A
$_{rr}$	Diode reverse recovery charge		-	2000	-	nC
$_{rr}$	Diode reverse recovery time	$_{R}$=600V $_{F}$=40A d $_{F}$/d =-750A/μs $_{vj}$=175	-	285	-	ns
$_{rrm}$	Diode peak reverse recovery current		-	37	-	A
$_{rr}$	Diode reverse recovery charge		-	5500	-	nC

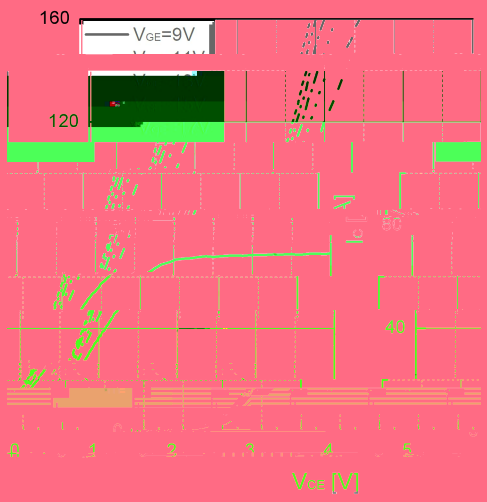


Fig 1. Typical output characteristic (vj=25)

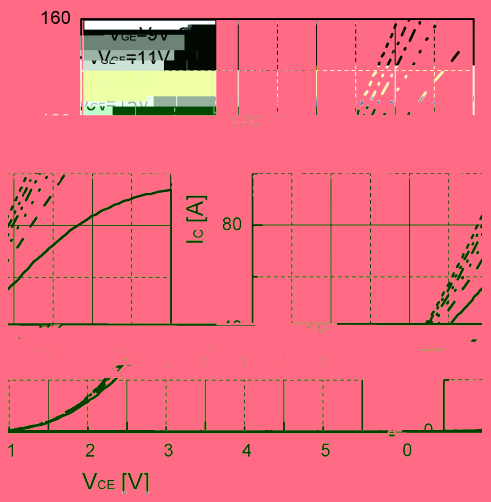


Fig 2. Typical output characteristic(vj=175)

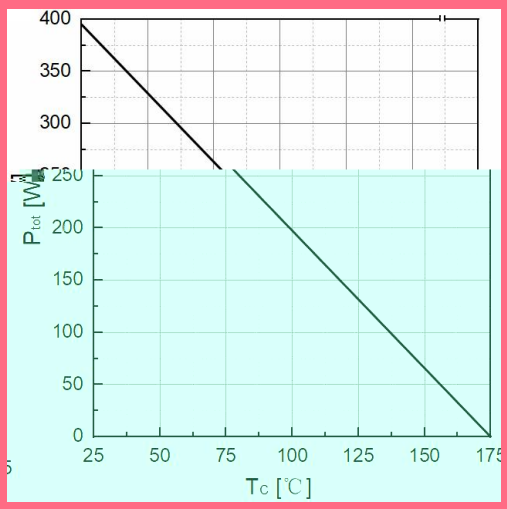


Fig 3. Power dissipation as a function of

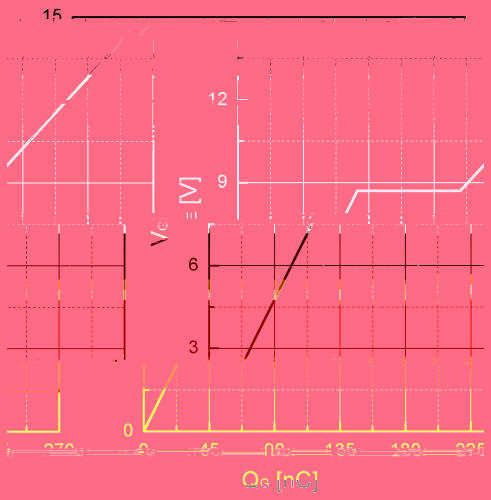


Fig 4. Typical Gate charge

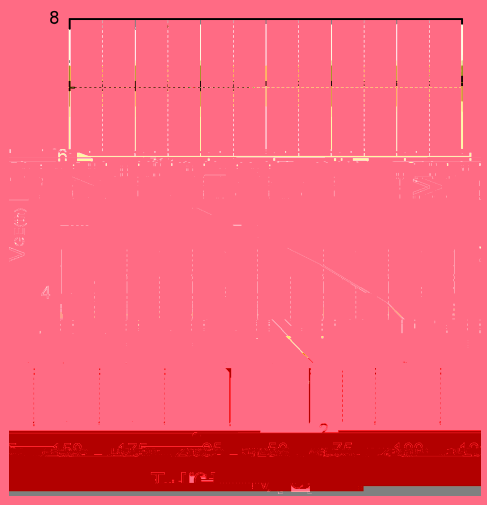
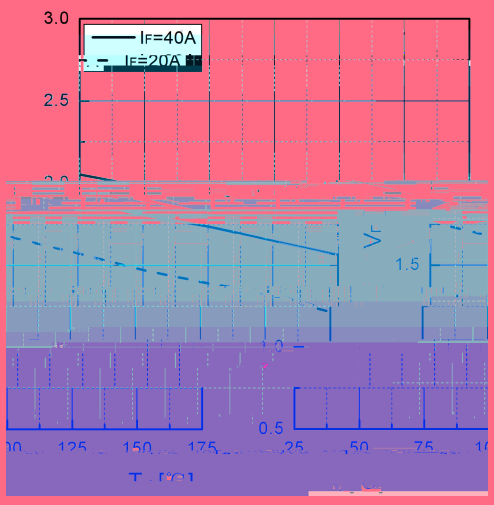


Fig 5. Typical GE(th) as a function of vj (C=1mA)



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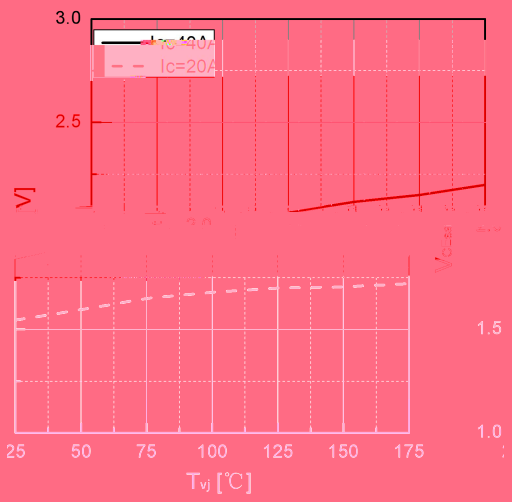


Fig 7. Typical $_{CEsat}$ as a function of $_{vj}$

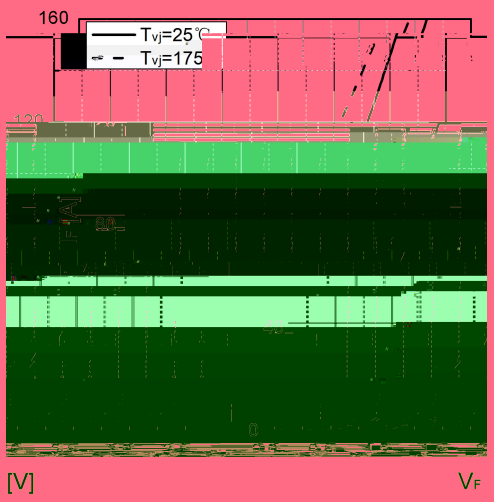


Fig 8. Typical $_{F}$ as a function of $_{F}$

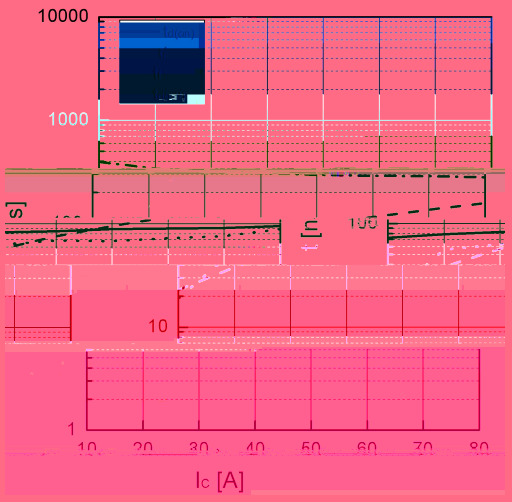


Fig 9. Typical switching time as a function of $_{C}$

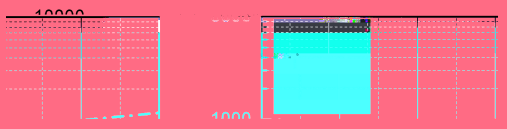


Fig 10. Typical switching times as a function of $_{G}$

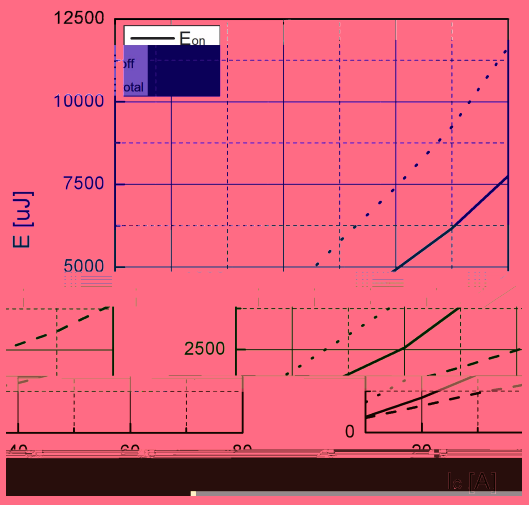


Fig 11. Typical switching energy losses as a function of $_{C}$

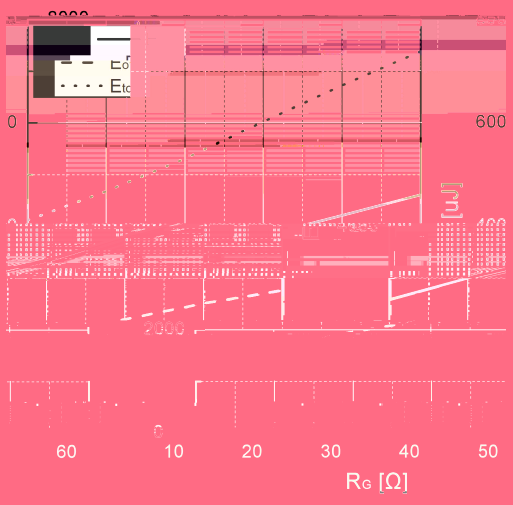


Fig 12. Typical switching energy losses as a function of $_{G}$

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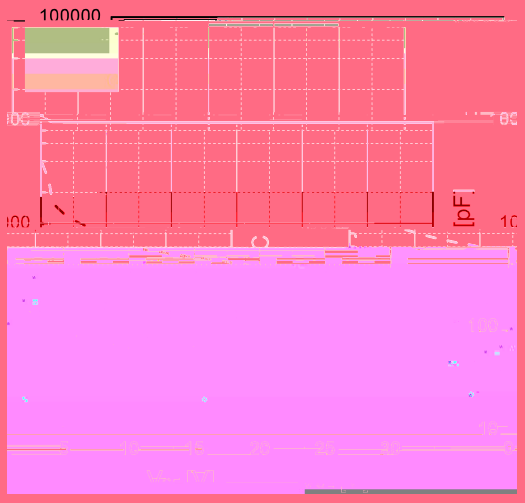


Fig 13. Typical capacitance as a function of $_{CE}$ ($f=1Mhz$, $_{GE}=0V$)

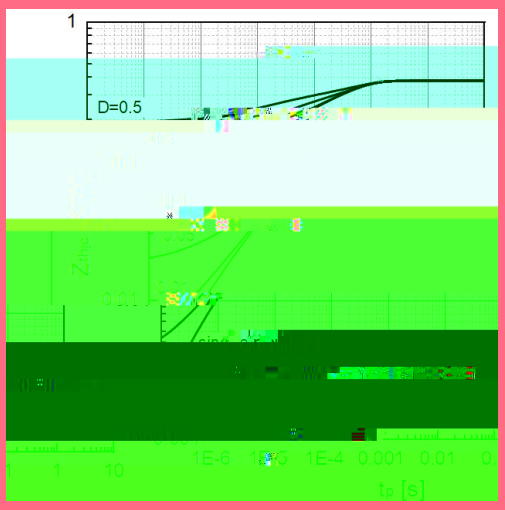
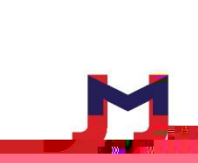


Fig 14. Transient thermal impedance of IGBT



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Date	Revision	Changes
2023-12-12	Rev. 1.0	Release of the datasheet.
202 :-0 ı	π	