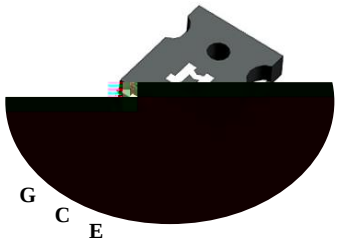
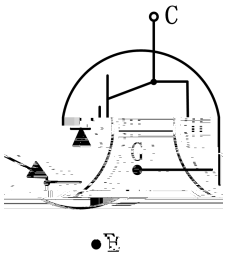
Key performance:

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

TO-247





Features:

- Trench and field-stop technology
- High speed switching
- Low collector to emitter saturation voltage
- Easy parallel switching capability
- High ruggedness performance
- RoHS compliant

Applications:

- Welding machines
- UPS
- Solar inverters

Package parameters

Type	Marking	Package	Packaging Method
JJT40N120HK	T40120HK	TO-247	Tube

Symbol	Parameter	Values	Unit
CES	Collector-emitter voltage	1200	V
GES	Gate-emitter voltage	±20	V
C	Continuous collector current (C=25)	80	A
	Continuous collector current (C=100)	40	A
CM	Pulsed collector current, p limited by vjmax	160	A
F	Diode continuous forward current (C=100)	40	A
FM	Diode maximum current, p		

A d c f a c ed a d bec e a d ca e .

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
$_{CES}$	Collector-emitter breakdown voltage	$_{GE}$=0V, I_C=250μA	1200	-	-	V
$_{CES}$	Collector-emitter leakage current	$_{CE}$=1200V, $_{GE}$=0V				

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
$t_{d(on)}$	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	-	307	-	ns
t_f	Fall time	I_C=40A R_G=10	-	69	-	ns
E_{on}	Turn-on energy	Inductive load	-	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	-	360	-	ns
t_f	Fall time	I_C=40A R_G=10 Inductive load T_{vj}=175	-			

Electrical characteristics of Diode ($_{vj}$=25 unless otherwise specified)

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
$_{F}$	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

Typical performance characteristics

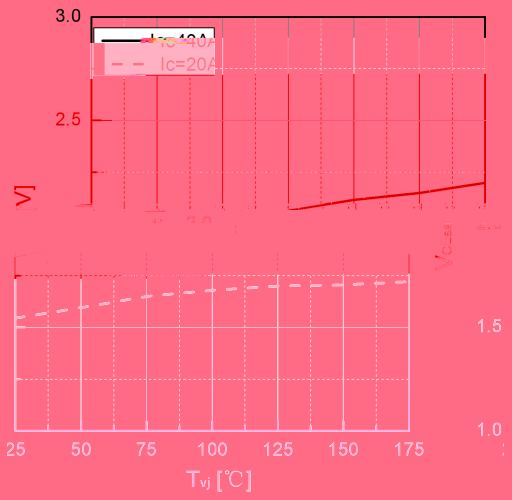


Fig 7. Typical $_{CEsat}$ as a function of $_{vj}$

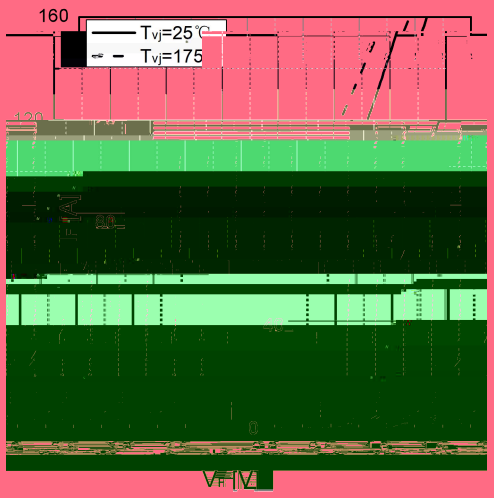


Fig 8. Typical $_{F}$ as a function of $_{F}$

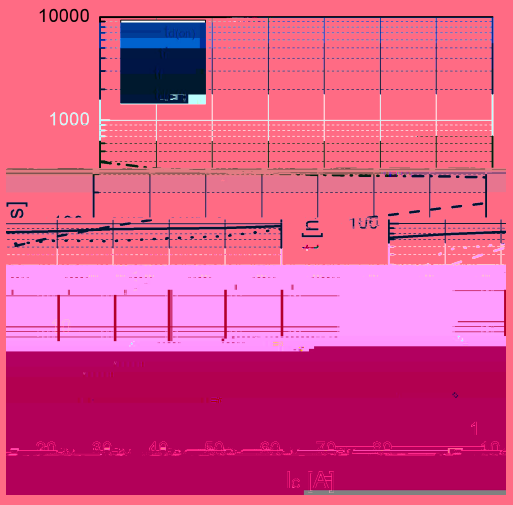


Fig 9. Typical switching time as a function of $_{C}$

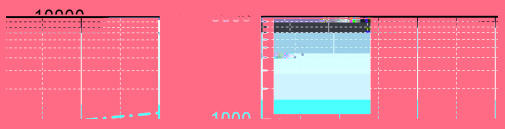


Fig 10. Typical switching times as a function of $_{G}$

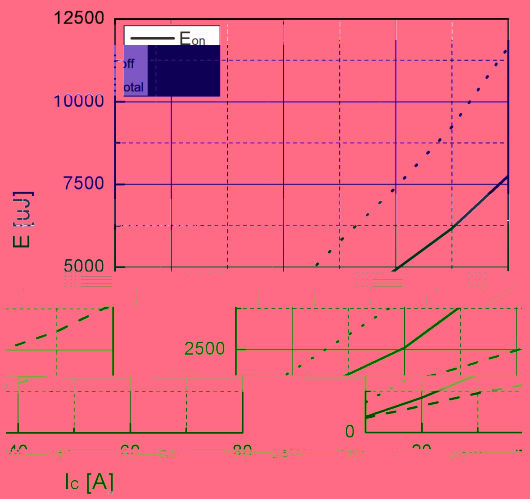


Fig 11. Typical switching energy losses as a function of $_{C}$

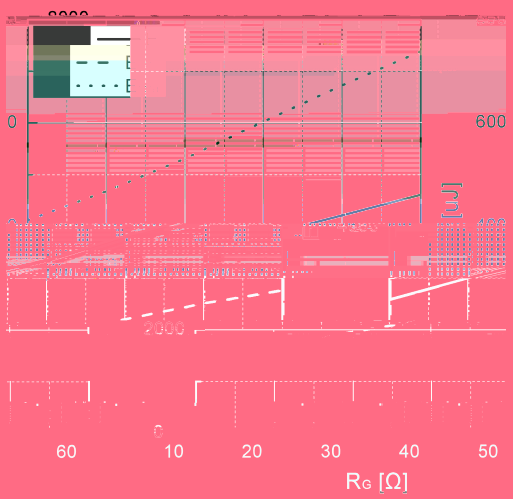


Fig 12. Typical switching energy losses as a function of $_{G}$

Typical performance characteristics

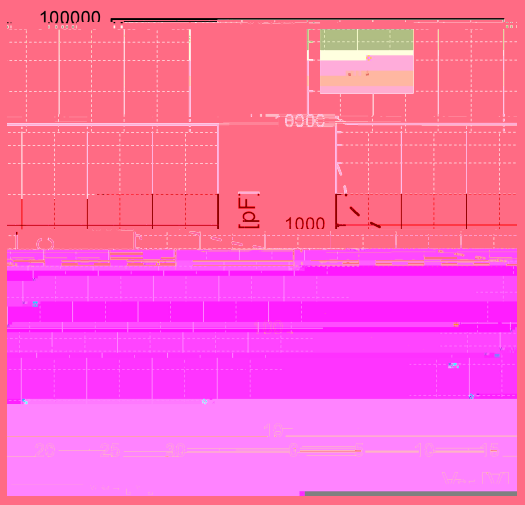


Fig 13. Typical capacitance as a function of $_{CE}$ (f=1Mhz, $_{GE}$=0V)

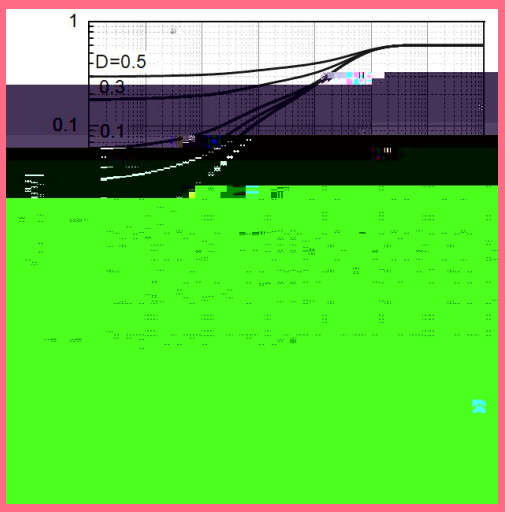
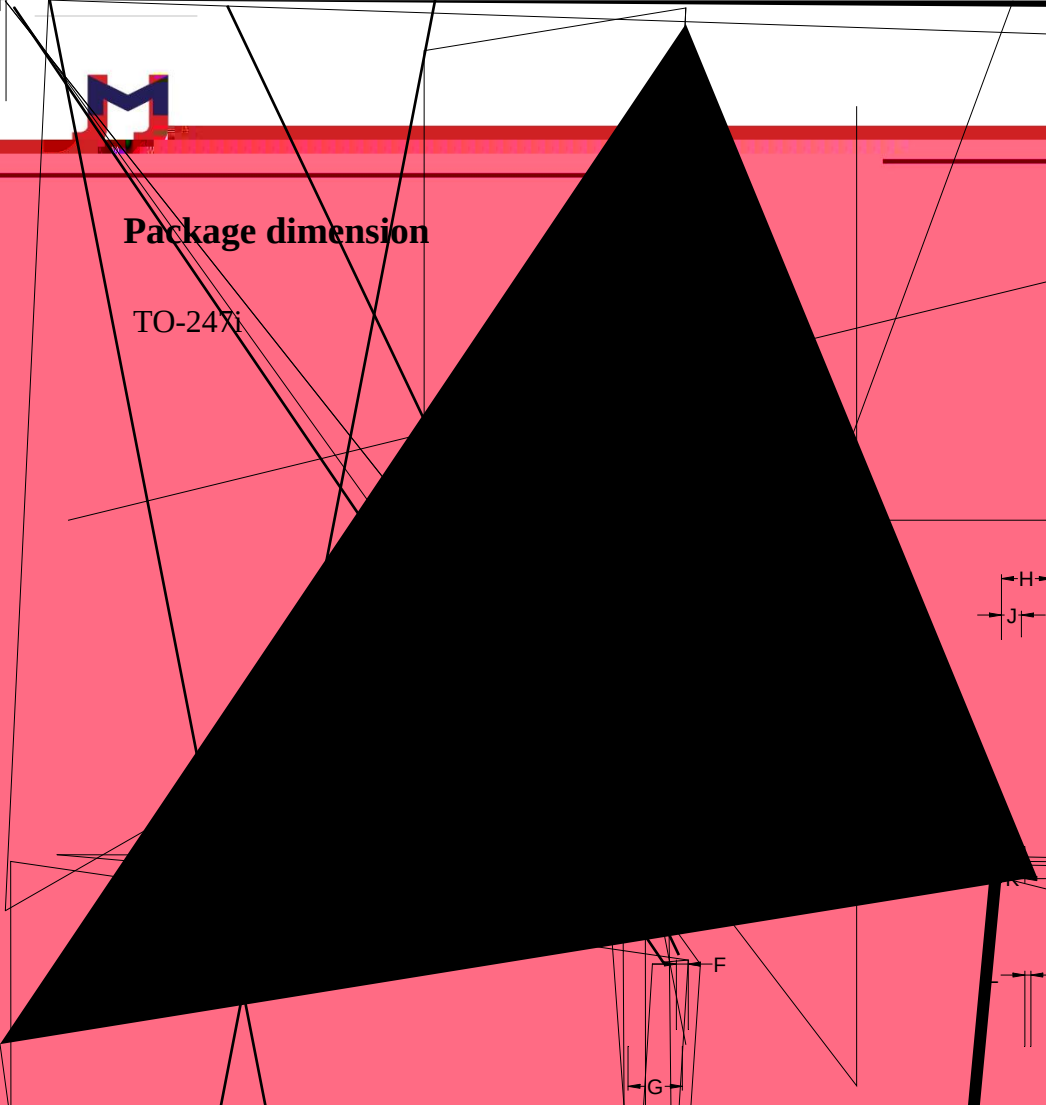


Fig 14. Transient thermal impedance of IGBT

Package dimension

TO-247i



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	21.20	0.819	0.827	0.835
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G	5.25	-	5.65	0.207	-	0.222
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031
M	2.80	3.00	3.20	0.110	0.118	0.126
N	2.90	3.10	3.30	0.114	0.122	0.130

Date	Revision	Changes
2025-12-17	Rev. 1.0	Release