

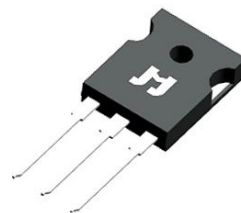
650V 75A Trench and Field Stop IGBT

JJT75N65UK

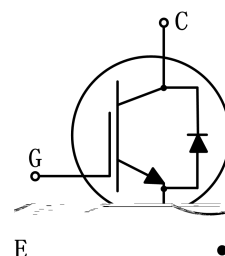
- $V_{CE}=650V$
- $I_C=75A@T_C=100$
- $V_{CE(sat)}=1.7V$

TO-247i

- Trench and field-stop technology.
- Easy parallel switching capability.



- High efficiency for inverters.
- High ruggedness performance.
- RoHS compliant.



- PFC applications
- Uninterruptible power supplies
- Solar inverters

Type	Marking	Package	Packaging Method
JJT75N65UK	T7565UK	TO-247i (内绝缘)	Tube



V_{CES}	Collector-emitter voltage	650	V
V_{GES}	Gate-emitter voltage	± 20	V
	Transient gate-emitter voltage($t_p \leq 10\mu s$, $D < 0.010$)	± 30	V
I_C	Continuous collector current ($T_C = 25^\circ C$)	150	A
	Continuous collector current ($T_C = 100^\circ C$)	75	A
I_{CM}	Pulsed collector current, t_p limited by T_{vjmax}	300	A
I_F	Diode continuous forward current ($T_C = 100^\circ C$)	75	A
I_{FM}	Diode maximum current, t_p limited by T_{vjmax}	300	A
P_{tot}	Power dissipation ($T_C = 25^\circ C$)	535	W
	Power dissipation ($T_C = 100^\circ C$)	267	W
T_{vj}	Operating junction temperature range	-40 to +175	
T_{stg}	Storage temperature range	-55 to +175	

$R_{th(j-c)}$ Thermal resistance, junction to case for IGBT - 0.35 K/W

$R_{th(j-c)}$ Thermal resistance, junction to case



($T_{vj}=25^{\circ}\text{C}$ unless otherwise specified)

Static characteristics

BV_{CES}	Collector-emitter breakdown voltage	$V_{GE}=0\text{V}, I_C=250\mu\text{A}$	650	-	-	V
I_{CES}	Collector-emitter leakage current	$V_{CE}=650\text{V}, V_{GE}=0\text{V}$	-	-	50	μA
I_{GES}	Gate leakage current, forward	$V_{GE}=20\text{V}, V_{CE}=0\text{V}$	-	-	100	nA
	Gate leakage current, reverse	$V_{GE}=-20\text{V}, V_{CE}=0\text{V}$	-	-	-100	nA
$V_{GE(th)}$	Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1\text{mA}$	4.7	5.2	5.7	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$V_{GE}=15\text{V}, I_C=75\text{A}$	1.60	1.72	1.90	V
		$V_{GE}=15\text{V}, I_C=75\text{A}, T_{vj}=175$	-	2.3	-	V

Dynamic characteristics

C_{ies}	Input capacitance	$V_{CE}=30\text{V}$ $V_{GE}=0\text{V}$ $f=1\text{MHz}$	-	4290	-	pF
C_{oes}	Output capacitance		-	195	-	pF
C_{res}	Reverse transfer capacitance		-	20	-	pF
Q_g	Total gate charge	$V_{CC}=520\text{V}$ $V_{GE}=15\text{V}$ $I_C=75\text{A}$	-	130	-	nC





($T_{vj}=25^{\circ}\text{C}$ unless otherwise specified)

V_F	Diode forward voltage	$I_F=75\text{A}$	0.95	1.1	1.25	V
		$I_F=75\text{A}, T_{vj}=175^{\circ}\text{C}$	-	0.95	-	V
t_{rr}	Diode reverse recovery time	$V_R=400\text{V}$ $I_F=75\text{A}$ $di_F/dt=-450\text{A/s}$	-	610	-	ns
I_{rrm}	Diode peak reverse recovery current		-	15	-	A
Q_{rr}	Diode reverse recovery charge		-	4950	-	nC
t_{rr}	Diode reverse recovery time	$V_R=400\text{V}$ $I_F=75\text{A}$ $di_F/dt=-450\text{A/s}$ $T_{vj}=175^{\circ}\text{C}$	-	745	-	ns
I_{rrm}	Diode peak reverse recovery current		-	24	-	A
Q_{rr}	Diode reverse recovery charge		-	14500	-	nC

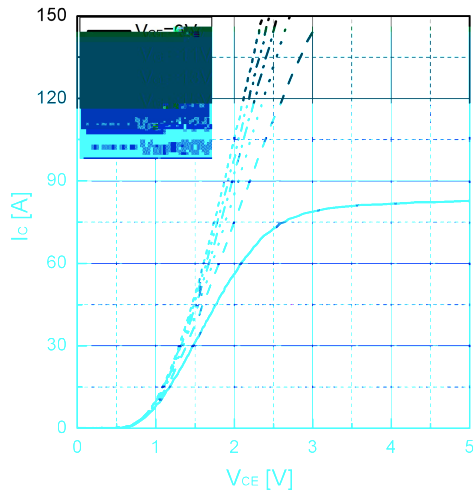


Fig 1. Typical output characteristic ($T_{vj}=25^{\circ}\text{C}$)

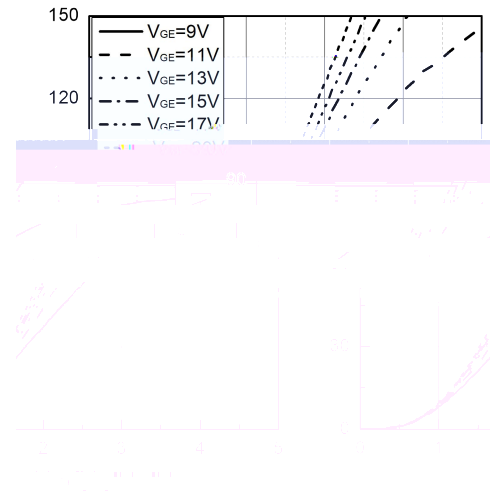


Fig 2. Typical output characteristic ($T_{vj}=175^{\circ}\text{C}$)

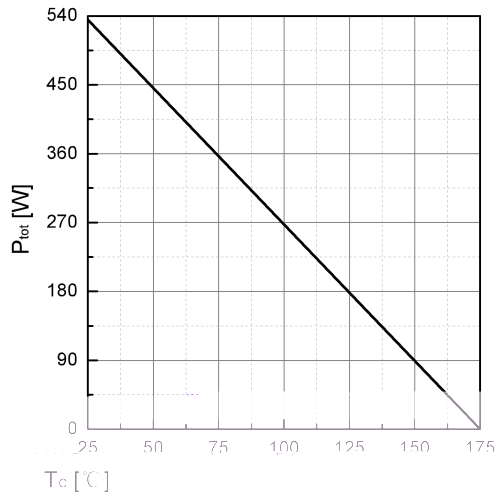


Fig 3. Power dissipation as a function of T_c

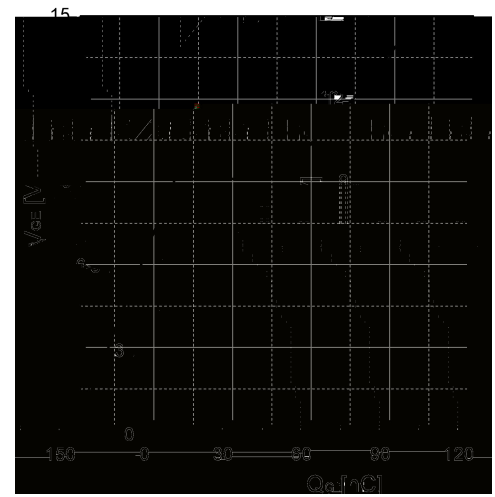


Fig 4. Typical Gate charge

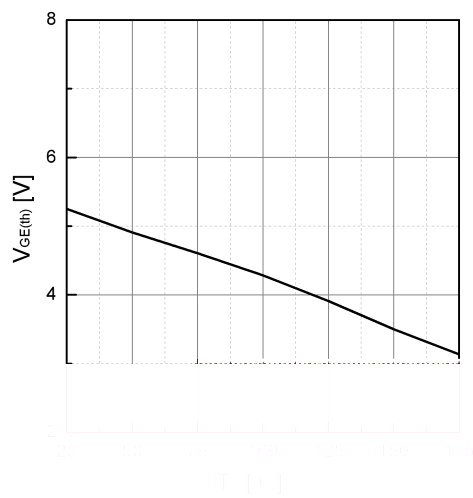


Fig 5. Typical $V_{GE(th)}$ as a function of T_{vj}
($I_C=1\text{mA}$)

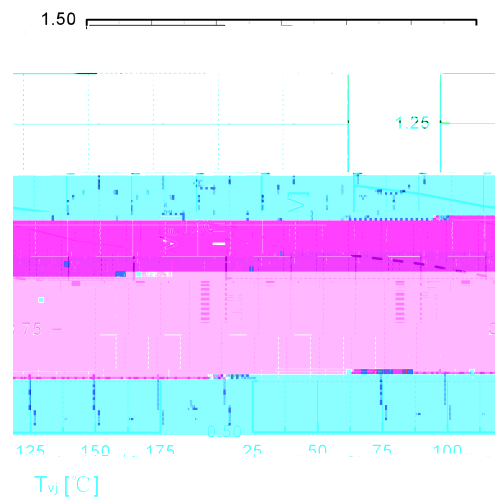


Fig 6. Typical V_F as a function of T_{vj}

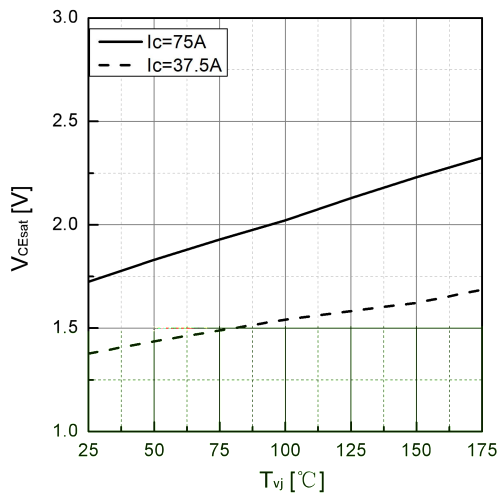


Fig 7. Typical V_{CEsat} as a function of T_{vj}

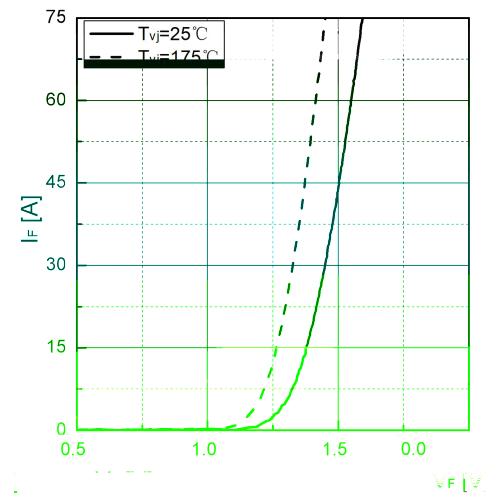


Fig 8. Typical I_F as a function of V_F

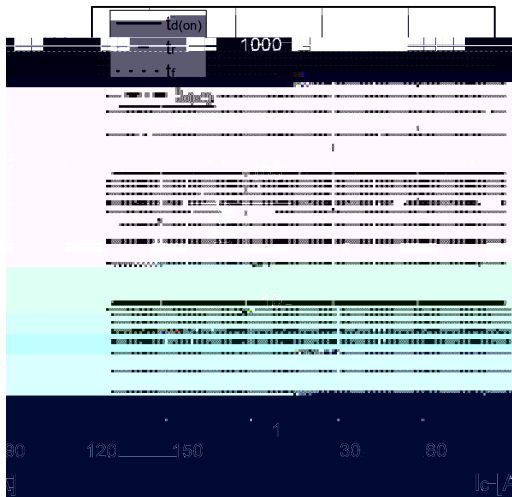


Fig 9. Typical switching time as a function of I_c

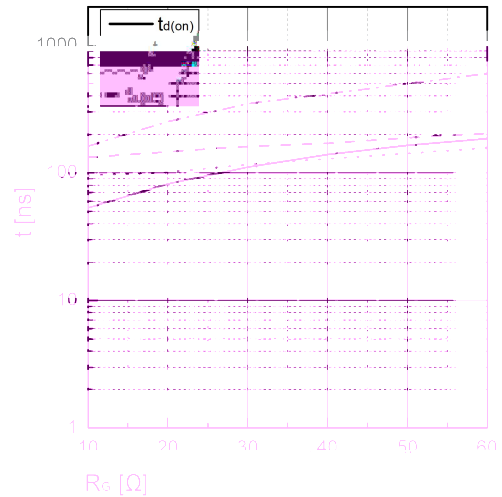


Fig 10. Typical switching times as a function of R_G

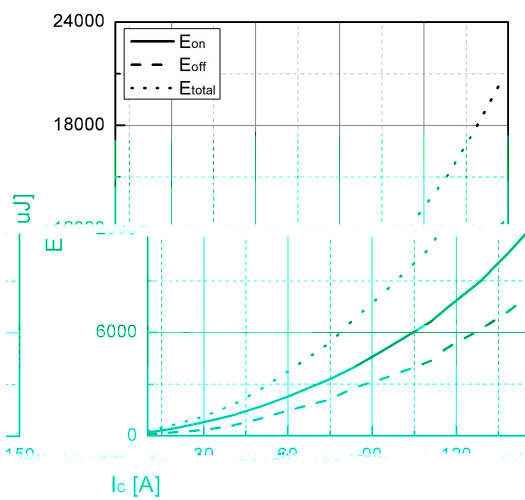


Fig 11. Typical switching energy losses as a function of I_c

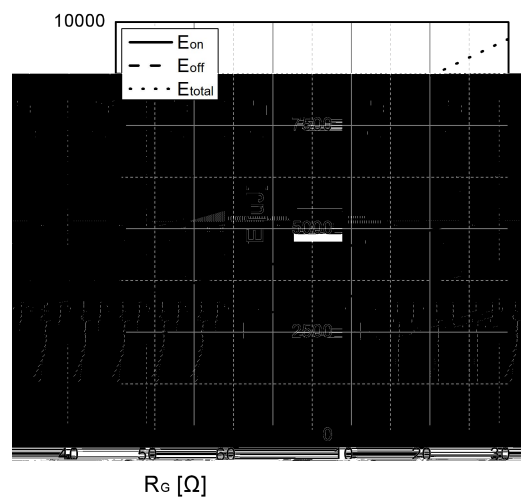


Fig 12. Typical switching energy losses as a function of R_G

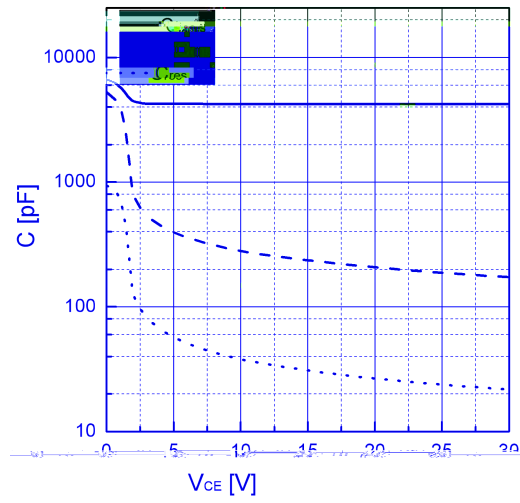


Fig 13. Typical capacitance as a function of V_{CE}
($f=1\text{MHz}$, $V_{GE}=0\text{V}$)

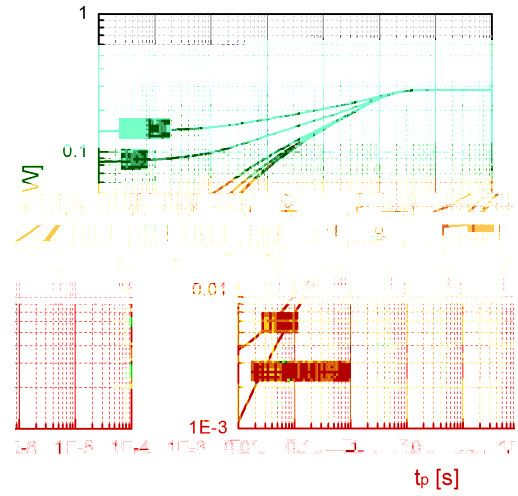
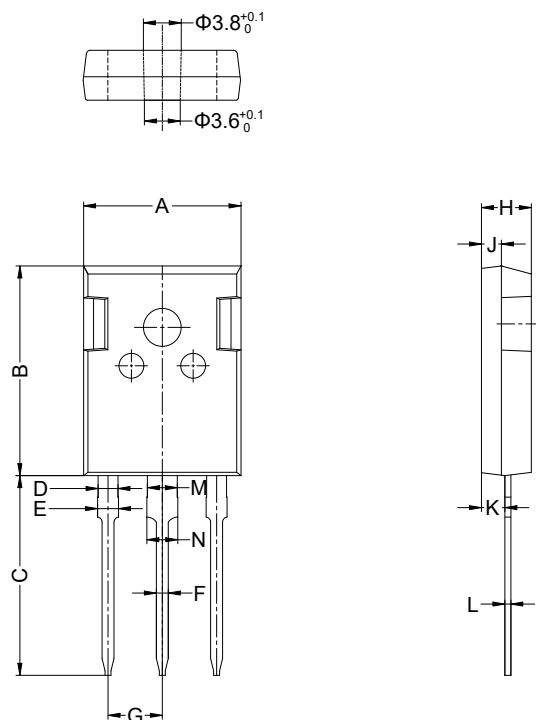


Fig 14. Transient thermal impedance of IGBT



TO-247



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
2025-7-8	Rev 1.0	Release of the Datasheet
2025-9-5	Rev 1.1	

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