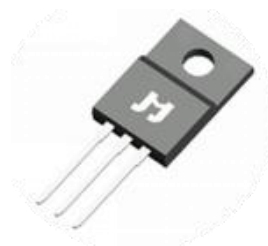


650V 15A Trench and Field Stop IGBT

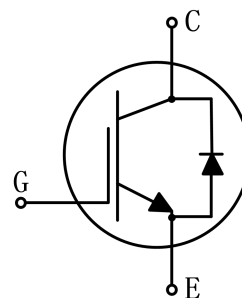
JJT15N65HS

- $V_{CE}=650V$
- $I_C=15A @ T_C=100$
- $V_{CE(sat)}=1.7 V$

TO-220F



- High ruggedness performance.
- Positive $V_{CE(sat)}$ temperature coefficient.
- High efficiency for motor control.
- Excellent current sharing in parallel operation.
- RoHS compliant.



- Energy storage

Type	Marking	Package	Packaging method
JJT15N65HS	T1565HS	TO-220F	Tube



CES	Collector-emitter voltage	650	V
GES	Gate-emitter voltage	±20	V
C	Continuous collector current ($T_C=25^\circ\text{C}$)	30	A
	Continuous collector current ($T_C=100^\circ\text{C}$)	15	A
CM	Pulsed collector current, I_P limited by V_{jmax}	60	A
F	Diode continuous forward current ($T_C=100^\circ\text{C}$)	15	A
FM	Diode maximum current, I_P limited by V_{jmax}	60	A
P_{tot}	Power dissipation ($T_C=25^\circ\text{C}$)	71	W
	Power dissipation ($T_C=100^\circ\text{C}$)	36	W
T_{vj}	Operating junction temperature range	-40 to +175	
T_{stg}	Storage temperature range	-55 to +150	

$\theta_{th(j-c)}$	Thermal resistance, junction to case for IGBT	-	2.1	K/ W
$\theta_{th(j-c)}$	Thermal resistance, junction to case for Diode	-	3.2	K/ W
$\theta_{th(j-a)}$	Thermal resistance, junction to ambient	-	70	K/ W



($v_j=25$ unless otherwise specified)

Static characteristics

CES	Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	650	-	-	V
CES	Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	-	-	50	μA
GES	Gate leakage current, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	nA
	Gate leakage current, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	nA
$GE(th)$	Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	5.3	5.8	6.3	V
$CE(sat)$	Collector-emitter saturation voltage	$V_{GE}=15V, I_C=15A$	-	1.7	-	V
		$V_{GE}=15V, I_C=15A, v_j=175$	-	2.1	-	V

Dynamic characteristics

i_{es}	Input capacitance	$V_{CE}=30V$ $V_{GE}=0V$ $f=1MHz$	-	1055	-	pF
o_{es}	Output capacitance		-	57	-	pF
r_{es}	Reverse transfer capacitance		-	15	-	pF
g	Total gate charge	$V_{CC}=520V$ $V_{GE}=15V$ $I_C=15A$	-	55	-	nC



Switching characteristics

d(on)	Turn-on delay time	$V_{CC}=400V$ $V_{GE}=0/15V$ $I_C=15A$ $R_G=10\Omega$ Inductive load	-	17	-	ns
r	Rise time		-	14	-	ns
d(off)	Turn-off delay time		-	104	-	ns
f	Fall time		-	41	-	ns
on	Turn-on energy		-	0.42	-	mJ
off	Turn-off energy		-	0.30	-	mJ
ts	Total switching energy		-	0.72	-	mJ
d(on)	Turn-on delay time	$V_{CC}=400V$ $V_{GE}=0/15V$ $I_C=15A$ $R_G=10\Omega$ Inductive load $v_j=175$	-	17	-	ns
r	Rise time		-	15	-	ns
d(off)	Turn-off delay time		-	123	-	ns
f	Fall time		-	77	-	ns
on	Turn-on energy		-	0.48	-	mJ
off	Turn-off energy		-	0.45	-	mJ
ts	Total switching energy		-	0.93	-	mJ



MOSFET

F	Diode forward voltage	$I_F=15A$	-	1.4	-	V
		$I_F=15A, V_{Tj}=175$	-	1.2	-	V
t_{rr}	Diode reverse recovery time	$V_R=400V$ $I_F=15A$ $dI_F/dt=-600A/\mu s$	-	55	-	ns
I_{rrm}	Diode peak reverse recovery current		-	9.5	-	A
Q_{rr}	Diode reverse recovery charge		-	220	-	nC
t_{rr}	Diode reverse recovery time	$V_R=400V$ $I_F=15A$ $dI_F/dt=-600A/\mu s$ $V_{Tj}=175$	-	77	-	ns
I_{rrm}	Diode peak reverse recovery current		-	15	-	A
Q_{rr}	Diode reverse recovery charge		-	481	-	nC

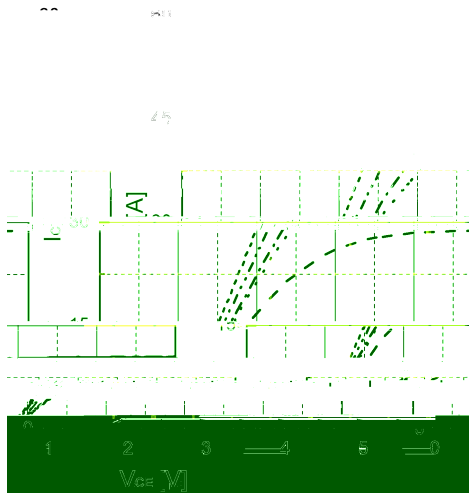


Fig 1. Typical output characteristic ($v_j=25^\circ\text{C}$)

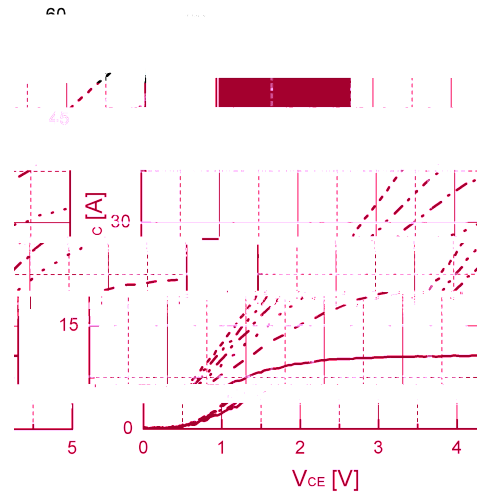


Fig 2. Typical output characteristic($v_j=175^\circ\text{C}$)

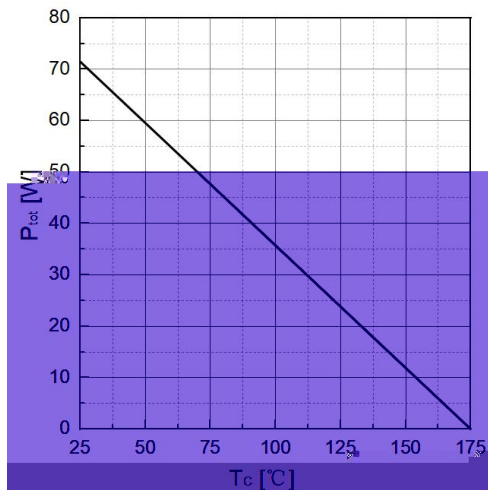


Fig 3. Power dissipation as a function of

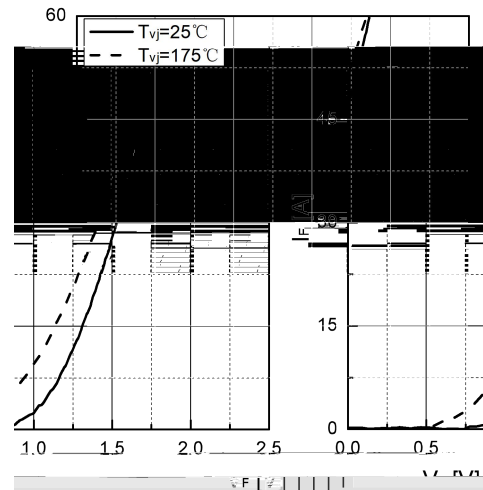


Fig 4. Typical F as a function of F

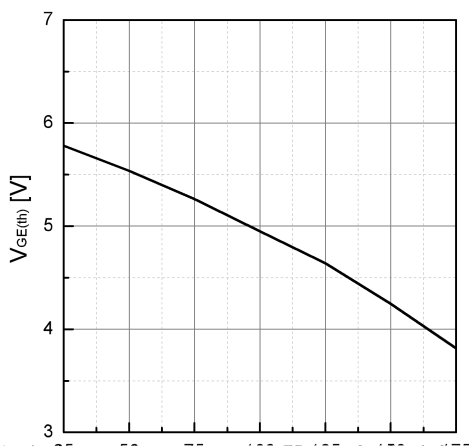


Fig 5. Typical $V_{GE(th)}$ as a function of v_j
($I_C=1\text{mA}$)

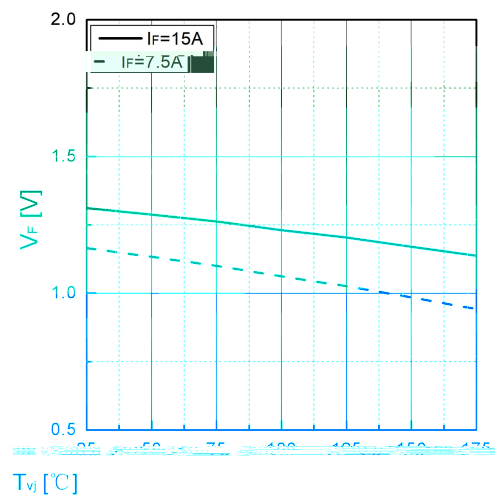


Fig 6. Typical F as a function of v_j



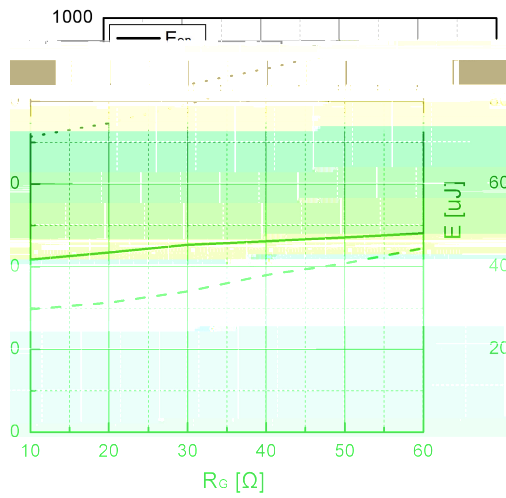


Fig 13. Typical switching energy losses as a function of R_G

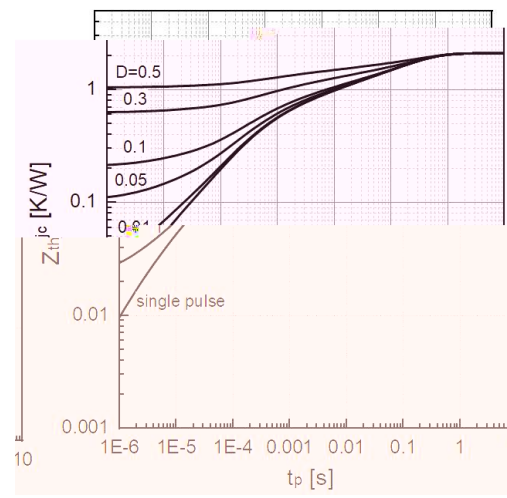
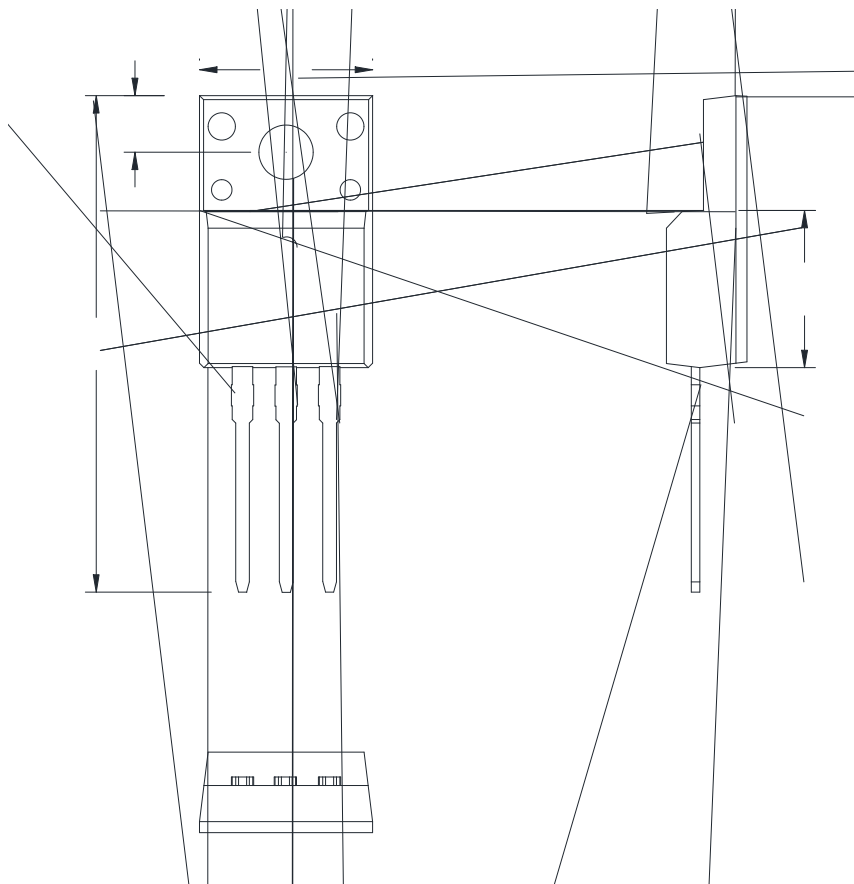


Fig 14. Transient thermal impedance, IGBT



TO-220F



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50	-	4.90	0.177	-	0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47	-	0.66	0.019	-	0.026
C2	2.45	-	2.75	0.096	-	0.108
C3	2.60	-	3.00	0.102	-	0.118
D	8.80	-	9.30	0.346	-	0.366
E	9.80	-	10.40	0.386	-	0.410
F	6.40	-	6.80	0.252	-	0.268
G	2.40	-	2.70	0.094	-	0.106
H	28.0	-	29.80	1.102	-	1.173
L1	-	3.63	-	-	0.143	-
L2	1.14	-	1.70	0.045	-	0.067
L3	-	3.30	-	-	0.130	-
V1	-	45	-	-	45	-



Date	Revision	Changes
2025-04-30	Rev 1.0	Release of the datasheet
2026-06-24	Rev 1.1	Update thermal

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