

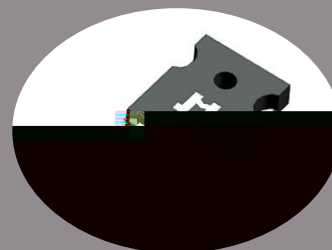
650V 50A Trench and Field Stop IGBT

JJT50N65SE

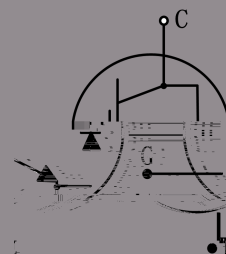
- $V_{CE} = 650V$
- $I_C = 50A @ T_C = 100$
- $V_{CE(sat)} = 1.65V$

TO-247

- Trench and field-stop technology
- $10\mu s$ short circuit capability
- Easy parallel switching capability



- High efficiency for motor control
- High ruggedness performance
- RoHS compliant



- Motor drives
- Fan, Pumps, Vacuum cleaner

Type	Marking	Package	Packaging Method
JJT50N65SE	T5065SE	TO-247	Tube



CES	Collector-emitter voltage	650	V
GES	Gate-emitter voltage	±20	V
C	Continuous collector current ($T_C=25^\circ\text{C}$)	100	A
	Continuous collector current ($T_C=100^\circ\text{C}$)	50	A
CM	Pulsed collector current, I_P limited by T_{vjmax}	200	A
F	Diode continuous forward current ($T_C=100^\circ\text{C}$)	50	A
FM	Diode maximum current, I_P limited by T_{vjmax}	200	A
sc	Short circuit withstand time	10	µs
P_{tot}	Power dissipation ($T_C=25^\circ\text{C}$)	500	W
	Power dissipation ($T_C=100^\circ\text{C}$)	250	W
T_{vj}	Operating junction temperature range	-40 to +175	
T_{stg}	Storage temperature range	-55 to +150	

t



($v_j=25$ unless otherwise specified)

Static characteristics

C_{ES}	Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	650	-	-	V
C_{ES}	Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	-	-	50	μA
G_{ES}	Gate leakage current, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	nA
	Gate leakage current, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	nA
$G_{E(th)}$	Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	5.3	5.7	6.1	V
$C_{E(sat)}$	Collector-emitter saturation voltage	$V_{GE}=15V, I_C=50A$	-	1.65	-	V
		$V_{GE}=15V, I_C=50A, v_j=175$	-	2.10	-	V

Dynamic characteristics

i_{es}	Input capacitance	$V_{CE}=30V$ $V_{GE}=0V$ $f=1MHz$	-	2890	-	pF
o_{es}	Output capacitance		-	170	-	pF
r_{es}	Reverse transfer capacitance		-	34	-	pF
g	Total gate charge	$V_{CC}=520V$ $V_{GE}=15V$ $I_C=50A$	-	185	-	nC





($v_j=25$ unless otherwise specified)

F	Diode forward voltage	$I_F=50A$	-	1.60	-	V
		$I_F=50A, v_j=175$	-	1.35	-	V
t_{rr}	Diode reverse recovery time	$V_R=400V$ $I_F=50A$ $d I_F/dt = -400A/\mu s$	-	106	-	ns
I_{rrm}	Diode peak reverse recovery current		-	8	-	A
Q_{rr}	Diode reverse recovery charge		-	500	-	nC
t_{rr}	Diode reverse recovery time	$V_R=400V$ $I_F=50A$ $d I_F/dt = -400A/\mu s$ $v_j=175$	-	161	-	ns
I_{rrm}	Diode peak reverse recovery current		-	20	-	A
Q_{rr}	Diode reverse recovery charge		-	1853	-	nC



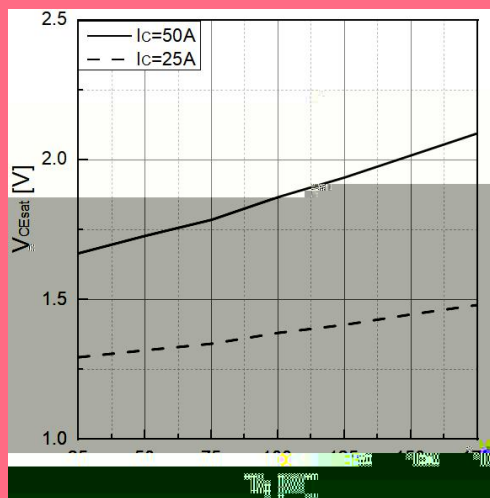
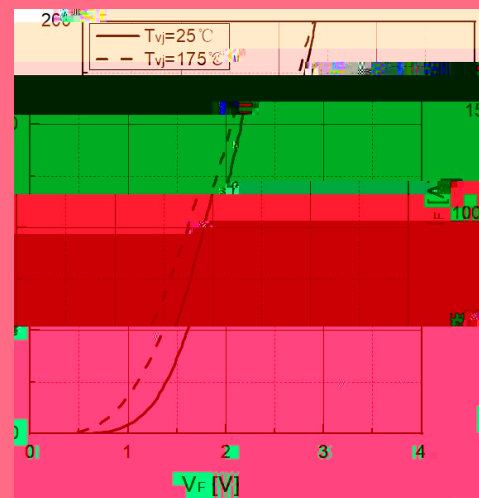


Fig 7. Typ 1







Date	Revision	Changes
2025-04-21	Rev 1.0	Release of the preliminary datasheet.
2025-12-10	Rev 1.1	