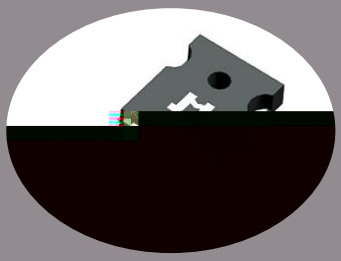
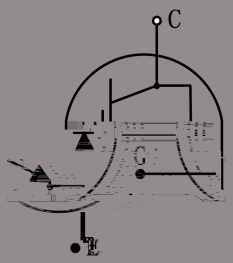
1200V 15A Trench and Field Stop IGBT

JJT15N120UE

- V_{CE} =1200V
- I_C=15A@ T_C=100
- $V_{CE(sat)}$=1.7V

TO-247





- Trench and field-stop technology
- Low collector to emitter saturation voltage
- Easy parallel switching capability
- Short circuit withstands time 10μs
- High ruggedness performance
- RoHS compliant

- Inverter
- Motor driver

Type	Marking	Package	Packaging Method
JJT15N120UE	T15120UE	TO-247	Tube

V_{CES}	Collector-emitter voltage	1200	V

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

Static characteristics

$_{CES}$	Collector-emitter breakdown voltage	$_{GE}$=0V, I_C=250μA	1200	-	-	V
$_{CES}$	Collector-emitter leakage current	$_{CE}$=1200V, $_{GE}$=0V	-	-	250	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	5.7	6.2	6.5	V
$_{CE(sat)}$	Collector-emitter saturation voltage	$_{GE}$=15 V, $_{C}$=15A	-	1.7	-	V
		$_{GE}$=15V, $_{C}$=15A, $_{vj}$=175	-	2.2	-	V

Dynamic characteristics

$_{ies}$	Input capacitance	$_{CE}$=30V $_{GE}$=0V =1MHz	-	1250	-	pF
$_{oes}$	Output capacitance		-	58	-	pF
$_{res}$	Reverse transfer capacitance		-	13	-	pF
$_{g}$	Total gate charge	$_{CC}$=960V =15V =15A	-	74	-	nC

Switching characteristics

$t_{d(on)}$	Turn-on delay time	V_{CC}=600V V_{GE}=0/15V I_C=15A R_G=10 Inductive load	-	22	-	ns
t_r	Rise time		-	34	-	ns
$t_{d(off)}$	Turn-off delay time		-	140	-	ns
t_f	Fall time		-	90	-	ns
E_{on}	Turn-on energy		-	0.9	-	mJ
E_{off}	Turn-off energy		-	0.7	-	mJ
E_{ts}	Total switching energy		-	1.6	-	mJ
$t_{d(on)}$	Turn-on delay time	V_{CC}=600V V_{GE}=0/15V I_C=15A R_G=10 Inductive load T_{vj} =175	-	22	-	ns
t_r	Rise time		-	38	-	ns
$t_{d(off)}$	Turn-off delay time		-	166	-	ns
t_f	Fall time		-	146	-	ns
E_{on}	Turn-on energy		-	1.1	-	mJ
E_{off}	Turn-off energy		-	1.0	-	mJ
E_{ts}	Total switching energy		-	2.1	-	mJ

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

$_{F}$	Diode forward voltage	$_{F}$=15A	-	2.3	-	V
		$_{F}$=15A $_{vj}$=175	-	1.9	-	V
$_{rr}$	Diode reverse recovery time	$_{R}$=600V $_{F}$=15A d $_{F}$/d =-250A/μs	-	223	-	ns
$_{rrm}$	Diode peak reverse recovery current		-	8	-	A
$_{rr}$	Diode reverse recovery charge		-	718	-	nC
$_{rr}$	Diode reverse recovery time	$_{R}$=600V $_{F}$=15A d $_{F}$/d =-250A/μs $_{vj}$=175	-	396	-	ns
$_{rrm}$	Diode peak reverse recovery current		-	11	-	A
$_{rr}$	Diode reverse recovery charge		-	1700	-	nC

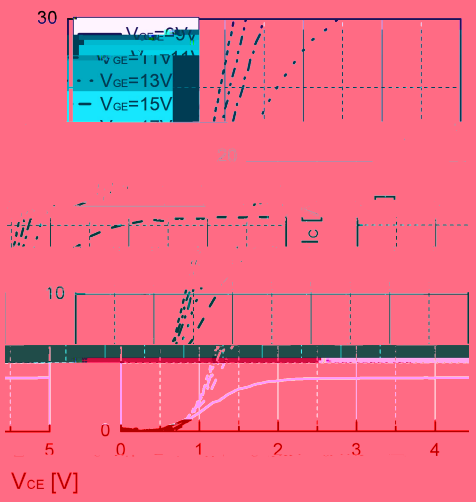


Fig 1. Typical output characteristic ($_{vj}$=25)

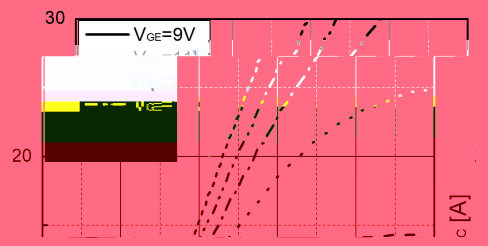


Fig 2. Typical output characteristic($_{vj}$=175)

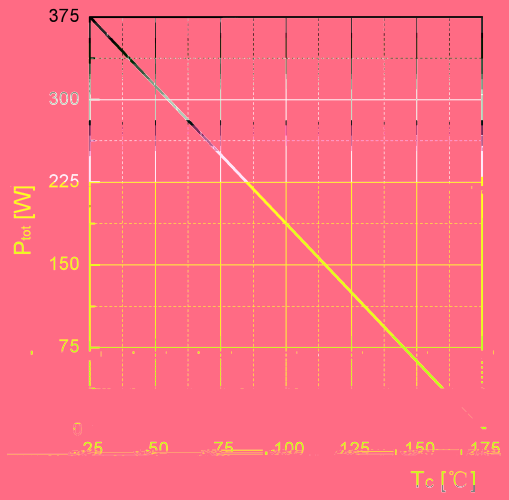


Fig 3. Power dissipation as a function of

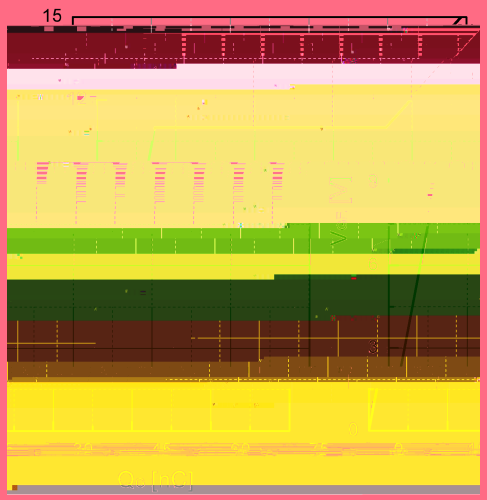


Fig 4. Typical Gate charge

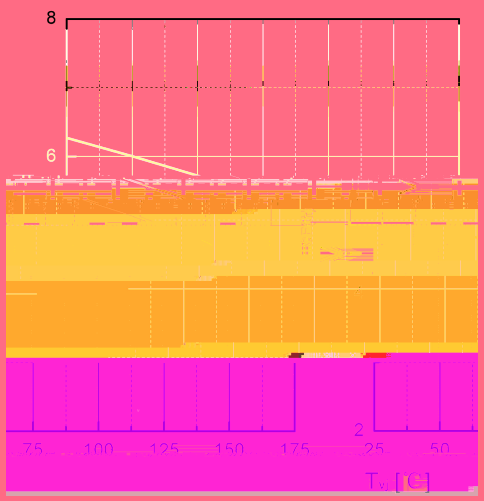


Fig 5. Typical $_{GE(th)}$ as a function of $_{vj}$ ($_{C}$=1mA)

Fig 6. Typical $_{F}$ as a function of $_{vj}$

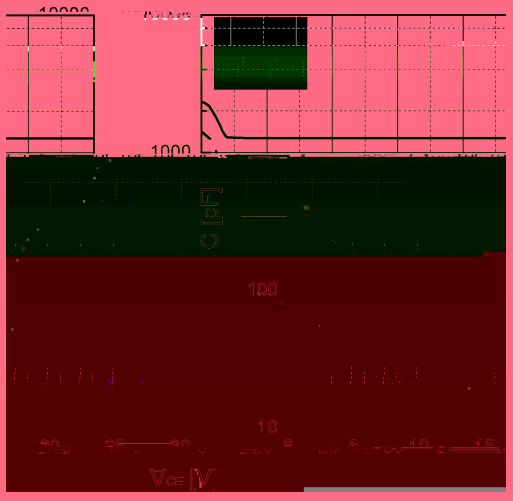


Fig 13. Typical capacitance as a function of $_{CE}$ (f=1Mhz, $_{GE}$=0V)

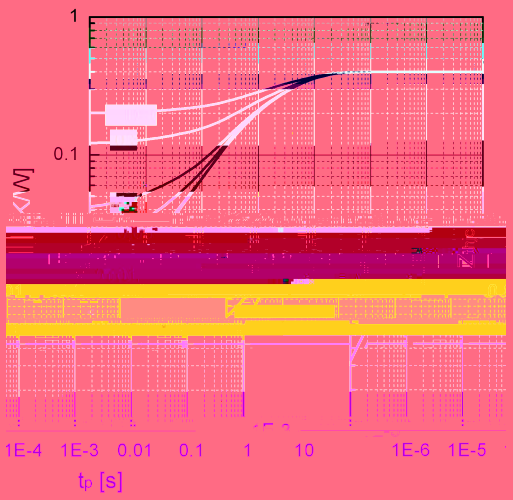


Fig 14. Transient thermal impedance of IGBT

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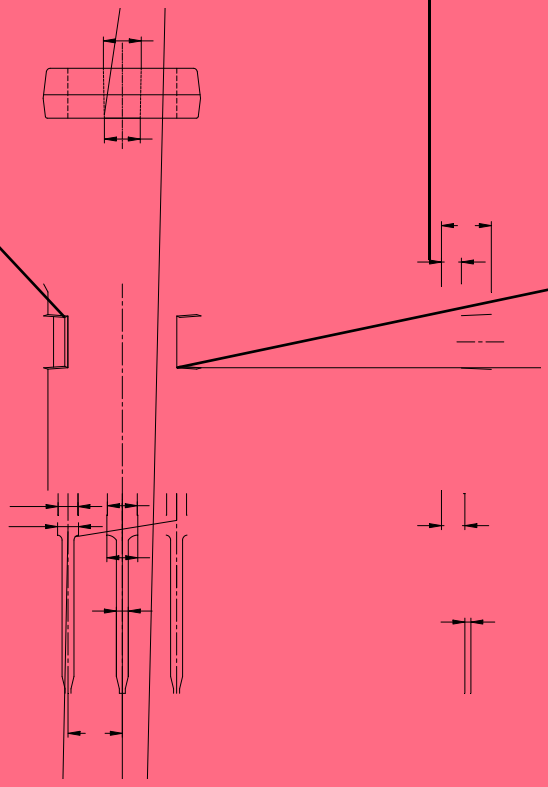

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	21.20	0.819	0.827	0.835
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G	5.25	-	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
2024-08-27	Rev 1.0	Release of the datasheet

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