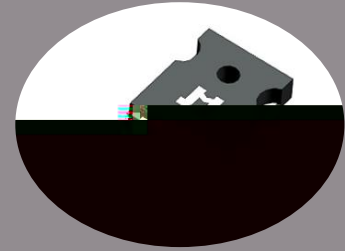


1200V 15A Trench and Field Stop IGBT

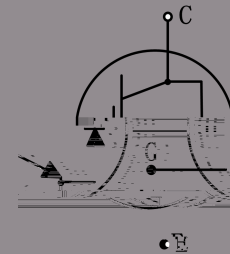
JJT15N120UE

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

TO-247



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



- Inverter
- Motor driver

| Type | Marking | Package | Packaging Method |
|-------------|----------|---------|------------------|
| JJT15N120UE | T15120UE | TO-247 | Tube |



CES

Collector-emitter voltage

1200

V

($v_j=25$ unless otherwise specified)

Static characteristics

| CES | Collector-emitter breakdown voltage | $V_{GE}=0V, I_C=250\mu A$ | 1200 | - | - | V |
|---------|--------------------------------------|--------------------------------|------|-----|------|---------|
| CES | Collector-emitter leakage current | $V_{CE}=1200V, V_{GE}=0V$ | - | - | 250 | 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 | $V_{GE}=V_{CE}, I_C=1mA$ | 5.7 | 6.2 | 6.5 | V |
| CE(sat) | Collector-emitter saturation voltage | $V_{GE}=15V, I_C=15A$ | - | 1.7 | - | V |
| | | $V_{GE}=15V, I_C=15A, v_j=175$ | - | 2.2 | - | V |

Dynamic characteristics

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



Switching characteristics

| d(on) | Turn-on delay time | CC=600V GE=0/15V C=15A G=10 Inductive load | - | 22 | - | ns |
|--------|------------------------|---|---|-----|---|----|
| r | Rise time | | - | 34 | - | ns |
| d(off) | Turn-off delay time | | - | 140 | - | ns |
| f | Fall time | | - | 90 | - | ns |
| on | Turn-on energy | | - | 0.9 | - | mJ |
| off | Turn-off energy | | - | 0.7 | - | mJ |
| ts | Total switching energy | | - | 1.6 | - | mJ |
| d(on) | Turn-on delay time | CC=600V GE=0/15V C=15A G=10 Inductive load v _j =175 | - | 22 | - | ns |
| r | Rise time | | - | 38 | - | ns |
| d(off) | Turn-off delay time | | - | 166 | - | ns |
| f | Fall time | | - | 146 | - | ns |
| on | Turn-on energy | | - | 1.1 | - | mJ |
| off | Turn-off energy | | - | 1.0 | - | mJ |
| ts | Total switching energy | | - | 2.1 | - | mJ |

($v_j=25$ unless otherwise specified)

| F | Diode forward voltage | $I_F=15A$ | - | 2.3 | - | V |
|-----------|-------------------------------------|--|---|------|---|----|
| | | $I_F=15A$ $v_j=175$ | - | 1.9 | - | V |
| t_{rr} | Diode reverse recovery time | $V_R=600V$ $I_F=15A$ $d I_F/d t =-250A/\mu s$ | - | 223 | - | ns |
| I_{rrm} | Diode peak reverse recovery current | | - | 8 | - | A |
| Q_{rr} | Diode reverse recovery charge | | - | 718 | - | nC |
| t_{rr} | Diode reverse recovery time | $V_R=600V$ $I_F=15A$ $d I_F/d t =-250A/\mu s$ $v_j=175$ | - | 396 | - | ns |
| I_{rrm} | Diode peak reverse recovery current | | - | 11 | - | A |
| Q_{rr} | Diode reverse recovery charge | | - | 1700 | - | nC |

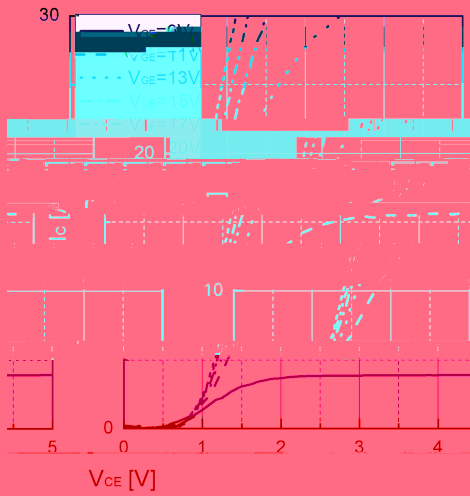


Fig 1. Typical output characteristic ($v_j=25$)

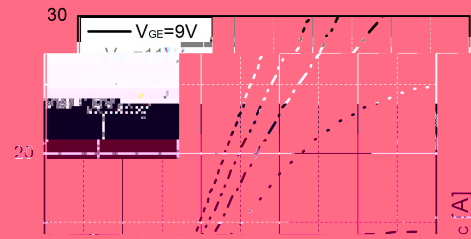


Fig 2. Typical output characteristic($v_j=175$)

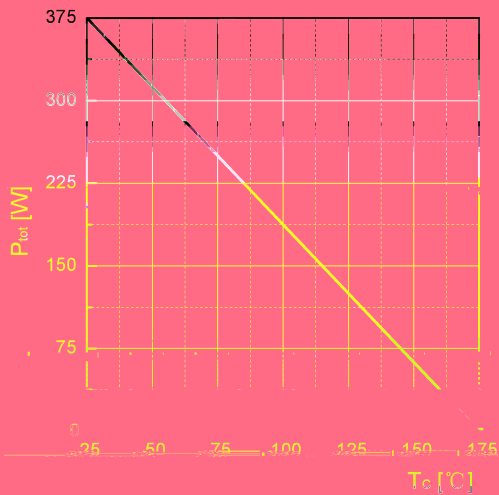


Fig 3. Power dissipation as a function of

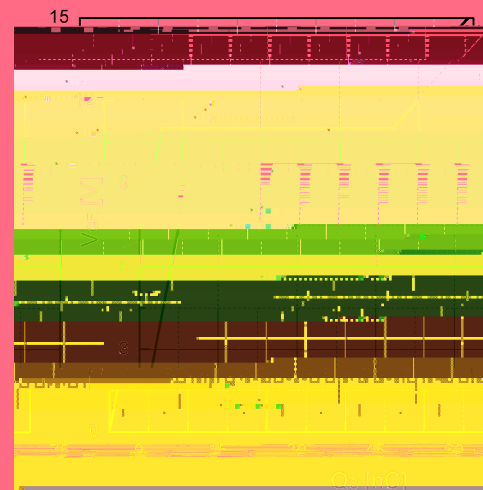


Fig 4. Typical Gate charge

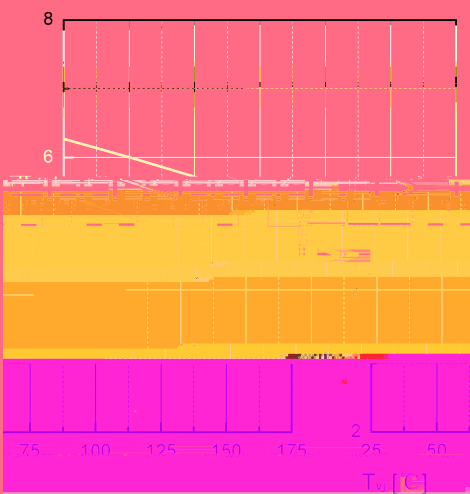


Fig 5. Typical $V_{GE(th)}$ as a function of v_j
($i_c=1mA$)

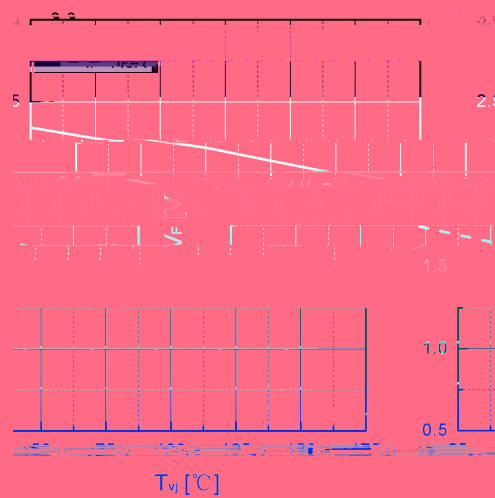


Fig 6. Typical V_F as a function of v_j



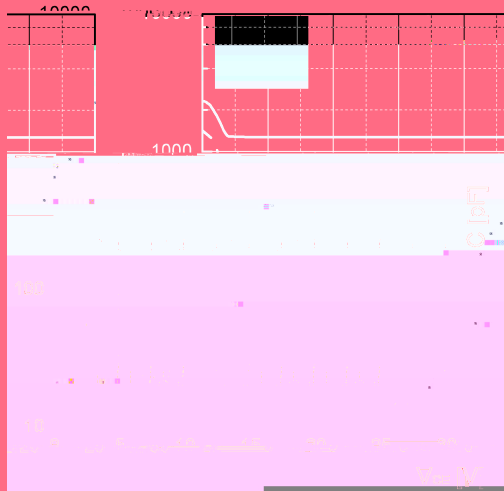


Fig 13. Typical capacitance as a function of V_{CE}
 (f=1Mhz, $V_{GE}=0V$)

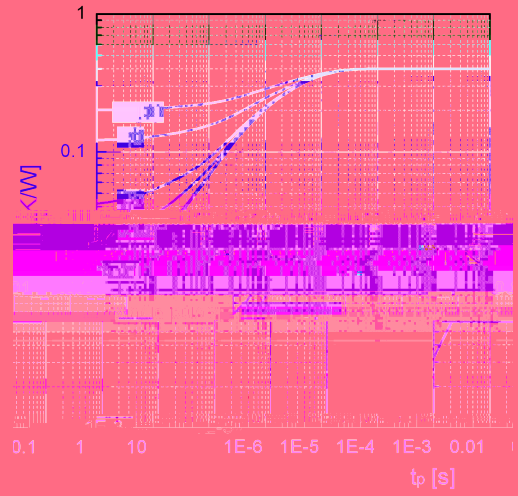


Fig 14. Transient thermal impedance of IGBT

| 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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