

### Features

- Trench/Fieldstop IGBT
- Half-bridge
- Low inductance
- Standard package
- High short circuit capability
- Including anti-parallel FWD



### Typical Applications

- Motor Drives
- Servo Drives
- Auxiliary Inverters

### IGBT, Inverter

| Maximum Rated Values   |                                      |                                                                                                |                        |        |      |      |    |
|------------------------|--------------------------------------|------------------------------------------------------------------------------------------------|------------------------|--------|------|------|----|
| Symbol                 | Item                                 | Conditions                                                                                     |                        | Rating |      | Unit |    |
| IGBT                   |                                      |                                                                                                |                        |        |      |      |    |
| V <sub>CES</sub>       | Collector-emitter voltage            | T <sub>vj</sub> =25°C                                                                          |                        | 1200   |      | V    |    |
| V <sub>GES</sub>       | Gate-emitter voltage                 | -                                                                                              |                        | ±20    |      | V    |    |
| I <sub>C</sub>         | Collector current,DC                 | T <sub>C</sub> =100°C,T <sub>vj</sub> =175°C                                                   |                        | 40     |      | A    |    |
| I <sub>CRM</sub>       | Repetitive peak collector current    | t <sub>p</sub> =1ms                                                                            |                        | 80     |      | A    |    |
| P <sub>tot</sub>       | Total power dissipation              | T <sub>C</sub> =25°C,T <sub>vj</sub> =175°C                                                    |                        | 250    |      | W    |    |
| Characteristics Values |                                      |                                                                                                |                        |        |      |      |    |
| Symbol                 | Item                                 | Conditions                                                                                     |                        | Values |      | Unit |    |
| IGBT                   |                                      |                                                                                                |                        | Min.   | Typ. | Max. |    |
| I <sub>CES</sub>       | Collector-emitter cut-off current    | V <sub>CE</sub> =1200V,V <sub>GE</sub> =0V,T <sub>vj</sub> =25°C                               |                        | -      | -    | 1    | mA |
| I <sub>GES</sub>       | Gate leakage current                 | V <sub>CE</sub> =0V,V <sub>GE</sub> =20V,T <sub>vj</sub> =25°C                                 |                        | -      | -    | 100  | nA |
| V <sub>GE(th)</sub>    | Gate-emitter threshold voltage       | I <sub>C</sub> =1.5mA,V <sub>CE</sub> =V <sub>GE</sub> ,T <sub>vj</sub> =25°C                  |                        | 5.2    | 5.58 | 6.6  | V  |
| V <sub>CESat</sub>     | Collector-emitter saturation voltage | I <sub>C</sub> =40A<br>V <sub>GE</sub> =15V                                                    | T <sub>vj</sub> =25°C  | -      | 1.98 | -    |    |
|                        |                                      |                                                                                                | T <sub>vj</sub> =125°C | -      | 2.31 | -    |    |
|                        |                                      |                                                                                                | T <sub>vj</sub> =150°C | -      | -    | -    |    |
| C <sub>ies</sub>       | Input capacitance                    | V <sub>CE</sub> =25V,V <sub>GE</sub> =0V<br>f=1MHz,T <sub>vj</sub> =25°C                       |                        | -      | 3.13 | -    | nF |
| C <sub>oes</sub>       | Output capacitance                   |                                                                                                |                        | -      | 0.17 | -    |    |
| C <sub>res</sub>       | Reverse transfer capacitance         |                                                                                                |                        | -      | 0.09 | -    |    |
| Q <sub>G</sub>         | Gate charge                          | V <sub>CC</sub> =600V,I <sub>C</sub> =40A<br>V <sub>GE</sub> =-15...+15V,T <sub>vj</sub> =25°C |                        | -      | 240  | -    | nC |
| R <sub>g</sub>         | Internal gate resistance             | T <sub>vj</sub> =25°C                                                                          |                        | -      | -    | -    | Ω  |

|                     |                                        |                                                                                                                              |                        |     |     |     |     |
|---------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------|-----|-----|-----|-----|
| t <sub>d(on)</sub>  | Turn-on delay time                     | V <sub>CC</sub> =600V<br>I <sub>C</sub> =40A<br>V <sub>GE</sub> =±15V<br>R <sub>G(on)</sub> =30Ω<br>R <sub>G(off)</sub> =30Ω | T <sub>vj</sub> =25°C  | -   | 136 | -   | ns  |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 116 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| t <sub>r</sub>      | Rise time                              |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 55  | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 58  | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| t <sub>d(off)</sub> | Turn-off delay time                    |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 294 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 328 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| t <sub>f</sub>      | Fall time                              |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 273 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 408 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| E <sub>on</sub>     | Turn-on energy (per pulse)             |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 6.4 | -   | mJ  |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 8.2 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| E <sub>off</sub>    | Turn-off energy (per pulse)            |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 2.8 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 3.6 | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -   | -   |     |
| SC data             | Short-circuit current                  | V <sub>CC</sub> =600V,V <sub>GE</sub> ≤15V,T <sub>vj</sub> =125°C<br>V <sub>CES</sub> ≤1200V,t <sub>p</sub> ≤10μs            |                        | -   | 180 | -   | A   |
| R <sub>thJC</sub>   | Thermal resistance,junction to case    | Per IGBT                                                                                                                     |                        | -   | -   | 0.6 | K/W |
| R <sub>thCH</sub>   | Thermalresistance,case to heatsink     | Per IGBT λgrease=1W/(m·K)                                                                                                    |                        | -   | -   | -   | K/W |
| T <sub>vjop</sub>   | Temperature under switching conditions |                                                                                                                              |                        | -40 |     | 150 | °C  |

**Diode, Inverter****Maximum Rated Values**

| Symbol    | Item                            | Conditions                              | Rating | Unit   |
|-----------|---------------------------------|-----------------------------------------|--------|--------|
| $V_{RRM}$ | Repetitive peak reverse voltage | $T_{vj}=25^{\circ}C$                    | 1200   | V      |
| $I_F$     | Forward current, DC             |                                         | 40     | A      |
| $I_{FRM}$ | Repetitive peak forward current | $t_p=1ms$                               | 80     | A      |
| $I^2t$    | $I^2t$ -value                   | $V_R=0V, t_p=10ms, T_{vj}=125^{\circ}C$ | 320    | $A^2s$ |

**Characteristic Values**

| Characteristic Values |                               |                                                                      | Min.                   | Typ. | Max. |     |    |
|-----------------------|-------------------------------|----------------------------------------------------------------------|------------------------|------|------|-----|----|
| V <sub>F</sub>        | Continuous forward voltage    | I <sub>F</sub> =40A<br>V <sub>GE</sub> =0V                           | T <sub>vj</sub> =25°C  | -    | 2.22 | 2.4 | V  |
|                       |                               |                                                                      | T <sub>vj</sub> =125°C | -    | 1.86 | 2.2 |    |
|                       |                               |                                                                      | T <sub>vj</sub> =150°C | -    | -    | -   |    |
| I <sub>RM</sub>       | Peak reverse recovery current | V <sub>R</sub> =600V<br>I <sub>F</sub> =40A<br>V <sub>GE</sub> =-15V | T <sub>vj</sub> =25°C  | -    | 29   | -   | A  |
|                       |                               |                                                                      | T <sub>vj</sub> =125°C | -    | 36   | -   |    |
|                       |                               |                                                                      | T <sub>vj</sub> =150°C | -    | -    | -   |    |
| t <sub>rr</sub>       | Reverse recovery time         |                                                                      | T <sub>vj</sub> =25°C  | -    | 125  | -   | ns |
|                       |                               |                                                                      | T <sub>vj</sub> =125°C | -    | 526  | -   |    |
|                       |                               |                                                                      | T <sub>vj</sub> =150°C | -    | -    | -   |    |
| Q <sub>r</sub>        | Recovered charge              |                                                                      | T <sub>vj</sub> =25°C  | -    | 2.51 | -   | μC |
|                       |                               |                                                                      | T <sub>vj</sub> =125°C | -    | 7.08 | -   |    |
|                       |                               |                                                                      | T <sub>vj</sub> =150°C | -    | -    | -   |    |

|            |                                        |          |                              |     |      |      |                    |
|------------|----------------------------------------|----------|------------------------------|-----|------|------|--------------------|
| $E_{rec}$  | Reverse recovery energy                |          | $T_{vj}=25^{\circ}\text{C}$  | -   | 0.56 | -    | mJ                 |
|            |                                        |          | $T_{vj}=125^{\circ}\text{C}$ | -   | 1.99 | -    |                    |
|            |                                        |          | $T_{vj}=150^{\circ}\text{C}$ | -   | -    | -    |                    |
| $R_{thJC}$ | Thermal resistance,junction to case    | Per IGBT |                              | -   | -    | 0.95 | K/W                |
| $T_{vjop}$ | Temperature under switching conditions |          |                              | -40 |      | 150  | $^{\circ}\text{C}$ |

**Diode, Rectifier**

| Maximum Rated Values  |                                        |                                                                |                        |        |      |      |                  |
|-----------------------|----------------------------------------|----------------------------------------------------------------|------------------------|--------|------|------|------------------|
| Symbol                | Item                                   | Conditions                                                     |                        | Rating |      |      | Unit             |
| V <sub>RRM</sub>      | Repetitive peak reverse voltage        | T <sub>vj</sub> =25°C                                          |                        | 1600   |      |      | V                |
| I <sub>F</sub>        | Forward current,DC                     | T <sub>C</sub> =100°C                                          |                        | 50     |      |      | A                |
| I <sub>FRM</sub>      | Repetitive peak forward current        | t <sub>p</sub> =1ms                                            |                        | 60     |      |      | A                |
| I <sup>2</sup> t      | I <sup>2</sup> t-value                 | V <sub>R</sub> =0V,t <sub>p</sub> =10ms,T <sub>vj</sub> =150°C |                        | 340    |      |      | A <sup>2</sup> s |
| Characteristic Values |                                        |                                                                |                        |        |      |      |                  |
| Symbol                | Item                                   | Conditions                                                     |                        | Values |      |      | Unit             |
|                       |                                        |                                                                |                        | Min.   | Typ. | Max. |                  |
| V <sub>F</sub>        | Continuous forward voltage             | I <sub>F</sub> =40A<br>V <sub>GE</sub> =0V                     | T <sub>vj</sub> =25°C  | -      | 1.21 | 2.3  | V                |
|                       |                                        |                                                                | T <sub>vj</sub> =125°C | -      | -    | -    |                  |
|                       |                                        |                                                                | T <sub>vj</sub> =150°C | -      | -    | -    |                  |
| I <sub>R</sub>        | Reverse current                        | V <sub>R</sub> =1600V                                          | T <sub>vj</sub> =25°C  | -      | -    | 10   | uA               |
|                       |                                        |                                                                | T <sub>vj</sub> =125°C | -      | -    | -    |                  |
|                       |                                        |                                                                | T <sub>vj</sub> =150°C | -      | -    | -    |                  |
| R <sub>thJC</sub>     | Thermal resistance,junction to case    | Per IGBT                                                       |                        | -      | -    | 1    | K/W              |
| T <sub>vjop</sub>     | Temperature under switching conditions |                                                                |                        | -40    |      | 150  | °C               |

**IGBT, Brake-Chopper**

| Maximum Rated Values  |                                      |                                                                               |                        |        |       |      |    |
|-----------------------|--------------------------------------|-------------------------------------------------------------------------------|------------------------|--------|-------|------|----|
| Symbol                | Item                                 | Conditions                                                                    |                        | Values |       | Unit |    |
| V <sub>CES</sub>      | Collector-emitter voltage            | T <sub>vj</sub> =25°C                                                         |                        | 1200   |       | V    |    |
| V <sub>GES</sub>      | Gate-emitter voltage                 | -                                                                             |                        | ±20    |       | V    |    |
| I <sub>C</sub>        | Collector current,DC                 | T <sub>C</sub> =100°C,T <sub>vj</sub> =175°C                                  |                        | 15     |       | A    |    |
| I <sub>CRM</sub>      | Repetitive peak collector current    | t <sub>p</sub> =1ms                                                           |                        | 30     |       | A    |    |
| P <sub>tot</sub>      | Total power dissipation              | T <sub>C</sub> =25°C,T <sub>vj</sub> =175°C                                   |                        | 125    |       | W    |    |
| Characteristic Values |                                      |                                                                               |                        |        |       |      |    |
| Symbol                | Item                                 | Conditions                                                                    |                        | Values |       | Unit |    |
| IGBT                  |                                      |                                                                               |                        | Min.   | Typ.  | Max. |    |
| I <sub>CES</sub>      | Collector-emitter cut-off current    | V <sub>CE</sub> =1200V,V <sub>GE</sub> =0V,T <sub>vj</sub> =25°C              |                        | -      | -     | 1    | mA |
| I <sub>GES</sub>      | Gate leakage current                 | V <sub>CE</sub> =0V,V <sub>GE</sub> =20V,T <sub>vj</sub> =25°C                |                        | -      | -     | 100  | nA |
| V <sub>GE(th)</sub>   | Gate-emitter threshold voltage       | I <sub>C</sub> =0.5mA,V <sub>CE</sub> =V <sub>GE</sub> ,T <sub>vj</sub> =25°C |                        | 5.2    | 5.87  | 6.6  | V  |
| V <sub>CEsat</sub>    | Collector-emitter saturation voltage | I <sub>C</sub> =15A<br>V <sub>GE</sub> =15V                                   | T <sub>vj</sub> =25°C  | -      | 1.94  | 2.25 |    |
|                       |                                      |                                                                               | T <sub>vj</sub> =125°C | -      | 2.1   | -    |    |
|                       |                                      |                                                                               | T <sub>vj</sub> =150°C | -      | -     | -    |    |
| C <sub>ies</sub>      | Input capacitance                    | V <sub>CE</sub> =25V,V <sub>GE</sub> =0V                                      |                        | -      | 1.12  | -    | nF |
| C <sub>oes</sub>      | Output capacitance                   | f=1MHz,T <sub>vj</sub> =25°C                                                  |                        | -      | 0.081 | -    |    |

|                     |                                        |                                                                                                                              |                        |     |       |     |     |
|---------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------|-----|-------|-----|-----|
| C <sub>res</sub>    | Reverse transfer capacitance           |                                                                                                                              |                        | -   | 0.035 | -   |     |
| Q <sub>G</sub>      | Gate charge                            | V <sub>CC</sub> =600V,I <sub>C</sub> =15A<br>V <sub>GE</sub> =-15...+15V,T <sub>vj</sub> =25°C                               |                        | -   | 94    | -   | nC  |
| R <sub>g</sub>      | Internal gate resistance               | T <sub>vj</sub> =25°C                                                                                                        |                        | -   | -     | -   | Ω   |
| t <sub>d(on)</sub>  | Turn-on delay time                     | V <sub>CC</sub> =600V<br>I <sub>C</sub> =15A<br>V <sub>GE</sub> =±15V<br>R <sub>G(on)</sub> =30Ω<br>R <sub>G(off)</sub> =30Ω | T <sub>vj</sub> =25°C  | -   | 105   | -   | ns  |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 86    | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -     | -   |     |
| t <sub>r</sub>      | Rise time                              |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 28    | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 33    | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -     | -   |     |
| t <sub>d(off)</sub> | Turn-off delay time                    |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 223   | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 245   | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -     | -   |     |
| t <sub>f</sub>      | Fall time                              |                                                                                                                              | T <sub>vj</sub> =25°C  | -   | 396   | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =125°C | -   | 540   | -   |     |
|                     |                                        |                                                                                                                              | T <sub>vj</sub> =150°C | -   | -     | -   |     |
| E <sub>on</sub>     | Turn-on energy (per pulse)             | T <sub>vj</sub> =25°C                                                                                                        | -                      | 1.9 | -     | mJ  |     |
|                     |                                        | T <sub>vj</sub> =125°C                                                                                                       | -                      | 2.6 | -     |     |     |
|                     |                                        | T <sub>vj</sub> =150°C                                                                                                       | -                      | -   | -     |     |     |
| E <sub>off</sub>    | Turn-off energy (per pulse)            | T <sub>vj</sub> =25°C                                                                                                        | -                      | 1.4 | -     |     |     |
|                     |                                        | T <sub>vj</sub> =125°C                                                                                                       | -                      | 1.7 | -     |     |     |
|                     |                                        | T <sub>vj</sub> =150°C                                                                                                       | -                      | -   | -     |     |     |
| SC data             | Short-circuit current                  | V <sub>CC</sub> =600V,V <sub>GE</sub> ≤15V,T <sub>vj</sub> =125°C<br>V <sub>CES</sub> ≤1200V,t <sub>p</sub> ≤10μs            |                        | -   | 60    | -   | A   |
| R <sub>thJC</sub>   | Thermal resistance,junction to case    | Per IGBT                                                                                                                     |                        | -   | -     | 1.2 | K/W |
| T <sub>vjop</sub>   | Temperature under switching conditions |                                                                                                                              |                        | -40 |       | 150 | °C  |

**Diode, Brake-Chopper**
**Maximum Rated Values**

| Symbol           | Item                            | Conditions                                                       | Rating | Unit             |
|------------------|---------------------------------|------------------------------------------------------------------|--------|------------------|
| V <sub>RRM</sub> | Repetitive peak reverse voltage | T <sub>vj</sub> =25°C                                            | 1200   | V                |
| I <sub>F</sub>   | Forward current, DC             |                                                                  | 10     | A                |
| I <sub>FRM</sub> | Repetitive peak forward current | t <sub>p</sub> =1ms                                              | 20     | A                |
| I <sup>2</sup> t | I <sup>2</sup> t-value          | V <sub>R</sub> =0V, t <sub>p</sub> =10ms, T <sub>vj</sub> =125°C | 20     | A <sup>2</sup> s |

**Characteristic Values**

|                 |                               |                                                                      |                        |   |     |     |    |
|-----------------|-------------------------------|----------------------------------------------------------------------|------------------------|---|-----|-----|----|
| V <sub>F</sub>  | Continuous forward voltage    | I <sub>F</sub> =10A<br>V <sub>GE</sub> =0V                           | T <sub>Vj</sub> =25°C  | - | 2.2 | 2.3 | V  |
|                 |                               |                                                                      | T <sub>Vj</sub> =125°C | - | 1.9 | -   |    |
|                 |                               |                                                                      | T <sub>Vj</sub> =150°C | - | -   | -   |    |
| I <sub>RM</sub> | Peak reverse recovery current | V <sub>R</sub> =600V<br>I <sub>F</sub> =10A<br>V <sub>GE</sub> =-15V | T <sub>Vj</sub> =25°C  | - | 28  | -   | A  |
|                 |                               |                                                                      | T <sub>Vj</sub> =125°C | - | 36  | -   |    |
|                 |                               |                                                                      | T <sub>Vj</sub> =150°C | - | -   | -   |    |
| t <sub>rr</sub> | Reverse recovery time         |                                                                      | T <sub>Vj</sub> =25°C  | - | 82  | -   | ns |
|                 |                               |                                                                      | T <sub>Vj</sub> =125°C | - | 282 | -   |    |

|                   |                                        |          |                        |     |      |     |     |
|-------------------|----------------------------------------|----------|------------------------|-----|------|-----|-----|
| Q <sub>r</sub>    | Recovered charge                       |          | T <sub>vj</sub> =25°C  | -   | 1.03 | -   | μC  |
|                   |                                        |          | T <sub>vj</sub> =125°C | -   | 3.33 | -   |     |
| E <sub>rec</sub>  | Reverse recovery energy                |          | T <sub>vj</sub> =25°C  | -   | 0.12 | -   | mJ  |
|                   |                                        |          | T <sub>vj</sub> =125°C | -   | 0.89 | -   |     |
| R <sub>thJC</sub> | Thermal resistance,junction to case    | Per IGBT |                        | -   | -    | 2.3 | K/W |
| T <sub>vjop</sub> | Temperature under switching conditions |          |                        | -40 |      | 150 | °C  |

Note:

IGBT electrical characteristics according to IEC 60747 – 9

Diode electrical characteristics according to IEC 60747 – 2

### NTC Thermistor Characteristics

| Symbol              | Item                    | Conditions                                           | Values |      |      | Unit |
|---------------------|-------------------------|------------------------------------------------------|--------|------|------|------|
|                     |                         |                                                      | Min.   | Typ. | Max. |      |
| R <sub>25</sub>     | Rated resistance        | T <sub>C</sub> =25°C                                 | -      | 5    | -    | kΩ   |
| ΔR/R                | Deviation of resistance | T <sub>C</sub> =100°C, R <sub>100</sub> =493Ω        | -5     | -    | 5    | %    |
| P <sub>25</sub>     | Power dissipation       | T <sub>C</sub> =25°C                                 | -      | -    | 20   | mW   |
| B <sub>25/50</sub>  | B-constant              | $R_2 = R_{25} \exp[B_{25/50}(1/T_2 - 1/(298.15K))]$  | -      | 3375 | -    | K    |
| B <sub>25/80</sub>  | B-constant              | $R_2 = R_{25} \exp[B_{25/80}(1/T_2 - 1/(298.15K))]$  | -      | 3411 | -    |      |
| B <sub>25/100</sub> | B-constant              | $R_2 = R_{25} \exp[B_{25/100}(1/T_2 - 1/(298.15K))]$ | -      | 3433 | -    |      |

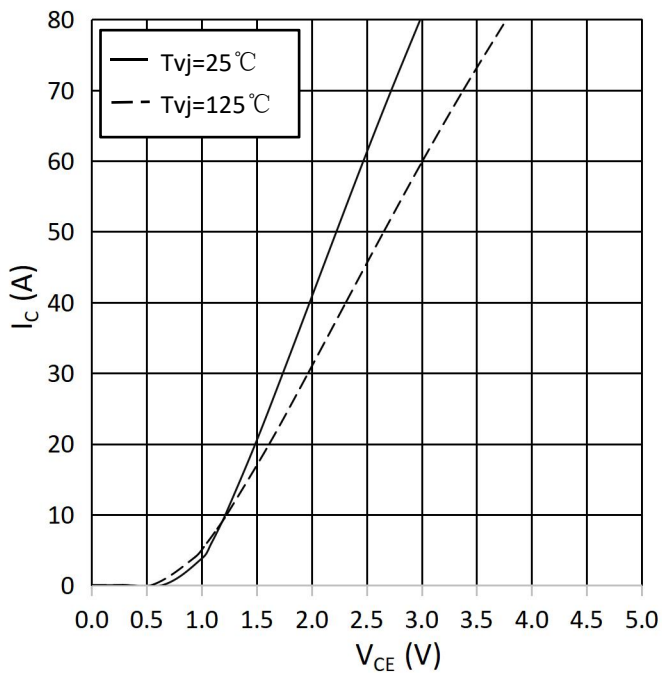
### Module

| Symbol              | Item                           | Conditions                                  | Rating  |      |      | Unit |
|---------------------|--------------------------------|---------------------------------------------|---------|------|------|------|
| V <sub>ISOL</sub>   | Isolation voltage              | Terminals to baseplate, RMS, f=50Hz, t=1min | 2500    |      |      | V    |
| T <sub>vj max</sub> | Maximum junction temperature   | -                                           | 175     |      |      | °C   |
| T <sub>vj op</sub>  | Operating junction temperature | Continuous operationg(under switching)      | -40~150 |      |      | °C   |
| T <sub>stg</sub>    | Storage temperature            | -                                           | -40~125 |      |      | °C   |
| Symbol              | Item                           | Conditions                                  | Values  |      |      | Unit |
|                     |                                |                                             | Min.    | Typ. | Max. |      |
| Ms                  | Mounting torque                | Mounting to heat sink, M5 screw             | 3       | -    | 6    | Nm   |
| ds                  | Creepage distance              | Terminal to terminal                        | -       | -    | -    | mm   |
|                     |                                | Terminal to base plate                      | -       | 10   | -    |      |
| da                  | Clearance                      | Terminal to terminal                        | -       | -    | -    | mm   |
|                     |                                | Terminal to base plate                      | -       | 7.5  | -    |      |
| m                   | Weight                         | -                                           | -       | 175  | -    | g    |

**output characteristic IGBT, Inverter (typical)**

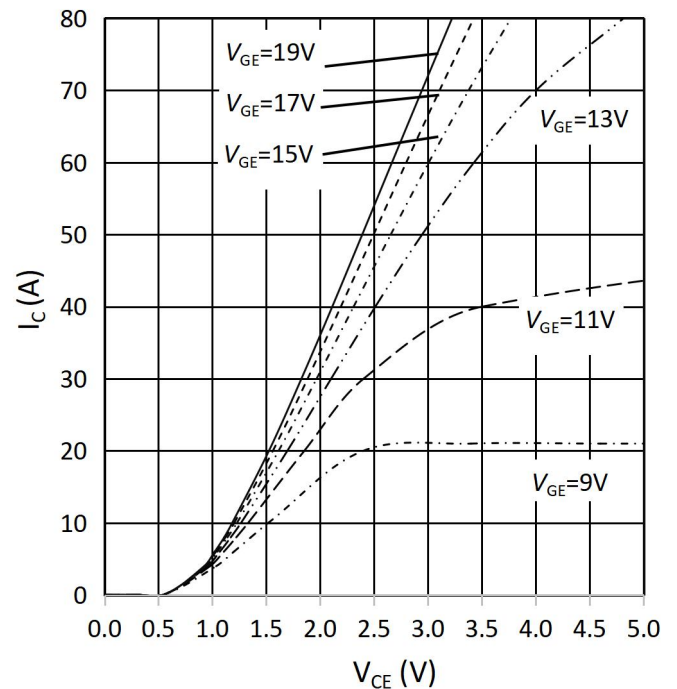
$$I_C = f(V_{CE})$$

$$V_{GE} = 15V$$


**output characteristic IGBT, Inverter (typical)**

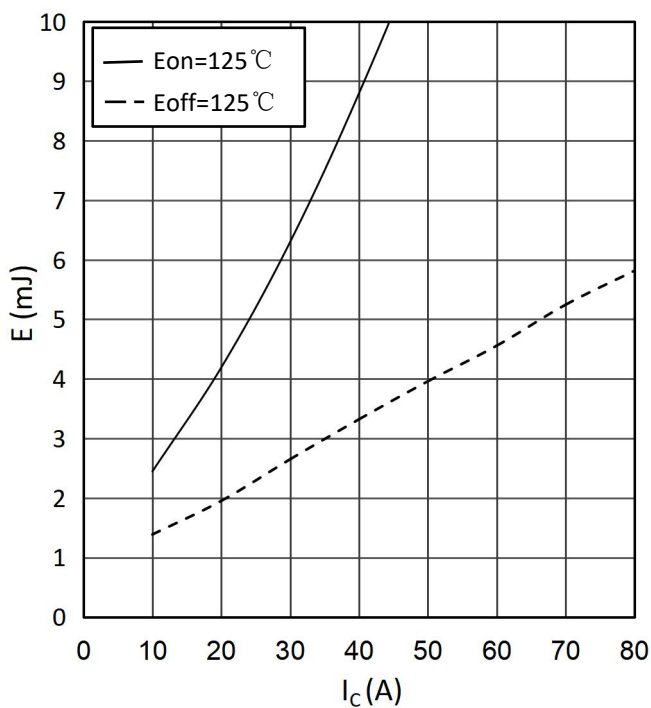
$$I_C = f(V_{CE})$$

$$T_{vj} = 125^{\circ}C$$


**switching losses IGBT, Inverter (typical)**

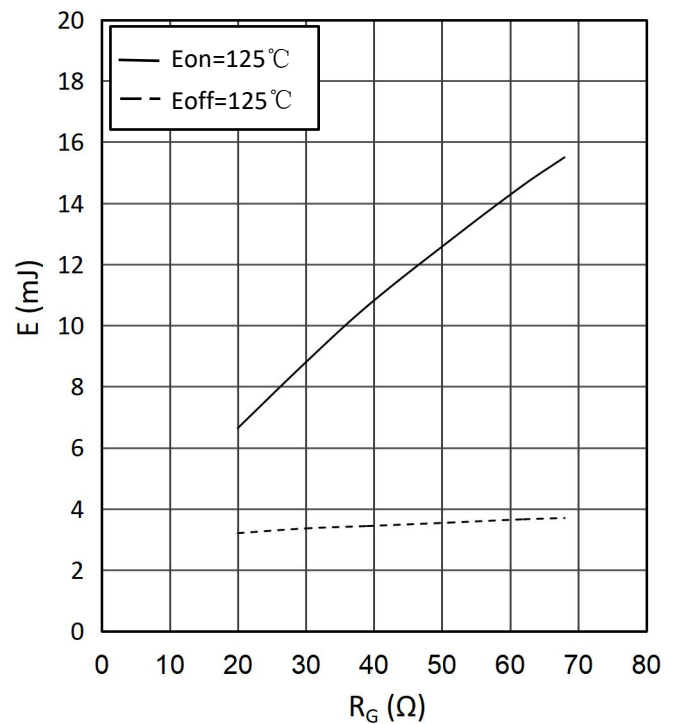
$$E_{on} = f(I_C), E_{off} = f(I_C)$$

$$V_{GE} = \pm 15V, R_{Gon} = 30\Omega, R_{Goff} = 30\Omega, V_{CE} = 600V$$


**switching losses IGBT, Inverter (typical)**

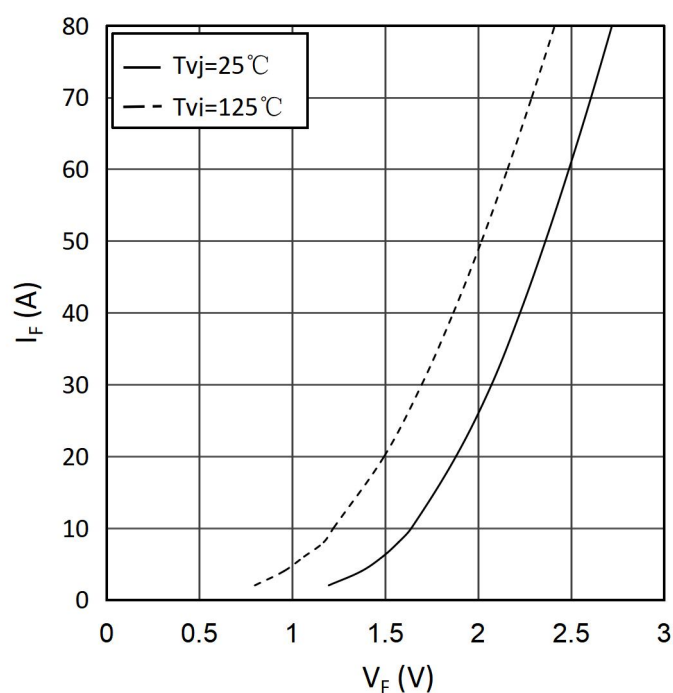
$$E_{on} = f(R_G), E_{off} = f(R_G)$$

$$V_{GE} = \pm 15V, I_C = 40A, V_{CE} = 600V$$



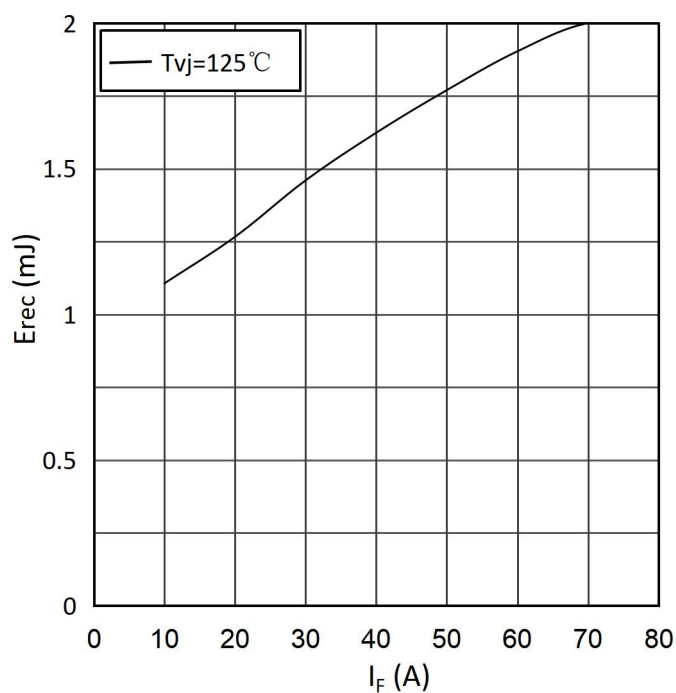
**forward characteristic of Diode, Inverter (typical)**

$$I_F = f(V_F)$$


**switching losses Diode, Inverter (typical)**

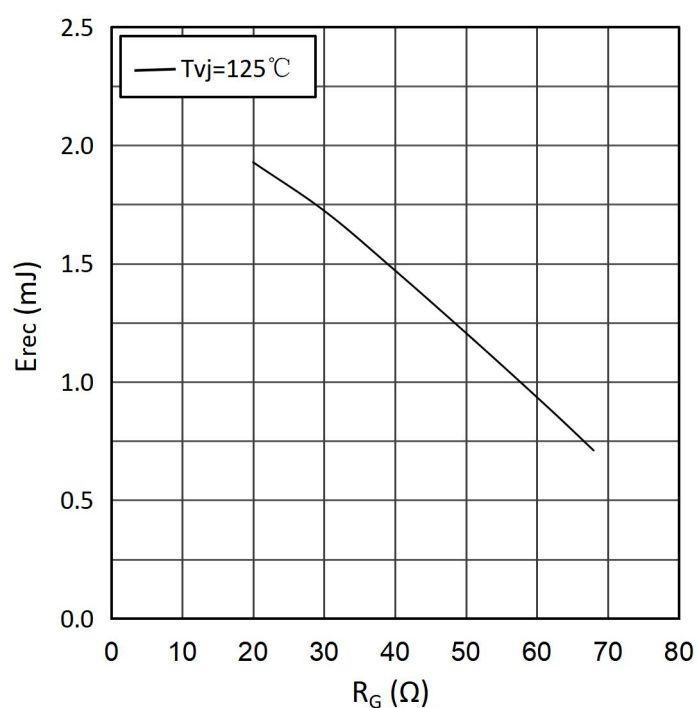
$$E_{rec} = f(I_F)$$

$$R_{Gon} = 30\Omega, V_{CE} = 600\text{ V}$$


**switching losses Diode, Inverter (typical)**

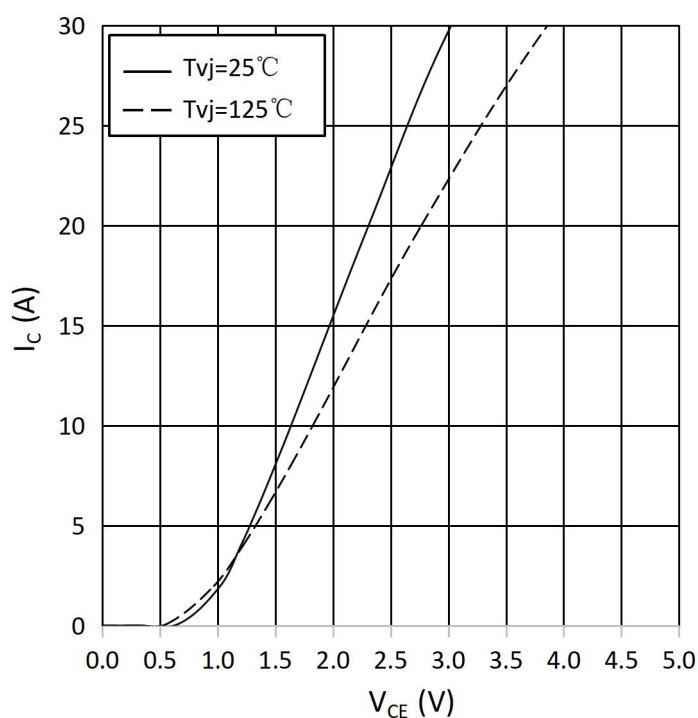
$$E_{rec} = f(R_G)$$

$$I_F = 40\text{A}, V_{CE} = 600\text{V}$$


**output characteristic IGBT, Brake-Chopper (typical)**

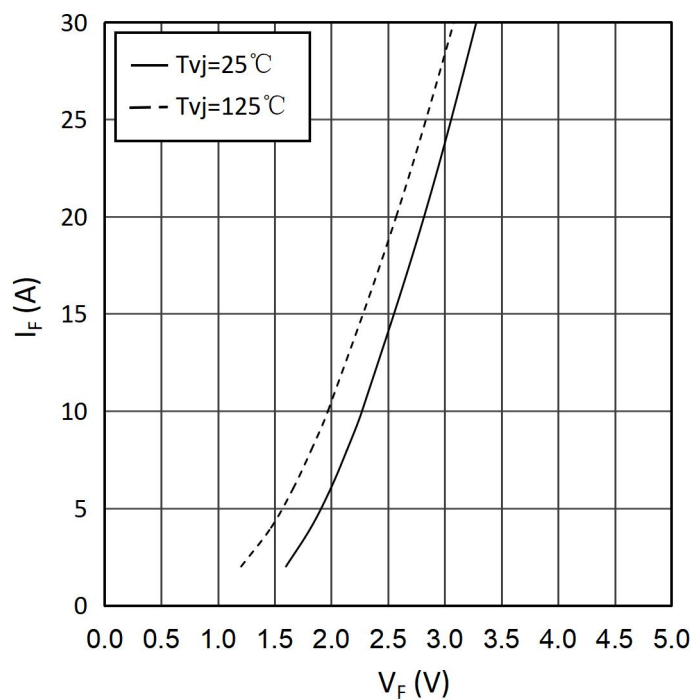
$$I_C = f(V_{CE})$$

$$V_{GE} = 15\text{V}$$



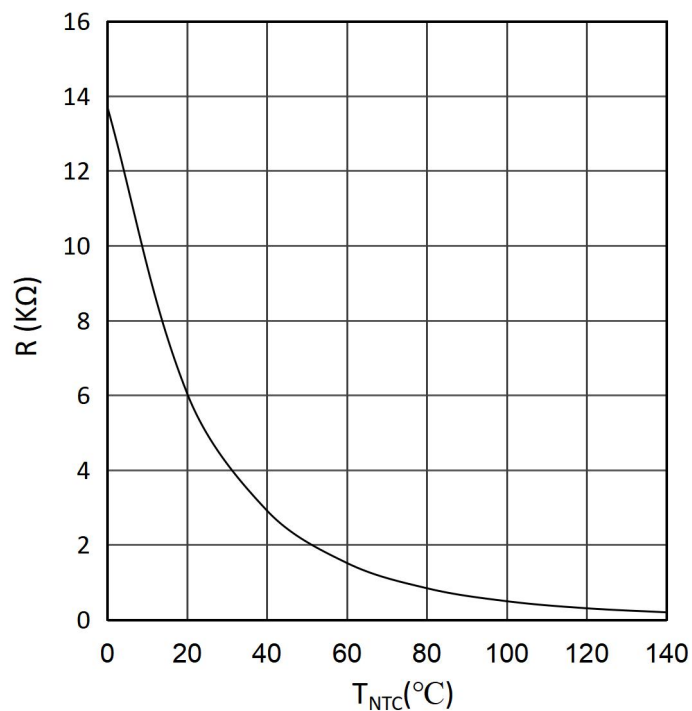
forward characteristic of Diode, Brake-Chopper (typical)

$$I_F = f(V_F)$$



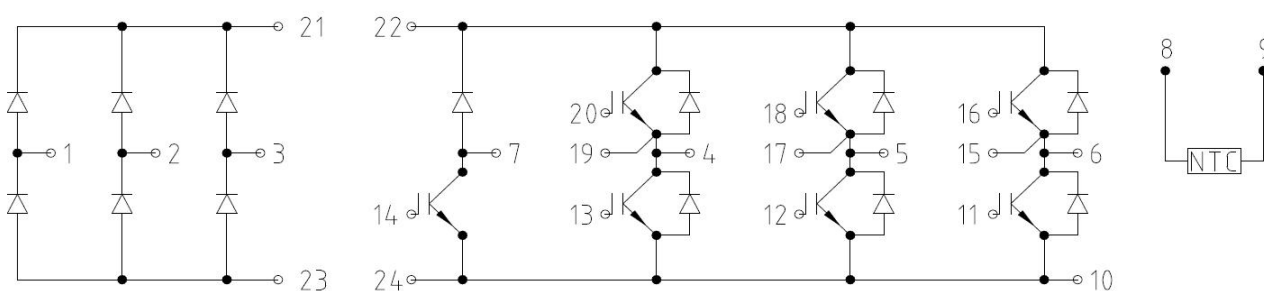
NTC-Thermistor-temperature characteristic(typical)

$$R = f(T)$$

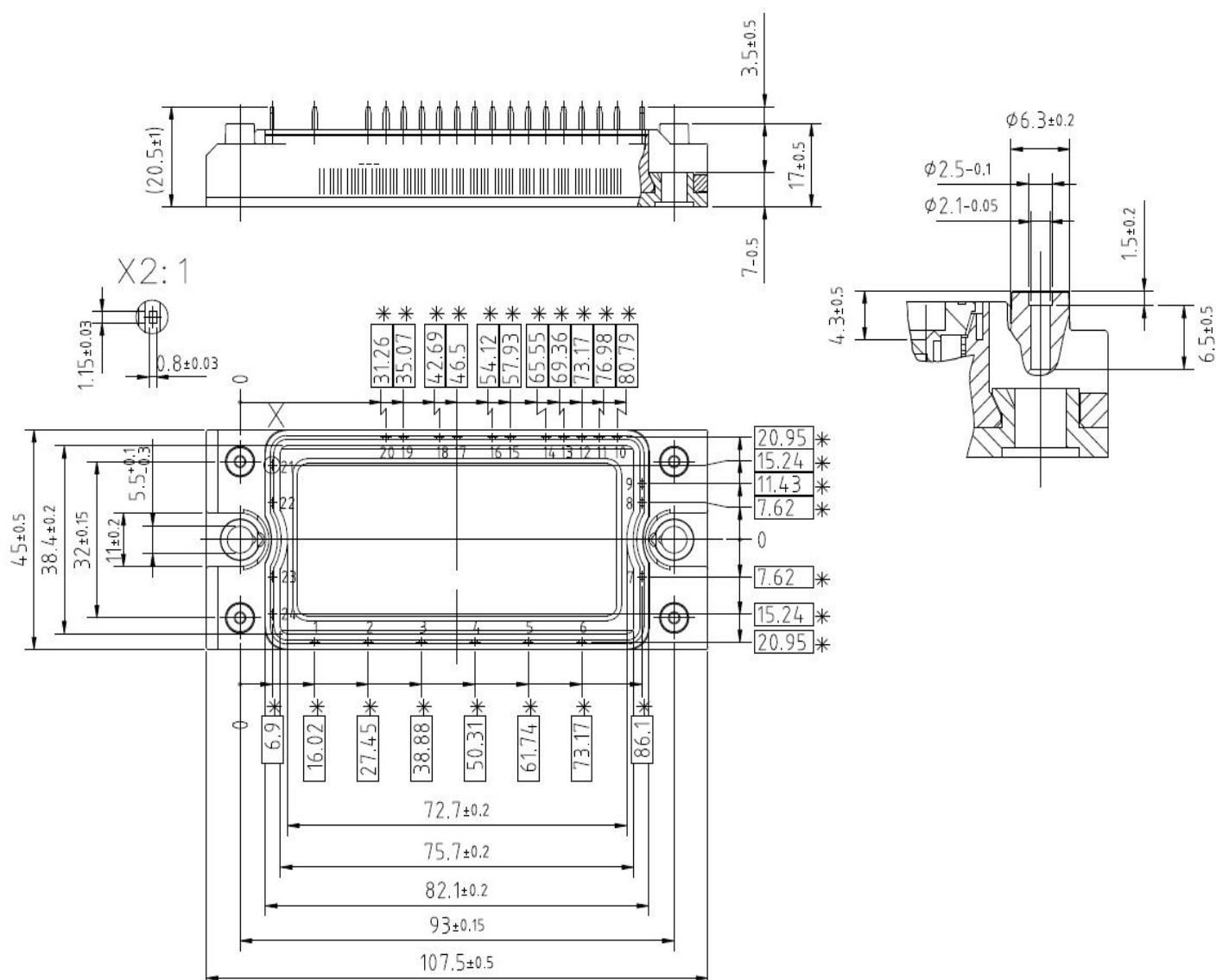




# Circuit Diagram



# Package Outlines



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