### Maximum Ratings

$T_j = 25 \, ^\circ C$, unless otherwise specified

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inverter Switch</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector-emitter voltage</td>
<td>$V_{CE}$</td>
<td></td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Collector current</td>
<td>$I_C$</td>
<td>$T_j = T_{j\text{max}}$</td>
<td>34</td>
<td>A</td>
</tr>
<tr>
<td>Repetitive peak collector current</td>
<td>$I_{CEM}$</td>
<td>$I_t$ limited by $T_{j\text{max}}$</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>Turn off safe operating area</td>
<td></td>
<td>$T_j \leq 150 , ^\circ C$, $V_{CE} \leq 1200 , V$</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>Total power dissipation</td>
<td>$P_{out}$</td>
<td>$T_j = T_{j\text{max}}$, $T_i = 80 , ^\circ C$</td>
<td>68</td>
<td>W</td>
</tr>
<tr>
<td>Gate-emitter voltage</td>
<td>$V_{GES}$</td>
<td></td>
<td>±20</td>
<td>V</td>
</tr>
<tr>
<td>Short circuit ratings</td>
<td></td>
<td>$T_i \leq 150 , ^\circ C$</td>
<td>6</td>
<td>$\mu$ s</td>
</tr>
<tr>
<td></td>
<td>$V_{CC}$</td>
<td>$V_{CE} = 15 , V$</td>
<td>360</td>
<td>V</td>
</tr>
<tr>
<td>Maximum junction temperature</td>
<td>$T_{j\text{max}}$</td>
<td></td>
<td>175</td>
<td>$^\circ$ C</td>
</tr>
</tbody>
</table>

### Features

- IGBT3 (600 V) technology
- Open emitter topology
- New ultra-compact housing
- Single-screw heat sink mounting

### Target applications

- Dedicated design for motor drive

### Types

- 10-0B066PA030SB-M996F09
## Maximum Ratings

*\( T = 25 \, ^\circ \text{C} \), unless otherwise specified

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inverter Diode</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak repetitive reverse voltage</td>
<td>( V_{\text{RRM}} )</td>
<td>( T_j = T_{\text{max}} ), ( T_s = 80 , ^\circ \text{C} )</td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Continuous (direct) forward current</td>
<td>( I_F )</td>
<td>( T_j = T_{\text{max}} ), ( T_s = 80 , ^\circ \text{C} )</td>
<td>32</td>
<td>A</td>
</tr>
<tr>
<td>Total power dissipation</td>
<td>( P_{\text{tot}} )</td>
<td>( T_j = T_{\text{max}} ), ( T_s = 80 , ^\circ \text{C} )</td>
<td>53</td>
<td>W</td>
</tr>
<tr>
<td>Maximum junction temperature</td>
<td>( T_{\text{max}} )</td>
<td>( T_j = T_{\text{max}} ), ( T_s = 80 , ^\circ \text{C} )</td>
<td>175</td>
<td>°C</td>
</tr>
<tr>
<td><strong>Module Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Thermal Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>( T_{\text{stg}} )</td>
<td>( -40...+125 , ^\circ \text{C} )</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Operation temperature under switching condition</td>
<td>( T_{\text{op}} )</td>
<td>( -40...(T_{\text{max}} - 25) , ^\circ \text{C} )</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td><strong>Isolation Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>( V_{\text{isol}} )</td>
<td>DC Test Voltage ( t_p = 2 , \text{s} )</td>
<td>4000</td>
<td>V</td>
</tr>
<tr>
<td>Creepage distance</td>
<td></td>
<td>( \text{min. } 12,7 )</td>
<td></td>
<td>mm</td>
</tr>
<tr>
<td>Clearance</td>
<td></td>
<td>( \text{min. } 12,7 )</td>
<td></td>
<td>mm</td>
</tr>
<tr>
<td>Comparative Tracking Index</td>
<td>CTI</td>
<td></td>
<td>&gt; 200</td>
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</table>
### Characteristic Values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inverter Switch</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Static</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gate-emitter threshold voltage</td>
<td>$V_{GE(th)}$</td>
<td>$V_{GE} = V_{CE}$</td>
<td>0,00043</td>
<td>25</td>
</tr>
<tr>
<td>Collector-emitter saturation voltage</td>
<td>$V_{Cesat}$</td>
<td>15</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Collector-emitter cut-off current</td>
<td>$I_{ces}$</td>
<td>0</td>
<td>600</td>
<td>25</td>
</tr>
<tr>
<td>Gate-emitter leakage current</td>
<td>$I_{ges}$</td>
<td>20</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Internal gate resistance</td>
<td>$r_{g}$</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Input capacitance</td>
<td>$C_{in}$</td>
<td></td>
<td>1630</td>
<td></td>
</tr>
<tr>
<td>Output capacitance</td>
<td>$C_{out}$</td>
<td>$f = 1$ MHz</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Reverse transfer capacitance</td>
<td>$C_{res}$</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Gate charge</td>
<td>$Q_{g}$</td>
<td>15</td>
<td>400</td>
<td>30</td>
</tr>
<tr>
<td>Thermal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal resistance junction to sink</td>
<td>$R_{th(j-s)}$</td>
<td>Thermal grease thickness ≤ 50 µm (\lambda = 1) W/mK</td>
<td>1,41</td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-on delay time</td>
<td>$t_{on}$</td>
<td>$R_{off} = 16$ Ω</td>
<td>15</td>
<td>300</td>
</tr>
<tr>
<td>Rise time</td>
<td>$t_{r}$</td>
<td>$R_{on} = 16$ Ω</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-off delay time</td>
<td>$t_{off}$</td>
<td>$R_{on} = 16$ Ω</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall time</td>
<td>$t_{f}$</td>
<td>$R_{off} = 16$ Ω</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Turn-on energy (per pulse)</td>
<td>$E_{on}$</td>
<td>$\lambda_{off} = 1,3$ µC</td>
<td>25</td>
<td>150</td>
</tr>
<tr>
<td>Turn-off energy (per pulse)</td>
<td>$E_{off}$</td>
<td>$\lambda_{on} = 2,7$ µC</td>
<td>25</td>
<td>150</td>
</tr>
</tbody>
</table>
## Characteristic Values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$V_G$</td>
<td>30 125</td>
<td>1.65 1.62</td>
<td>V</td>
</tr>
<tr>
<td>Reverse leakage current</td>
<td>$I_L$</td>
<td>600 25</td>
<td>27</td>
<td>μA</td>
</tr>
<tr>
<td>Thermal resistance junction to sink</td>
<td>$R_{th(j-s)}$</td>
<td>≤ 50 μm λ = 1 W/mK</td>
<td>1.80</td>
<td>K/W</td>
</tr>
<tr>
<td>Peak recovery current</td>
<td>$i_{RRM}$</td>
<td>±15 300</td>
<td>25 150 27 34</td>
<td>A</td>
</tr>
<tr>
<td>Reverse recovery time</td>
<td>$t_{rr}$</td>
<td></td>
<td>25 150 146 253</td>
<td>ns</td>
</tr>
<tr>
<td>Recovered charge</td>
<td>$Q_r$</td>
<td>di/dt = 2285 A/μs</td>
<td>25 150 1.338 2.654</td>
<td>μC</td>
</tr>
<tr>
<td>Reverse recovered energy</td>
<td>$E_{rec}$</td>
<td></td>
<td>25 150 0.290 0.568</td>
<td>mWs</td>
</tr>
<tr>
<td>Peak rate of fall of recovery current</td>
<td>$di/dt</td>
<td>_{max}$</td>
<td></td>
<td>25 150 1.752 815</td>
</tr>
<tr>
<td>Rated resistance</td>
<td>$R$</td>
<td></td>
<td>25</td>
<td>21.5</td>
</tr>
<tr>
<td>Deviation of $R_{tot}$</td>
<td>$\Delta R$</td>
<td>$R_{tot} = 1486$ Ω</td>
<td>100</td>
<td>-4.5</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>$P$</td>
<td></td>
<td>25</td>
<td>210</td>
</tr>
<tr>
<td>Power dissipation constant</td>
<td></td>
<td></td>
<td>25</td>
<td>3.5</td>
</tr>
<tr>
<td>B-value</td>
<td>$B_{25(25)}$</td>
<td></td>
<td>25</td>
<td>3884</td>
</tr>
<tr>
<td>B-value</td>
<td>$B_{25(100)}$</td>
<td></td>
<td>25</td>
<td>3964</td>
</tr>
</tbody>
</table>

### Inverter Diode

#### Static

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$V_F$</td>
<td>30</td>
<td>1.62</td>
<td>V</td>
</tr>
<tr>
<td>Reverse leakage current</td>
<td>$I_R$</td>
<td>600</td>
<td>27</td>
<td>μA</td>
</tr>
</tbody>
</table>

#### Dynamic

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak recovery current</td>
<td>$i_{RRM}$</td>
<td></td>
<td>25 150 27 34</td>
<td>A</td>
</tr>
<tr>
<td>Reverse recovery time</td>
<td>$t_{rr}$</td>
<td></td>
<td>25 150 146 253</td>
<td>ns</td>
</tr>
<tr>
<td>Recovered charge</td>
<td>$Q_r$</td>
<td>di/dt = 1902 A/μs</td>
<td>25 150 0.290 0.568</td>
<td>μC</td>
</tr>
<tr>
<td>Reverse recovered energy</td>
<td>$E_{rec}$</td>
<td></td>
<td>25 150 0.290 0.568</td>
<td>mWs</td>
</tr>
<tr>
<td>Peak rate of fall of recovery current</td>
<td>$di/dt</td>
<td>_{max}$</td>
<td></td>
<td>25 150 1.752 815</td>
</tr>
</tbody>
</table>

#### Thermistor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td>Rated resistance</td>
<td>$R$</td>
<td></td>
<td>25</td>
<td>21.5</td>
</tr>
<tr>
<td>Deviation of $R_{tot}$</td>
<td>$\Delta R$</td>
<td>$R_{tot} = 1486$ Ω</td>
<td>100</td>
<td>-4.5</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>$P$</td>
<td></td>
<td>25</td>
<td>210</td>
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<td></td>
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<td>B-value</td>
<td>$B_{25(100)}$</td>
<td></td>
<td>25</td>
<td>3964</td>
</tr>
</tbody>
</table>

**Vincotech NTC Reference** F
Inverter Switch Characteristics

**figure 1.** IGBT

Typical output characteristics

$I_C = f(V_{CE})$

$\tau_p = 250 \ \mu s \quad T_J = 25 ^\circ C$

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

$V_{CE}$ from 7 V to 17 V in steps of 1 V

**figure 2.** IGBT

Typical output characteristics

$I_C = f(V_{GE})$

$\tau_p = 250 \ \mu s \quad T_J = 125 ^\circ C$

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

**figure 3.** IGBT

Typical transfer characteristics

$I_C = f(V_{GE})$

$\tau_p = 100 \ \mu s \quad T_J = 25 ^\circ C$

$V_{CE} = 10 \ \text{V}$

$V_{GE}$ from 7 V to 17 V in steps of 1 V

**figure 4.** IGBT

Transient thermal impedance as function of pulse duration

$Z_{th(j-s)} = f(t_p)$

$\tau_p = 100 \ \mu s \quad T_J = 125 ^\circ C$

$V_{CE} = 10 \ \text{V}$

IGBT thermal model values

$R (K/W) \quad \tau (s)$

3,67E-02 9,82E+00
1,46E-01 1,04E+00
5,44E-01 1,78E-01
3,36E-01 4,31E-02
2,08E-01 8,55E-03
6,31E-02 9,19E-04
7,45E-02 1,51E-04
Inverter Switch Characteristics

**Figure 5.** IGBT Gate voltage vs gate charge

\[ V_{GE} = f(Q_{G}) \]

- \( Q_{G} \) in nC
- \( V_{GE} \) in V
- \( I_{C} \) = 30 A
- \( D = \) single pulse
- \( T_{s} = 80^\circ C \)
- \( V_{CE} \leq 400 \text{ V} \)
- \( T_{j} \leq 150^\circ C \)

**Figure 6.** IGBT Safe operating area

\[ I_{C} = f(V_{GE}) \]

**Figure 7.** IGBT Short circuit duration as a function of \( V_{GE} \)

\[ t_{pS C} = f(V_{GE}) \]

- \( V_{GE} = 400 \text{ V} \)
- \( T_{j} \leq 150^\circ C \)

**Figure 8.** IGBT Typical short circuit current as a function of \( V_{GE} \)

\[ I_{SC} = f(V_{GE}) \]

- \( V_{GE} \leq 400 \text{ V} \)
- \( T_{j} \leq 150^\circ C \)
Inverter Diode Characteristics

**figure 1.** FWD
Typical forward characteristics

\[ I_F = f(V_F) \]

**figure 2.** FWD
Transient thermal impedance as a function of pulse width

\[ Z_{th(j-s)} = f(t_p) \]

- \( t_p = 250 \, \mu s \)
- \( T_j = 25 \, \degree C \)
- \( T_j = 125 \, \degree C \)
- \( D = t_p / T \)
- \( R_{th(j-s)} = 1.80 \, K/W \)
- FWD thermal model values

<table>
<thead>
<tr>
<th>( R (K/W) )</th>
<th>( \tau (s) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.95E-02</td>
<td>3.72E+00</td>
</tr>
<tr>
<td>2.06E-01</td>
<td>4.02E-01</td>
</tr>
<tr>
<td>7.04E-01</td>
<td>8.35E-02</td>
</tr>
<tr>
<td>4.39E-01</td>
<td>1.56E-02</td>
</tr>
<tr>
<td>2.12E-01</td>
<td>2.93E-03</td>
</tr>
<tr>
<td>1.68E-01</td>
<td>3.31E-04</td>
</tr>
</tbody>
</table>

Thermistor Characteristics

**Thermistor typical temperature characteristic**

Typical NTC characteristic

\[ R_T = f(T) \]

- NTC-typical temperature characteristic

Copyright Vincotech
Switching Characteristics

Figure 1. IGBT
Typical switching energy losses as a function of collector current

\[ E = f(I_C) \]

With an inductive load at 25 °C

- \( V_{CE} = 300 \) V
- \( T_J = 150 ^\circ C \)

- \( V_{CE} = \pm 15 \) V
- \( R_{on} = 16 \) Ω
- \( R_{off} = 16 \) Ω

Figure 2. IGBT
Typical switching energy losses as a function of gate resistor

\[ E = f(R_g) \]

With an inductive load at 25 °C

- \( V_{CE} = 300 \) V
- \( T_J = 150 ^\circ C \)

- \( V_{CE} = \pm 15 \) V
- \( I_C = 30 \) A

Figure 3. FWD
Typical reverse recovered energy loss as a function of collector current

\[ E_{rec} = f(I_C) \]

With an inductive load at 25 °C

- \( V_{CE} = 300 \) V
- \( T_J = 150 ^\circ C \)

- \( V_{CE} = \pm 15 \) V
- \( R_{on} = 16 \) Ω
- \( R_{off} = 16 \) Ω

Figure 4. FWD
Typical reverse recovered energy loss as a function of gate resistor

\[ E_{rec} = f(R_g) \]

With an inductive load at 25 °C

- \( V_{CE} = 300 \) V
- \( T_J = 150 ^\circ C \)

- \( V_{CE} = \pm 15 \) V
- \( I_C = 30 \) A
Switching Characteristics

**Figure 5.** IGBT
Typical switching times as a function of collector current

\[ t = f(I_C) \]

With an inductive load at
- \( T_j = 150 \, ^\circ C \)
- \( V_{CE} = 300 \, V \)
- \( V_{CE} = \pm 15 \, V \)
- \( R_gon = 16 \, \Omega \)
- \( I_C = 30 \, A \)

**Figure 6.** IGBT
Typical switching times as a function of gate resistor

\[ t = f(R_g) \]

With an inductive load at
- \( T_j = 150 \, ^\circ C \)
- \( V_{CE} = 300 \, V \)
- \( V_{CE} = \pm 15 \, V \)
- \( R_gon = 16 \, \Omega \)
- \( I_C = 30 \, A \)

**Figure 7.** FWD
Typical reverse recovery time as a function of collector current

\[ t_{rr} = f(I_C) \]

At
- \( V_{CE} = 300 \, V \)
- \( V_{CE} = \pm 15 \, V \)
- \( R_{pm} = 16 \, \Omega \)

**Figure 8.** FWD
Typical reverse recovery time as a function of IGBT turn on gate resistor

\[ t_{rr} = f(R_{gon}) \]

At
- \( V_{CE} = 300 \, V \)
- \( V_{CE} = \pm 15 \, V \)
- \( R_{pm} = 16 \, \Omega \)
Switching Characteristics

**Figure 9.** Typical recovered charge as a function of collector current

\[ Q_r = f(I_C) \]

At
- \( V_{CE} = 300 \) V
- \( V_{GE} = \pm 15 \) V
- \( I_C = 30 \) A

\( T_j = 150 \) °C

**Figure 10.** Typical recovered charge as a function of IGBT turn on gate resistor

\[ Q_r = f(R_{gon}) \]

At
- \( V_{CE} = 300 \) V
- \( V_{GE} = \pm 15 \) V
- \( I_C = 30 \) A

\( T_j = 150 \) °C

**Figure 11.** Typical peak reverse recovery current as a function of collector current

\[ I_{RM} = f(I_C) \]

At
- \( V_{CE} = 300 \) V
- \( V_{GE} = \pm 15 \) V
- \( R_{gon} = 16 \) Ω

\( T_j = 150 \) °C

**Figure 12.** Typical peak reverse recovery current as a function of IGBT turn on gate resistor

\[ I_{RM} = f(R_{gon}) \]

At
- \( V_{CE} = 300 \) V
- \( V_{GE} = \pm 15 \) V
- \( I_C = 30 \) A

\( T_j = 150 \) °C
Switching Characteristics

**Figure 13.** FWD
Typical rate of fall of forward and reverse recovery current as a function of collector current.

\[
d_i F/d_t, d_i r r/d_t = f(I_c)
\]

At

- \(V_{CE} = 300\) V
- \(V_{GE} = \pm 15\) V
- \(T_j = 150\) °C
- \(I_c = 30\) A
- \(R_{gon} = 16\) Ω
- \(R_{goff} = 16\) Ω

**Figure 14.** FWD
Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor.

\[
d_i F/d_t, d_i r r/d_t = f(R_g)
\]

At

- \(V_{CE} = 300\) V
- \(V_{GE} = \pm 15\) V
- \(T_j = 150\) °C
- \(I_c = 30\) A
- \(R_{gon} = 16\) Ω
- \(R_{goff} = 16\) Ω

**Figure 15.** IGBT
Reverse bias safe operating area.

\[
k = K_{MAX}\]

At

- \(T_j = 175\) °C
- \(R_{gon} = 16\) Ω
- \(R_{goff} = 16\) Ω
Switching Characteristics

General conditions

<table>
<thead>
<tr>
<th>$V_c$</th>
<th>$150 \degree C$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{on}$</td>
<td>$16 \Omega$</td>
</tr>
<tr>
<td>$R_{off}$</td>
<td>$16 \Omega$</td>
</tr>
</tbody>
</table>

**Figure 1.** IGBT

Turn-off Switching Waveforms & definition of $t_{doff}$, $t_{Eoff}$ ($t_{Eoff}$ = integrating time for $Eoff$)

- $V_{GE}(90\%) = -15 \text{ V}$
- $V_{GE}(100\%) = 15 \text{ V}$
- $V_{C}(100\%) = 300 \text{ V}$
- $I_{C}(100\%) = 30 \text{ A}$
- $t_{doff} = 0.171 \mu\text{s}$
- $t_{Eoff} = 0.437 \mu\text{s}$

**Figure 2.** IGBT

Turn-on Switching Waveforms & definition of $t_{don}$, $t_{Eon}$ ($t_{Eon}$ = integrating time for $Eon$)

- $V_{GE}(90\%) = -15 \text{ V}$
- $V_{GE}(100\%) = 15 \text{ V}$
- $V_{C}(100\%) = 300 \text{ V}$
- $I_{C}(100\%) = 30 \text{ A}$
- $t_{don} = 0.104 \mu\text{s}$
- $t_{Eon} = 0.259 \mu\text{s}$

**Figure 3.** IGBT

Turn-off Switching Waveforms & definition of $f_t$

- $V_{C}(100\%) = 300 \text{ V}$
- $I_{C}(100\%) = 30 \text{ A}$
- $t_{doff} = 0.12 \mu\text{s}$
- $t_{Eoff} = 0.24 \mu\text{s}$
- $t_{don} = 0.3 \mu\text{s}$
- $t_{Eon} = 0.42 \mu\text{s}$

**Figure 4.** IGBT

Turn-on Switching Waveforms & definition of $\tau_r$

- $V_{C}(100\%) = 300 \text{ V}$
- $I_{C}(100\%) = 30 \text{ A}$
- $t_{don} = 0.020 \mu\text{s}$
- $t_{Eon} = 0.048 \mu\text{s}$
Switching Characteristics

Figure 5. IGBT
Turn-off Switching Waveforms & definition of tEoff

- $P_{off}(100\%) = 9.01 \text{ kW}$
- $E_{off}(100\%) = 0.91 \text{ mJ}$
- $t_{Eoff} = 0.44 \mu s$

Figure 6. IGBT
Turn-on Switching Waveforms & definition of tEon

- $P_{on}(100\%) = 9.01 \text{ kW}$
- $E_{on}(100\%) = 0.67 \text{ mJ}$
- $t_{Eon} = 0.26 \mu s$

Figure 7. FWD
Turn-off Switching Waveforms & definition of tRR

- $V_F(100\%) = 300 \text{ V}$
- $I_F(100\%) = 30 \text{ A}$
- $I_{Fmax}(100\%) = -34 \text{ A}$
- $t_{rr} = 0.253 \mu s$
Switching Characteristics

Figure 8. FWD
Turn-on Switching Waveforms & definition of \( t_{Qr} \) (integrating time for \( Q_r \))

\[ I_F(100\%) = 30 \text{ A} \]
\[ Q_r(100\%) = 2.65 \mu\text{C} \]
\[ t_{Qr} = 0.49 \mu\text{s} \]

Figure 9. FWD
Turn-on Switching Waveforms & definition of \( t_{Erec} \) (integrating time for \( E_{rec} \))

\[ P_{rec}(100\%) = 9.01 \text{ kW} \]
\[ E_{rec}(100\%) = 0.57 \text{ mJ} \]
\[ t_{Erec} = 0.49 \mu\text{s} \]
### Ordering Code & Marking

<table>
<thead>
<tr>
<th>Text</th>
<th>Name</th>
<th>Date code</th>
<th>UL &amp; VIN</th>
<th>Lot</th>
<th>Serial</th>
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</thead>
<tbody>
<tr>
<td>10-0B066PA030SB-M996F09</td>
<td>10-0B066PA030SB-M996F09</td>
<td>WWYY</td>
<td>UL VIN</td>
<td>LLLLL</td>
<td>SSSS</td>
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**Version**
- without thermal paste 17mm housing with solder pins

**Outline**

#### Pin table [mm]

<table>
<thead>
<tr>
<th>Pin</th>
<th>X</th>
<th>Y</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>0</td>
<td>G6</td>
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<tr>
<td>2</td>
<td>24.9</td>
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<td>E6</td>
</tr>
<tr>
<td>3</td>
<td>19.1</td>
<td>0</td>
<td>G5</td>
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<tr>
<td>4</td>
<td>16.2</td>
<td>0</td>
<td>E5</td>
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<tr>
<td>5</td>
<td>11.6</td>
<td>0</td>
<td>NTC2</td>
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<tr>
<td>6</td>
<td>7.6</td>
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<td>NTC1</td>
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<tr>
<td>7</td>
<td>2.9</td>
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<tr>
<td>8</td>
<td>0</td>
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<td>G4</td>
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<tr>
<td>9</td>
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<td>13.7</td>
<td>U</td>
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<tr>
<td>10</td>
<td>2.9</td>
<td>13.7</td>
<td>G1</td>
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<tr>
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<td>8.8</td>
<td>13.7</td>
<td>DC+</td>
</tr>
<tr>
<td>12</td>
<td>14.6</td>
<td>13.7</td>
<td>V</td>
</tr>
<tr>
<td>13</td>
<td>17.5</td>
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</tr>
<tr>
<td>14</td>
<td>24.9</td>
<td>13.7</td>
<td>G3</td>
</tr>
<tr>
<td>15</td>
<td>27.8</td>
<td>13.7</td>
<td>W</td>
</tr>
</tbody>
</table>

**Dimensions**
- All dimensions are given in mm.
- Tolerance of wire diameters ±0.005mm is ±0.002mm at the end of pins.
- Dimension of coordinates axis is only offset without tolerance.
- Gridlines and holes are seen in handling instruction document.
**Thermistor**

**IGBT**

**FWD**

**Component**

<table>
<thead>
<tr>
<th>ID</th>
<th>Component</th>
<th>Voltage</th>
<th>Current</th>
<th>Function</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1-T6</td>
<td>IGBT</td>
<td>600 V</td>
<td>30 A</td>
<td>Inverter Switch</td>
<td></td>
</tr>
<tr>
<td>D1-D6</td>
<td>FWD</td>
<td>600 V</td>
<td>30 A</td>
<td>Inverter Diode</td>
<td></td>
</tr>
<tr>
<td>NTC</td>
<td>Thermistor</td>
<td>600 V</td>
<td></td>
<td>Thermistor</td>
<td></td>
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</table>
**Packaging instruction**

<table>
<thead>
<tr>
<th>Standard packaging quantity (SPQ)</th>
<th>&gt;SPQ</th>
<th>Standard</th>
<th>&lt;SPQ</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Handling instruction**

Handling instructions for flow0 B packages see vincotech.com website.

**Package data**

Package data for flow0 B packages see vincotech.com website.

**UL recognition and file number**

This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.