## Final datasheet

## EasyPACK™ 2B module with TRENCHSTOP™ 5 and RAPID 1 diode and PressFIT / NTC

### Features


Typical appearance

- Electrical features
  - $V_{CES}$ = 650 V
  - $I_{C\ nom}$ = 150 A / $I_{CRM}$ = 300 A
  - Increased blocking voltage capability up to 650 V
  - Low inductive design
  - Low switching losses
  - Low $V_{CE,sat}$
  - Suitable Infineon gate drivers can be found under https://www.infineon.com/gdfinder
- Mechanical features
  - $Al_2O_3$ substrate with low thermal resistance
  - Compact design
  - PressFIT contact technology
  - Rugged mounting due to integrated mounting clamps

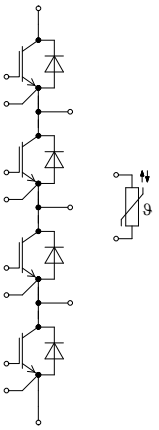
### Potential applications

- Three-level applications
- Motor drives
- Solar applications

### Product validation

- Qualified for industrial applications according to the relevant tests of IEC 60747, 60749 and 60068

### Description



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# 1 Package

**Table 1 Insulation coordination**

| Parameter | Symbol | Note or test condition | Values | Unit |
|---|---|---|---|---|
| Isolation test voltage | $V_{ISOL}$ | RMS, f = 50 Hz, *t* = 1 min | 2.5 | kV |
| Isolation test voltage NTC | $V_{ISOL(NTC)}$ | RMS, f = 50 Hz, *t* = 60 s | 2.5 | kV |
| Internal isolation | | basic insulation (class 1, IEC 61140) | $Al_2O_3$ | |
| Comparative tracking index | *CTI* | | > 200 | |
| Relative thermal index (electrical) | *RTI* | housing | 140 | °C |

**Table 2 Characteristic values**

| Parameter | Symbol | Note or test condition | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Stray inductance module | $L_{sCE}$ | | | 22 | | nH |
| Module lead resistance, terminals - chip | $R_{CC'+EE'}$ | $T_H$ = 25 °C, per switch | | 2.8 | | mΩ |
| Storage temperature | $T_{stg}$ | | -40 | | 125 | °C |
| Mounting force per clamp | *F* | | 40 | | 80 | N |
| Weight | *G* | | | 39 | | g |

***Note**: The current under continuous operation is limited to 25A rms per connector pin.*

# 2 IGBT, T1 / T4

**Table 3 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Collector-emitter voltage | $V_{CES}$ | | $T_{vj}$ = 25 °C | 650 | V |
| Implemented collector current | $I_{CN}$ | | | 50 | A |
| Continuous DC collector current | $I_{CDC}$ | $T_{vj\,max}$ = 175 °C | $T_H$ = 65 °C | 45 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{vj\,op}$ | | 100 | A |
| Gate-emitter peak voltage | $V_{GES}$ | | | ±20 | V |

**Table 4 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Collector-emitter saturation voltage | $V_{CE\,sat}$ | $I_C$ = 50 A, $V_{GE}$ = 15 V | $T_{vj}$ = 25 °C | | 1.42 | 1.90 | V |
| | | | $T_{vj}$ = 125 °C | | 1.53 | | |
| | | | $T_{vj}$ = 150 °C | | 1.56 | | |
| Gate threshold voltage | $V_{GEth}$ | $I_C$ = 0.5 mA, $V_{CE}$ = $V_{GE}$, $T_{vj}$ = 25 °C | | 3.25 | 4.00 | 4.75 | V |
| Gate charge | $Q_G$ | $V_{GE}$ = ±15 V, $V_{CC}$ = 400 V, $T_{vj}$ = 25 °C | | | 0.21 | | µC |
| Internal gate resistor | $R_{Gint}$ | $T_{vj}$ = 25 °C | | | 0 | | Ω |
| Input capacitance | $C_{ies}$ | $f$ = 100 kHz, $T_{vj}$ = 25 °C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | | 3.56 | | nF |
| Reverse transfer capacitance | $C_{res}$ | $f$ = 100 kHz, $T_{vj}$ = 25 °C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | | 0.013 | | nF |
| Collector-emitter cut-off current | $I_{CES}$ | $V_{CE}$ = 650 V, $V_{GE}$ = 0 V | $T_{vj}$ = 25 °C | | | 45 | mA |
| Gate-emitter leakage current | $I_{GES}$ | $V_{CE}$ = 0 V, $V_{GE}$ = 20 V, $T_{vj}$ = 25 °C | | | | 100 | nA |
| Turn-on delay time (inductive load) | $t_{don}$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.015 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.015 | | |
| | | | $T_{vj}$ = 150 °C | | 0.015 | | |
| Rise time (inductive load) | $t_r$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.014 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.016 | | |
| | | | $T_{vj}$ = 150 °C | | 0.016 | | |
| Turn-off delay time (inductive load) | $t_{doff}$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Goff}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.084 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.102 | | |
| | | | $T_{vj}$ = 150 °C | | 0.104 | | |
| Fall time (inductive load) | $t_f$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Goff}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.015 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.044 | | |
| | | | $T_{vj}$ = 150 °C | | 0.05 | | |
| Turn-on energy loss per pulse | $E_{on}$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $L_\sigma$ = 35 nH, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω, di/dt = 2450 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.71 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.9 | | |
| | | | $T_{vj}$ = 150 °C | | 0.96 | | |
| Turn-off energy loss per pulse | $E_{off}$ | $I_C$ = 50 A, $V_{CC}$ = 300 V, $L_\sigma$ = 35 nH, $V_{GE}$ = ±15 V, $R_{Goff}$ = 12 Ω, dv/dt = 6700 V/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.3 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.53 | | |
| | | | $T_{vj}$ = 150 °C | | 0.6 | | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per IGBT, $\lambda_{grease}$ = 5 W/(m·K) | | | 1.09 | | K/W |

**(table continues...)**

**Table 4 (continued) Characteristic values**

| Parameter | Symbol | Note or test condition | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Temperature under switching conditions | $T_{vj\,op}$ | | -40 | | 150 | °C |

## 3 IGBT, T2 / T3

**Table 5 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Collector-emitter voltage | $V_{CES}$ | | $T_{vj}$ = 25 °C | 650 | V |
| Implemented collector current | $I_{CN}$ | | | 150 | A |
| Continuous DC collector current | $I_{CDC}$ | $T_{vj\,max}$ = 175 °C | $T_H$ = 65 °C | 120 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{vj\,op}$ | | 300 | A |
| Gate-emitter peak voltage | $V_{GES}$ | | | ±20 | V |

**Table 6 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Collector-emitter saturation voltage | $V_{CE\,sat}$ | $I_C$ = 150 A, $V_{GE}$ = 15 V | $T_{vj}$ = 25 °C | | 1.42 | 1.90 | V |
| | | | $T_{vj}$ = 125 °C | | 1.53 | | |
| | | | $T_{vj}$ = 150 °C | | 1.56 | | |
| Gate threshold voltage | $V_{GEth}$ | $I_C$ = 1.5 mA, $V_{CE}$ = $V_{GE}$, $T_{vj}$ = 25 °C | | 3.25 | 4.00 | 4.75 | V |
| Gate charge | $Q_G$ | $V_{GE}$ = ±15 V, $V_{CC}$ = 400 V, $T_{vj}$ = 25 °C | | | 0.63 | | µC |
| Internal gate resistor | $R_{Gint}$ | $T_{vj}$ = 25 °C | | | 0 | | Ω |
| Input capacitance | $C_{ies}$ | $f$ = 100 kHz, $T_{vj}$ = 25 °C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | | 10.34 | | nF |
| Reverse transfer capacitance | $C_{res}$ | $f$ = 100 kHz, $T_{vj}$ = 25 °C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | | 0.036 | | nF |
| Collector-emitter cut-off current | $I_{CES}$ | $V_{CE}$ = 650 V, $V_{GE}$ = 0 V | $T_{vj}$ = 25 °C | | | 51 | µA |
| Gate-emitter leakage current | $I_{GES}$ | $V_{CE}$ = 0 V, $V_{GE}$ = 20 V, $T_{vj}$ = 25 °C | | | | 100 | nA |
| Turn-on delay time (inductive load) | $t_{don}$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.04 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.038 | | |
| | | | $T_{vj}$ = 150 °C | | 0.037 | | |

**(table continues...)**

**Table 6 (continued) Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Rise time (inductive load) | $t_r$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω | $T_{vj}$ = 25 °C | | 0.05 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.053 | | |
| | | | $T_{vj}$ = 150 °C | | 0.054 | | |
| Turn-off delay time (inductive load) | $t_{doff}$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Goff}$ = 10 Ω | $T_{vj}$ = 25 °C | | 0.149 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.166 | | |
| | | | $T_{vj}$ = 150 °C | | 0.17 | | |
| Fall time (inductive load) | $t_f$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $V_{GE}$ = ±15 V, $R_{Goff}$ = 10 Ω | $T_{vj}$ = 25 °C | | 0.016 | | µs |
| | | | $T_{vj}$ = 125 °C | | 0.036 | | |
| | | | $T_{vj}$ = 150 °C | | 0.041 | | |
| Turn-on energy loss per pulse | $E_{on}$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $L_\sigma$ = 35 nH, $V_{GE}$ = ±15 V, $R_{Gon}$ = 12 Ω, di/dt = 2350 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 3.7 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 4.52 | | |
| | | | $T_{vj}$ = 150 °C | | 4.63 | | |
| Turn-off energy loss per pulse | $E_{off}$ | $I_C$ = 150 A, $V_{CC}$ = 300 V, $L_\sigma$ = 35 nH, $V_{GE}$ = ±15 V, $R_{Goff}$ = 10 Ω, dv/dt = 7800 V/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 1.16 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 2.92 | | |
| | | | $T_{vj}$ = 150 °C | | 3.07 | | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per IGBT, $\lambda_{grease}$ = 5 W/(m·K) | | | 0.460 | | K/W |
| Temperature under switching conditions | $T_{vj\,op}$ | | | -40 | | 150 | °C |

# 4 Diode, D1 / D4

**Table 7 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 650 | V |
| Continuous DC forward current | $I_F$ | | | 100 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_P$ = 1 ms | | 200 | A |
| $I^2t$ - value | $I^2t$ | $t_P$ = 10 ms, $V_R$ = 0 V | $T_{vj}$ = 125 °C | 880 | $A^2s$ |
| | | | $T_{vj}$ = 150 °C | 820 | |

**Table 8 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 100 A | $T_{vj}$ = 25 °C | | 1.65 | 2.15 | V |
| | | | $T_{vj}$ = 125 °C | | 1.55 | | |
| | | | $T_{vj}$ = 150 °C | | 1.50 | | |
| Peak reverse recovery current | $I_{RM}$ | $V_{CC}$ = 300 V, $I_F$ = 100 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2350 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 43 | | A |
| | | | $T_{vj}$ = 125 °C | | 61 | | |
| | | | $T_{vj}$ = 150 °C | | 65 | | |
| Recovered charge | $Q_r$ | $V_{CC}$ = 300 V, $I_F$ = 100 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2350 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 2.55 | | µC |
| | | | $T_{vj}$ = 125 °C | | 5.4 | | |
| | | | $T_{vj}$ = 150 °C | | 6.3 | | |
| Reverse recovery energy | $E_{rec}$ | $V_{CC}$ = 300 V, $I_F$ = 100 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2350 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.38 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.81 | | |
| | | | $T_{vj}$ = 150 °C | | 0.96 | | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode, $\lambda_{grease}$ = 5 W/(m·K) | | | 0.700 | | K/W |
| Temperature under switching conditions | $T_{vj\,op}$ | | | -40 | | 150 | °C |

# 5 Diode, D2 / D3

**Table 9 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 650 | V |
| Continuous DC forward current | $I_F$ | | | 50 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_P$ = 1 ms | | 100 | A |
| $I^2t$ - value | $I^2t$ | $t_P$ = 10 ms, $V_R$ = 0 V | $T_{vj}$ = 125 °C | 270 | $A^2s$ |
| | | | $T_{vj}$ = 150 °C | 265 | |

**Table 10 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 50 A | $T_{vj}$ = 25 °C | | 1.65 | 2.15 | V |
| | | | $T_{vj}$ = 125 °C | | 1.55 | | |
| | | | $T_{vj}$ = 150 °C | | 1.50 | | |
| Peak reverse recovery current | $I_{RM}$ | $V_{CC}$ = 300 V, $I_F$ = 50 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2450 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 36.5 | | A |
| | | | $T_{vj}$ = 125 °C | | 47 | | |
| | | | $T_{vj}$ = 150 °C | | 52 | | |
| Recovered charge | $Q_r$ | $V_{CC}$ = 300 V, $I_F$ = 50 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2450 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 1.36 | | µC |
| | | | $T_{vj}$ = 125 °C | | 2.75 | | |
| | | | $T_{vj}$ = 150 °C | | 3.2 | | |
| Reverse recovery energy | $E_{rec}$ | $V_{CC}$ = 300 V, $I_F$ = 50 A, $V_{GE}$ = -15 V, -di$_F$/dt = 2450 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.22 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.51 | | |
| | | | $T_{vj}$ = 150 °C | | 0.61 | | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode, $\lambda_{grease}$ = 5 W/(m·K) | | | 1.33 | | K/W |
| Temperature under switching conditions | $T_{vj\,op}$ | | | -40 | | 150 | °C |

# 6 NTC-Thermistor

**Table 11 Characteristic values**

| Parameter | Symbol | Note or test condition | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Rated resistance | $R_{25}$ | $T_{NTC}$ = 25 °C | | 5 | | kΩ |
| Deviation of $R_{100}$ | $\Delta R/R$ | $T_{NTC}$ = 100 °C, $R_{100}$ = 493 Ω | -5 | | 5 | % |
| Power dissipation | $P_{25}$ | $T_{NTC}$ = 25 °C | | | 20 | mW |
| B-value | $B_{25/50}$ | $R_2 = R_{25} \exp[B_{25/50}(1/T_2\text{-}1/(298{,}15\ K))]$ | | 3375 | | K |
| B-value | $B_{25/80}$ | $R_2 = R_{25} \exp[B_{25/80}(1/T_2\text{-}1/(298{,}15\ K))]$ | | 3411 | | K |
| B-value | $B_{25/100}$ | $R_2 = R_{25} \exp[B_{25/100}(1/T_2\text{-}1/(298{,}15\ K))]$ | | 3433 | | K |

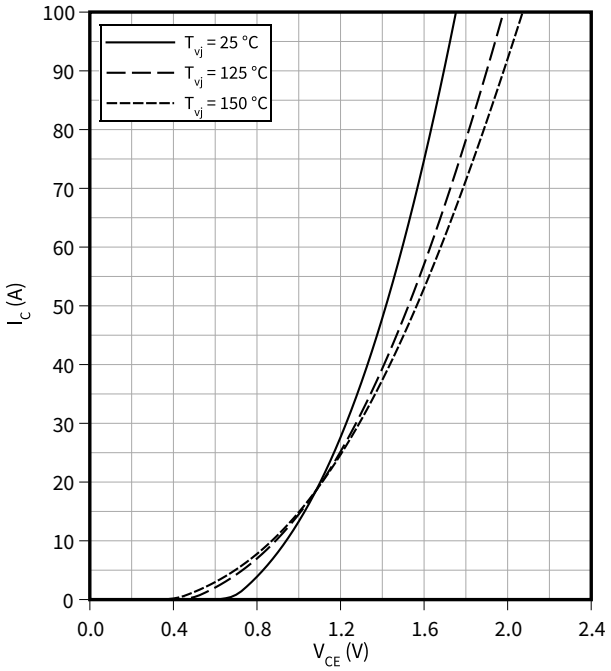
***Note**: For an analytical description of the NTC characteristics please refer to AN2009-10, chapter 4.*

# 7 Characteristics diagrams

**Output characteristic (typical), IGBT, T1 / T4**

$I_C = f(V_{CE})$

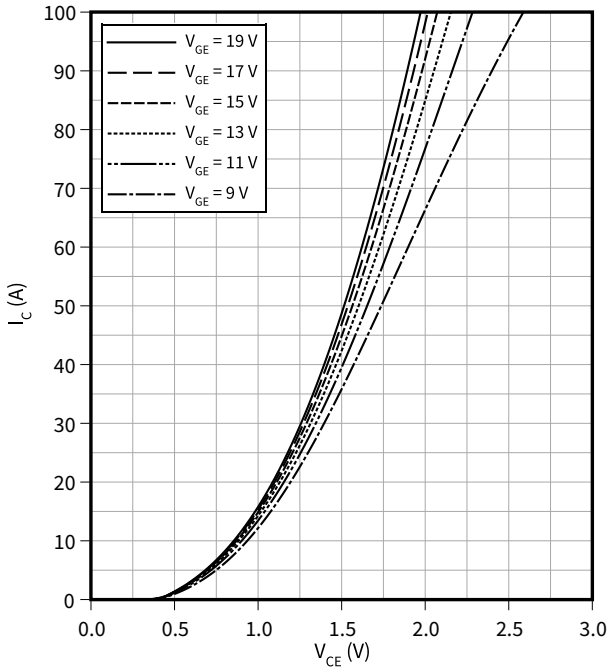
$V_{GE}$ = 15 V




**Output characteristic field (typical), IGBT, T1 / T4**

$I_C = f(V_{CE})$

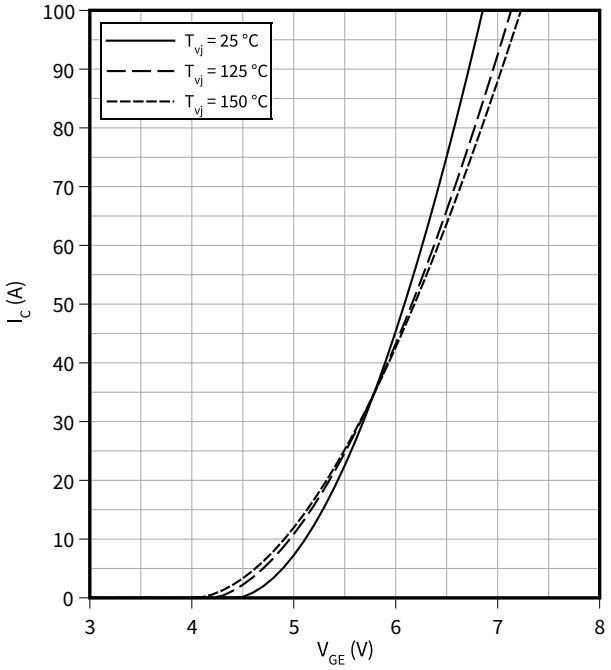
$T_{vj}$ = 150 °C




**Transfer characteristic (typical), IGBT, T1 / T4**

$I_C = f(V_{GE})$

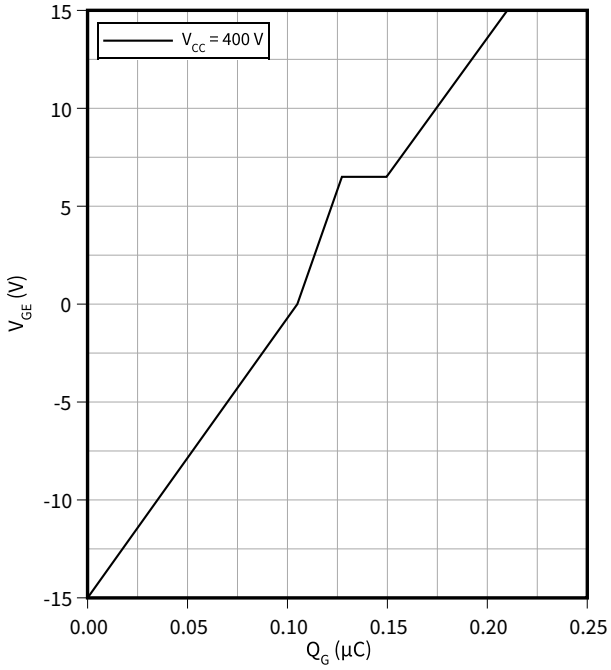
$V_{CE}$ = 20 V




**Gate charge characteristic (typical), IGBT, T1 / T4**

$V_{GE} = f(Q_G)$

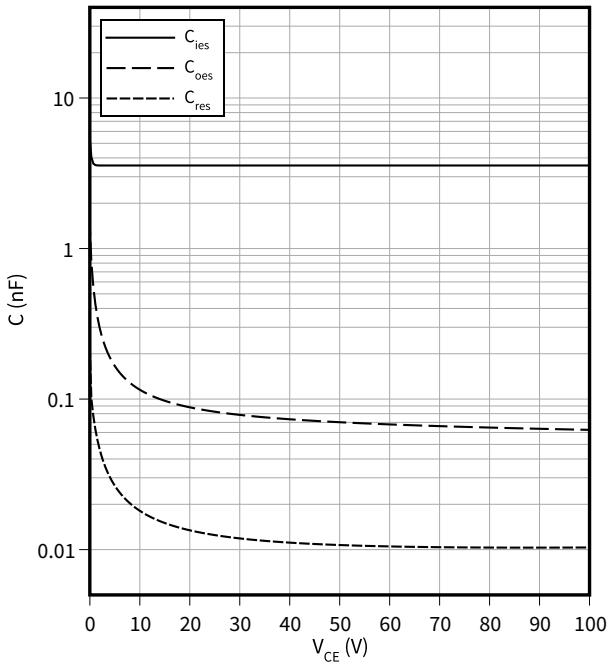
$I_C$ = 50 A, $T_{vj}$ = 25 °C



### Capacity characteristic (typical), IGBT, T1 / T4

$C = f(V_{CE})$

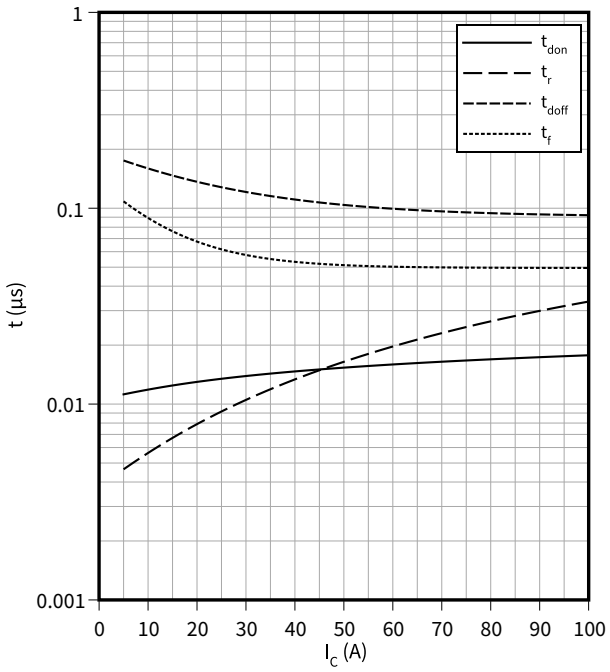
$f = 100\ kHz$, $V_{GE} = 0\ V$, $T_{vj} = 25\ °C$




### Switching times (typical), IGBT, T1 / T4

$t = f(I_C)$

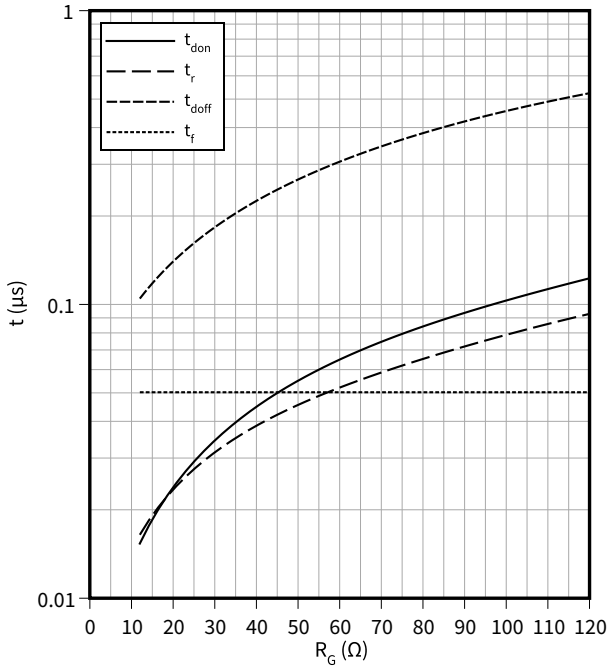
$R_{Goff} = 12\ \Omega$, $R_{Gon} = 12\ \Omega$, $V_{GE} = \pm 15\ V$, $V_{CC} = 300\ V$, $T_{vj} = 150\ °C$




### Switching times (typical), IGBT, T1 / T4

$t = f(R_G)$

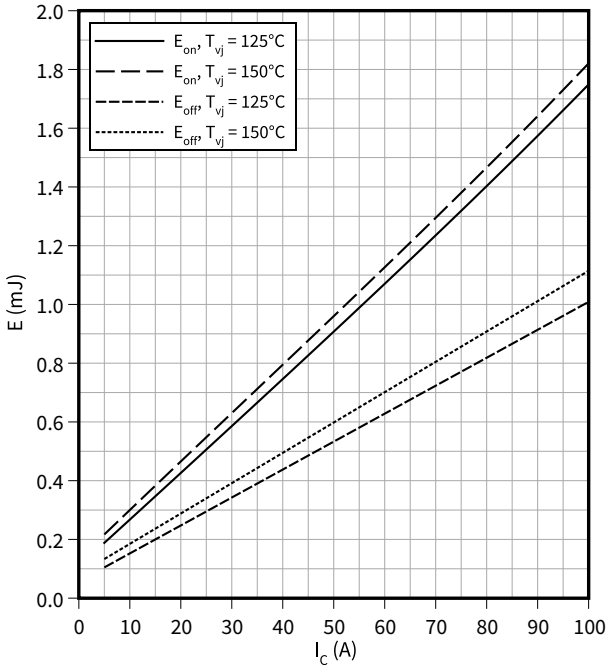
$V_{GE} = \pm 15\ V$, $I_C = 50\ A$, $V_{CC} = 300\ V$, $T_{vj} = 150\ °C$




### Switching losses (typical), IGBT, T1 / T4

$E = f(I_C)$

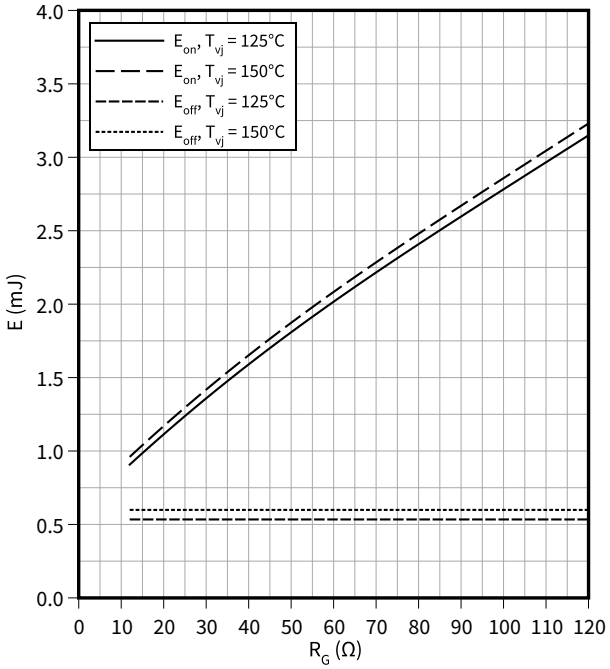
$R_{Goff} = 12\ \Omega$, $R_{Gon} = 12\ \Omega$, $V_{GE} = \pm 15\ V$, $V_{CC} = 300\ V$



### Switching losses (typical), IGBT, T1 / T4

$E = f(R_G)$

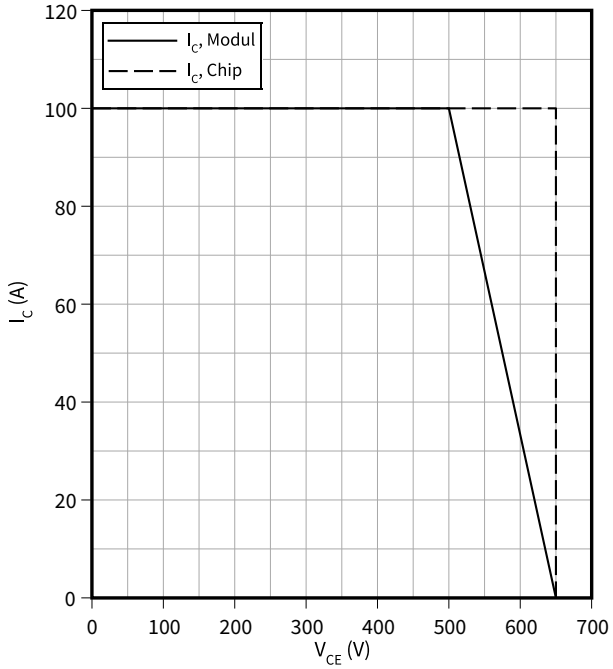
$V_{GE} = \pm 15$ V, $I_C = 50$ A, $V_{CC} = 300$ V




### Reverse bias safe operating area (RBSOA), IGBT, T1 / T4

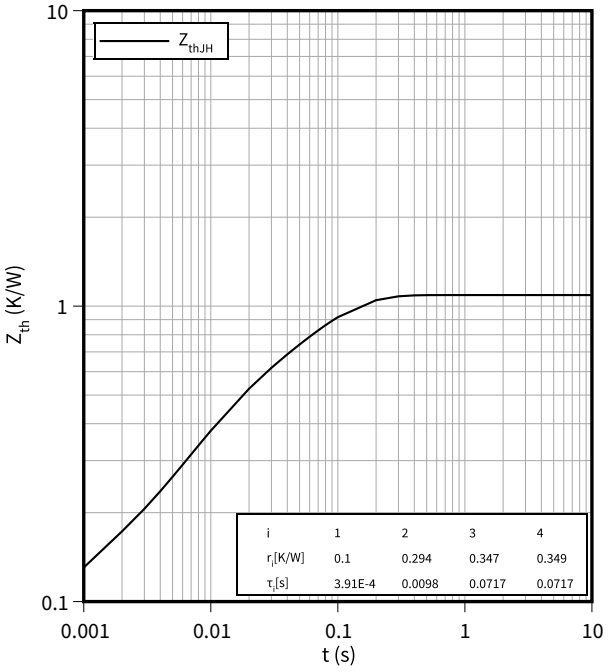
$I_C = f(V_{CE})$

$R_{Goff} = 12\ \Omega$, $V_{GE} = \pm 15$ V, $T_{vj} = 150$ °C




### Transient thermal impedance, IGBT, T1 / T4

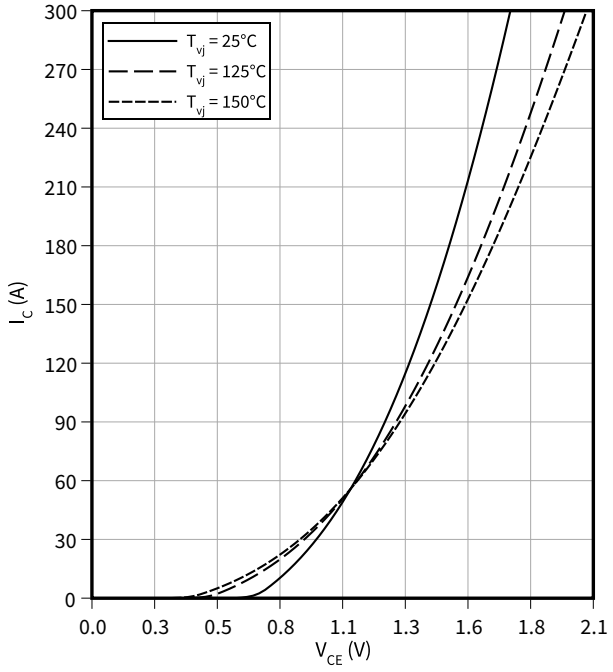
$Z_{th} = f(t)$




### Output characteristic (typical), IGBT, T2 / T3

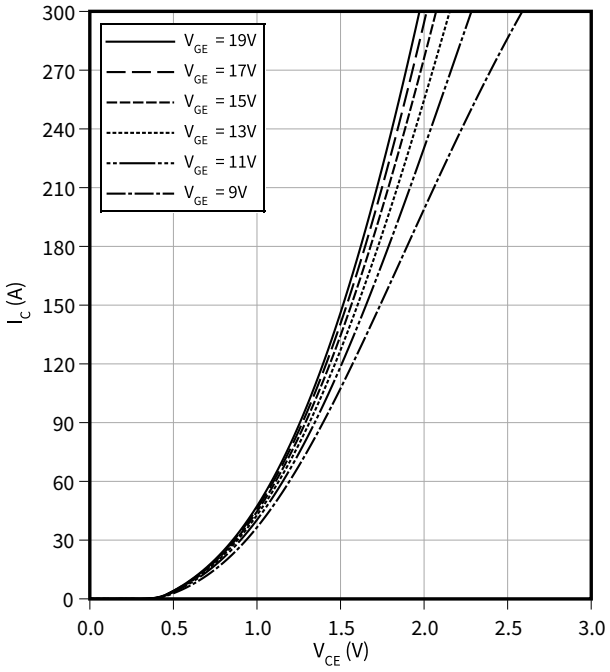
$I_C = f(V_{CE})$

$V_{GE} = 15$ V



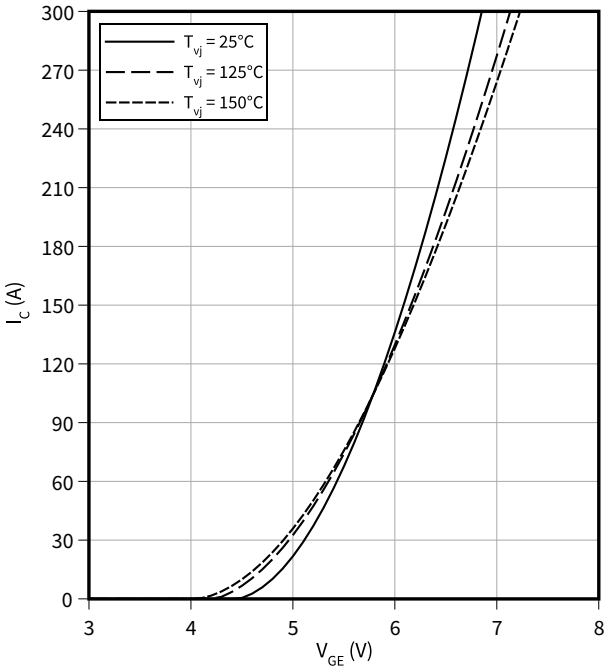
### Output characteristic field (typical), IGBT, T2 / T3

$I_C = f(V_{CE})$
$T_{vj} = 150\ °C$



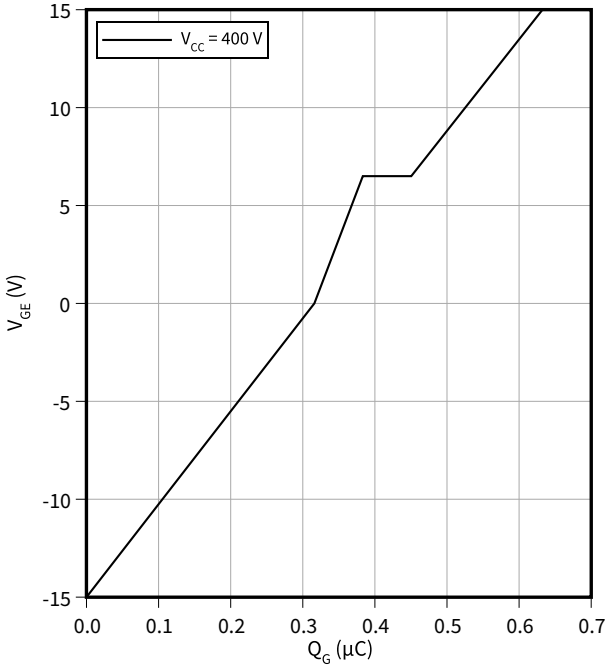

### Transfer characteristic (typical), IGBT, T2 / T3

$I_C = f(V_{GE})$
$V_{CE} = 20\ V$



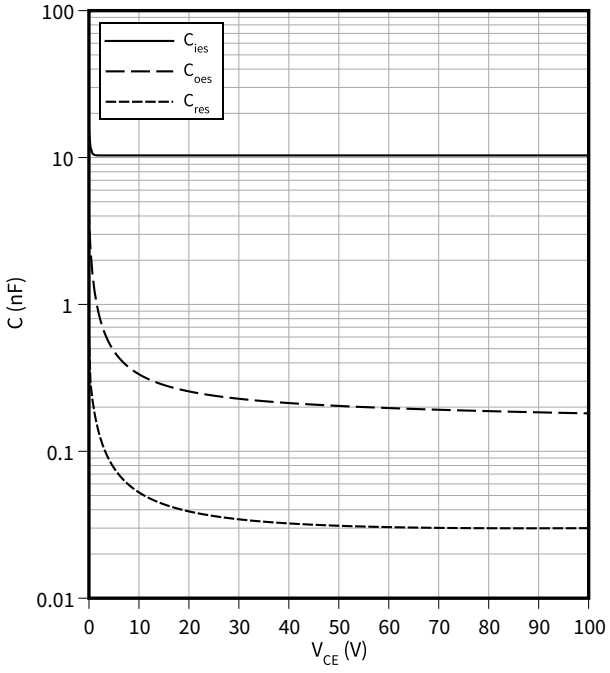

### Gate charge characteristic (typical), IGBT, T2 / T3

$V_{GE} = f(Q_G)$
$I_C = 150\ A,\ T_{vj} = 25\ °C$




### Capacity characteristic (typical), IGBT, T2 / T3

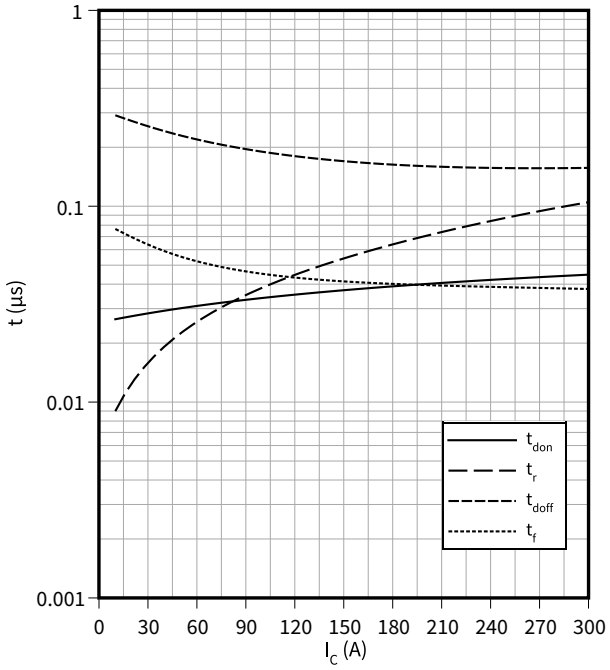
$C = f(V_{CE})$
$f = 100\ kHz,\ V_{GE} = 0\ V,\ T_{vj} = 25\ °C$



### Switching times (typical), IGBT, T2 / T3

$t = f(I_C)$

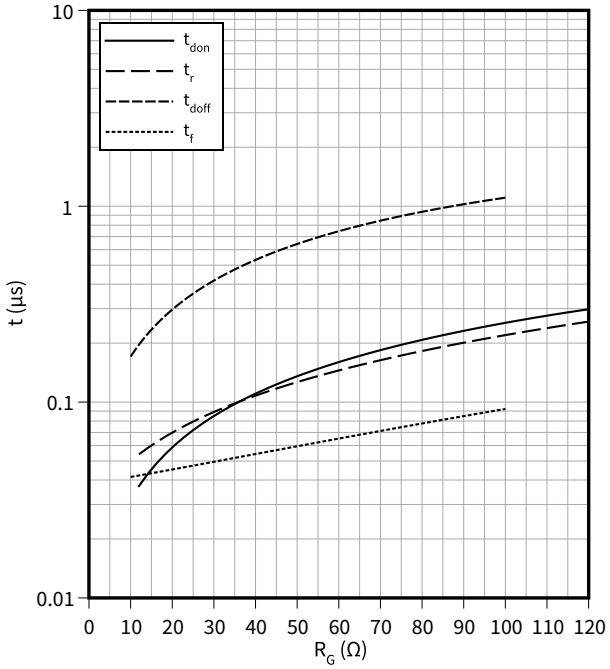
$R_{Goff} = 10\ \Omega$, $R_{Gon} = 12\ \Omega$, $V_{GE} = \pm 15$ V, $V_{CC} = 300$ V, $T_{vj} = 150$ °C




### Switching times (typical), IGBT, T2 / T3

$t = f(R_G)$

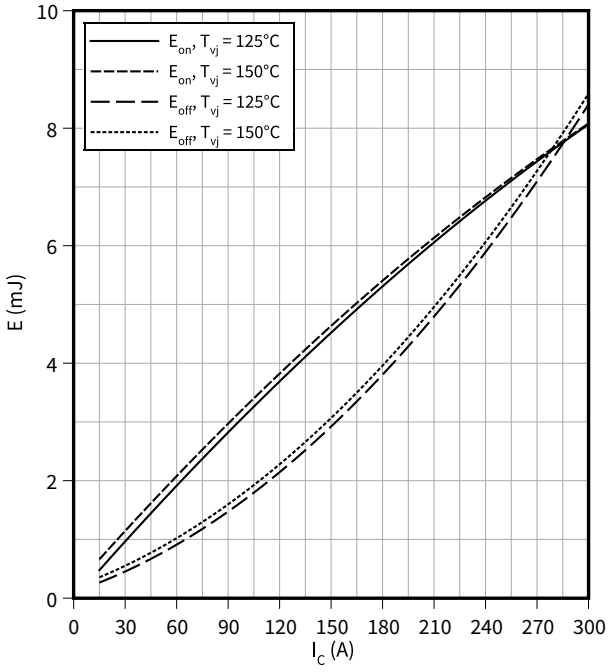
$V_{GE} = \pm 15$ V, $I_C = 150$ A, $V_{CC} = 300$ V, $T_{vj} = 150$ °C




### Switching losses (typical), IGBT, T2 / T3

$E = f(I_C)$

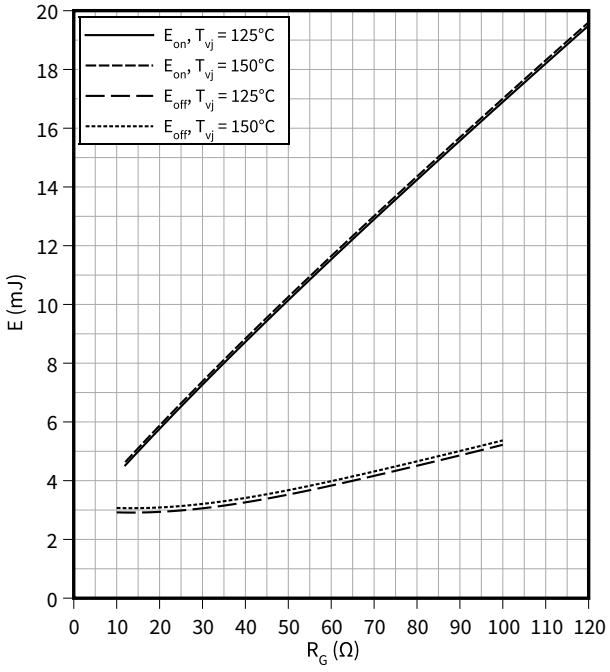
$R_{Goff} = 10\ \Omega$, $R_{Gon} = 12\ \Omega$, $V_{GE} = \pm 15$ V, $V_{CC} = 300$ V




### Switching losses (typical), IGBT, T2 / T3

$E = f(R_G)$

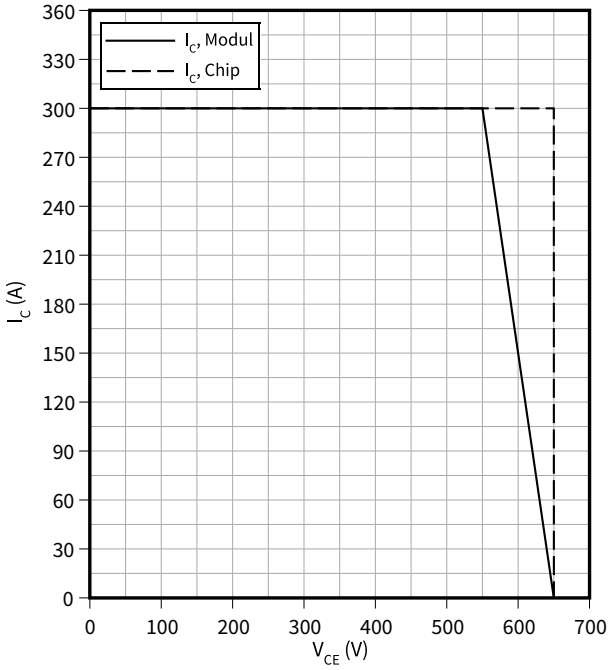
$V_{GE} = \pm 15$ V, $I_C = 150$ A, $V_{CC} = 300$ V



### Reverse bias safe operating area (RBSOA), IGBT, T2 / T3

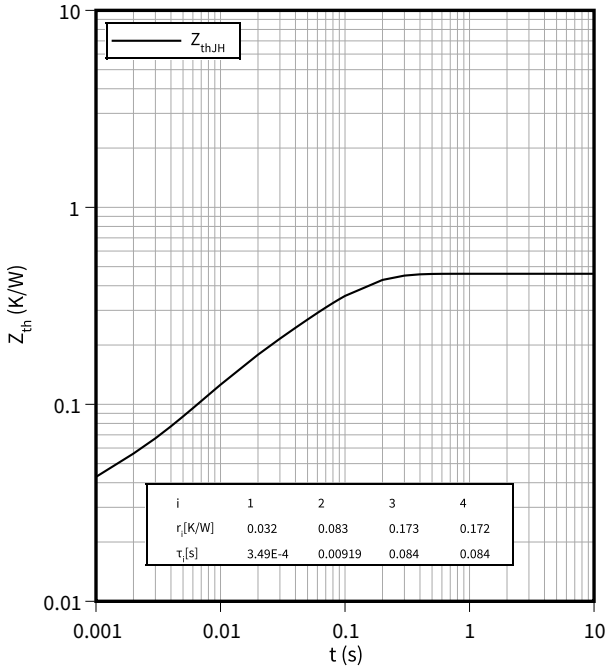
$I_C = f(V_{CE})$

$R_{Goff} = 10\ \Omega$, $V_{GE} = \pm 15$ V, $T_{vj} = 150$ °C



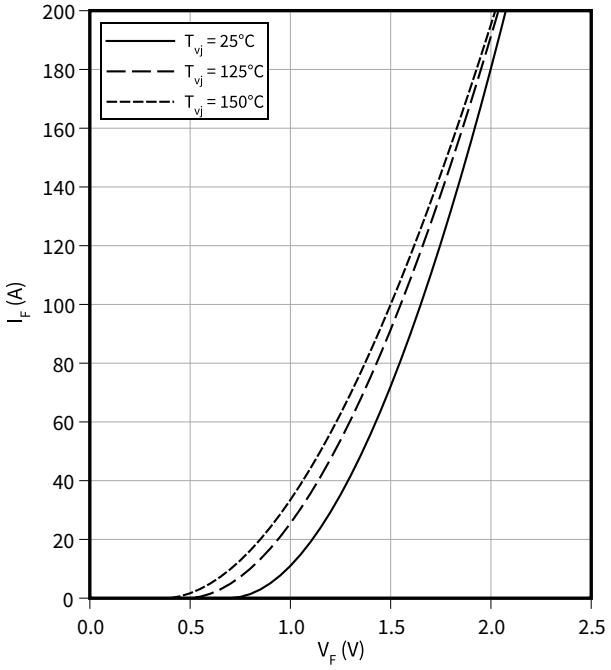

### Transient thermal impedance, IGBT, T2 / T3

$Z_{th} = f(t)$




### Forward characteristic (typical), Diode, D1 / D4

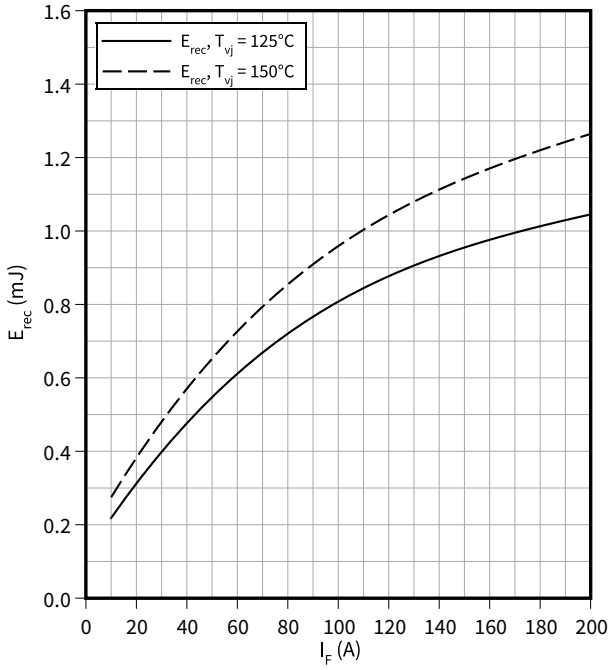
$I_F = f(V_F)$




### Switching losses (typical), Diode, D1 / D4

$E_{rec} = f(I_F)$

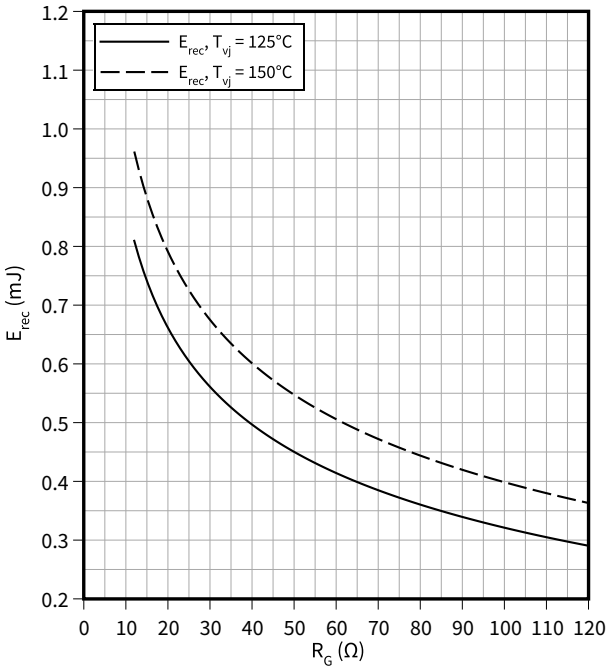
$R_{Gon} = 12\ \Omega$, $V_{CE} = 300$ V



### Switching losses (typical), Diode, D1 / D4

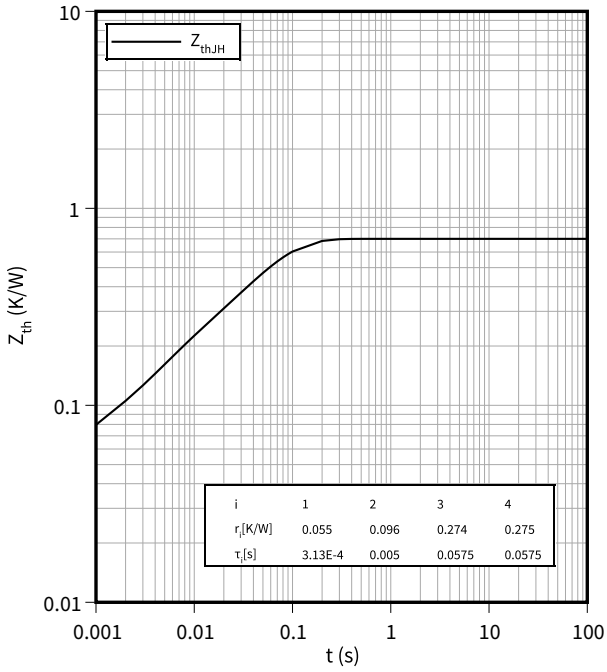
$E_{rec} = f(R_G)$

$V_{CE} = 300\ V$, $I_F = 100\ A$



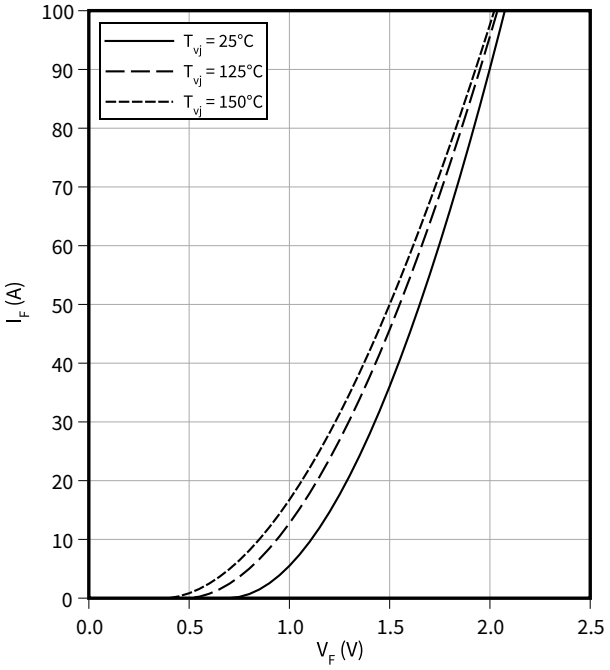

### Transient thermal impedance, Diode, D1 / D4

$Z_{th} = f(t)$




### Forward characteristic (typical), Diode, D2 / D3

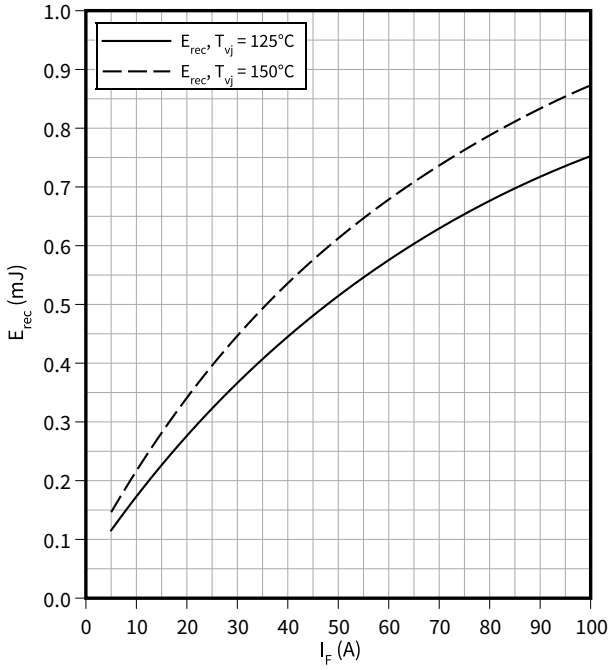
$I_F = f(V_F)$




### Switching losses (typical), Diode, D2 / D3

$E_{rec} = f(I_F)$

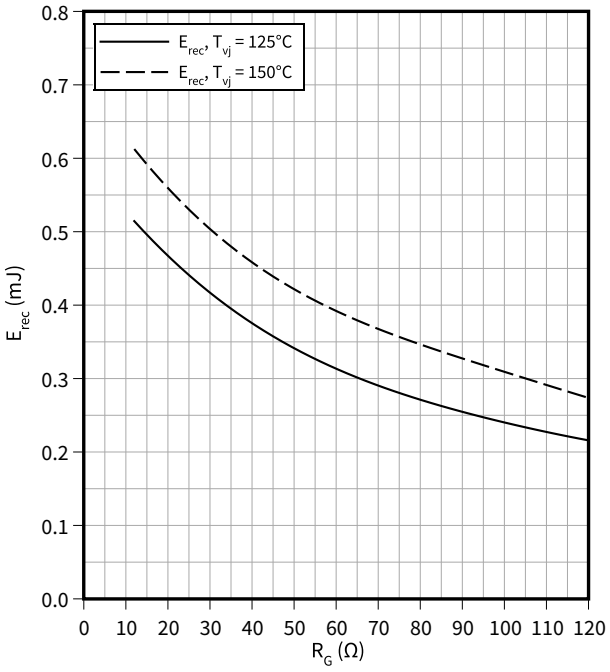
$R_{Gon} = 12\ \Omega$, $V_{CE} = 300\ V$



### Switching losses (typical), Diode, D2 / D3

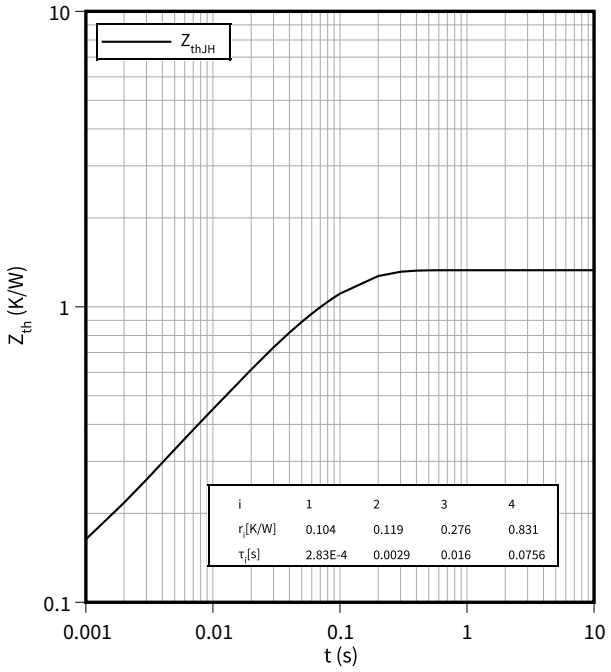
$E_{rec} = f(R_G)$

$V_{CE} = 300\ V$, $I_F = 50\ A$



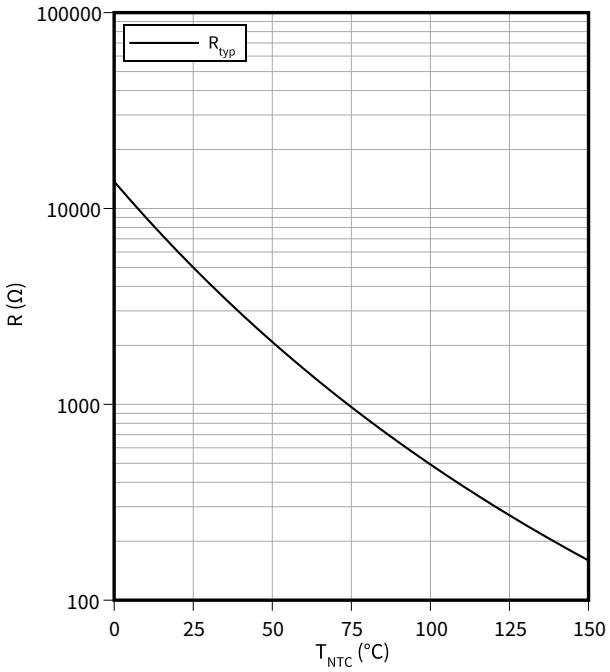

### Transient thermal impedance, Diode, D2 / D3

$Z_{th} = f(t)$




### Temperature characteristic (typical), NTC-Thermistor

$R = f(T_{NTC})$



# 8 Circuit diagram

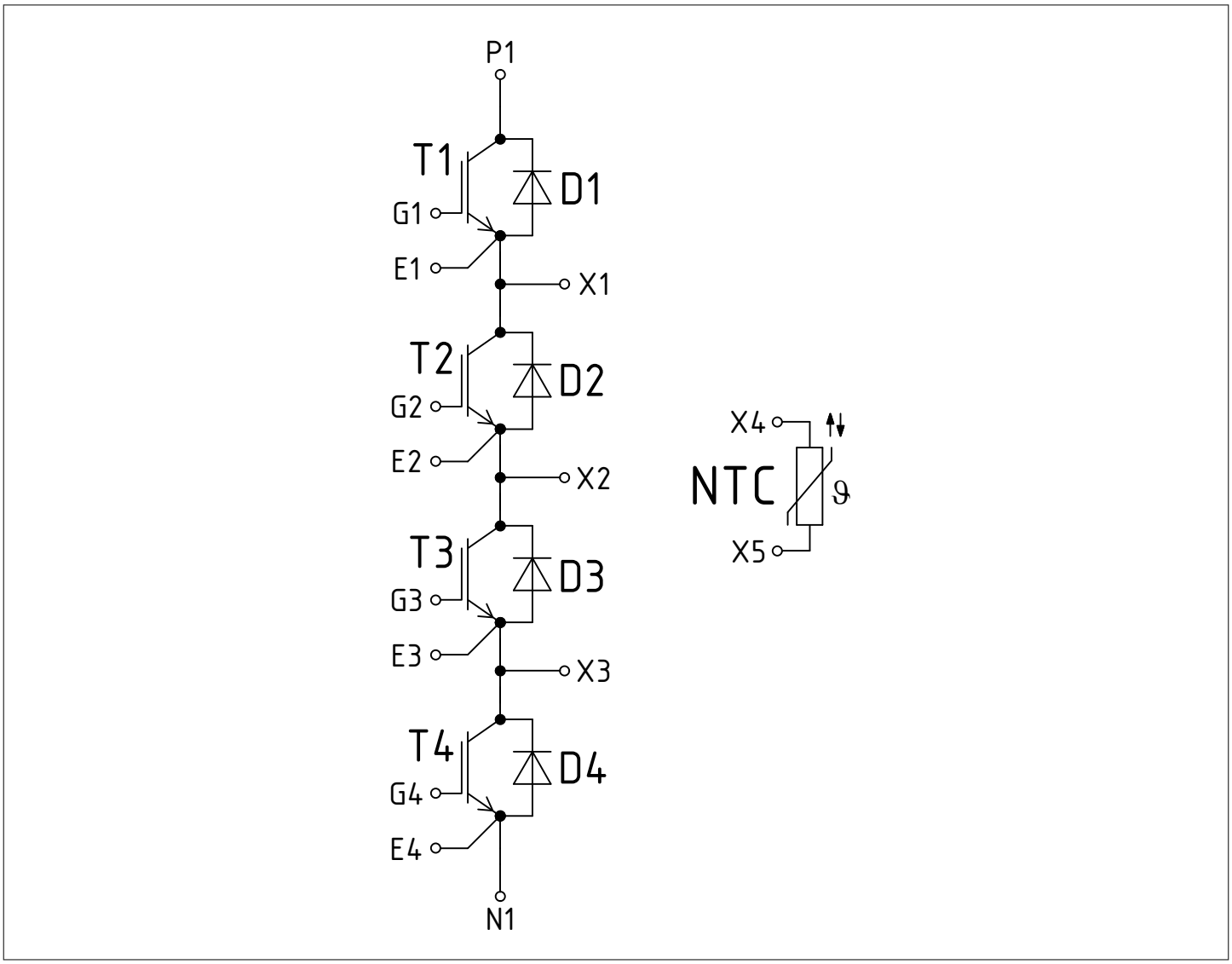



**Figure 1**

# 9 Package outlines

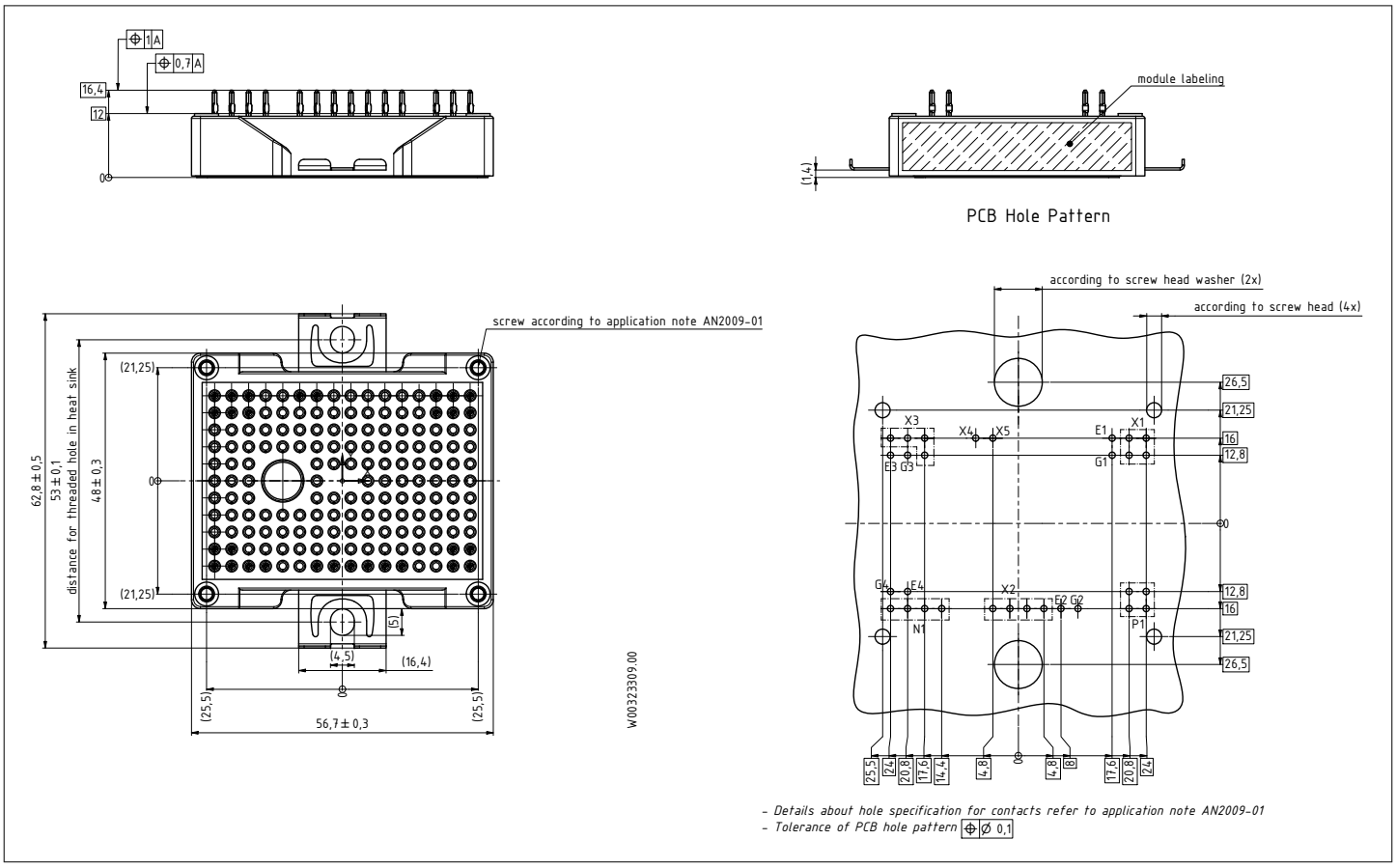



**Figure 2**

# 10 Module label code

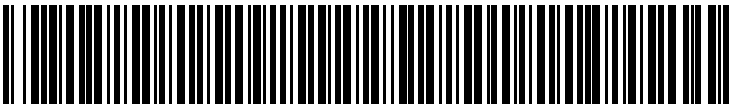
| Module label code | | | |
|---|---|---|---|
| Code format | Data Matrix | | Barcode Code128 |
| Encoding | ASCII text | | Code Set A |
| Symbol size | 16x16 | | 23 digits |
| Standard | IEC24720 and IEC16022 | | IEC8859-1 |
| Code content | *Content*<br>Module serial number<br>Module material number<br>Production order number<br>Date code (production year)<br>Date code (production week) | *Digit*<br>1 – 5<br>6 - 11<br>12 - 19<br>20 – 21<br>22 – 23 | *Example*<br>71549<br>142846<br>55054991<br>15<br>30 |
| Example |  7154914284655054991530 |  7154914284655054991530 | |

**Figure 3**

# Revision history

| Document version | Date of release | Description of changes |
|---|---|---|
| 1.00 | 2026-06-16 | Initial version |

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**Email: erratum@infineon.com**

**Document reference**
**IFX-ABR617-001**

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