## Preliminary datasheet
## EasyPACK™ module with CoolSiC™ Trench MOSFET and PressFIT / NTC

### Features

Typical appearance

- Electrical features
  - $V_{DSS}$ = 1200 V
  - $I_{DN}$ = 25 A / $I_{DRM}$ = 50 A
  - High current density
  - Low inductive design
- Mechanical features
  - PressFIT contact technology
  - Integrated NTC temperature sensor
  - Rugged mounting due to integrated mounting clamps

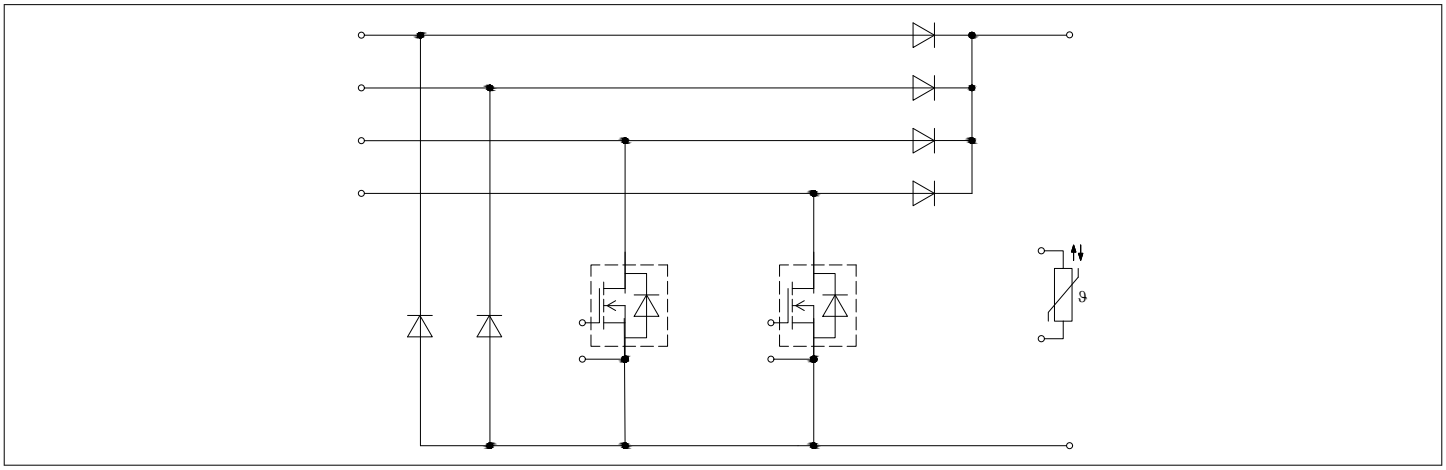
### Potential applications

- 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 | 3.0 | kV |
| Internal isolation | | basic insulation (class 1, IEC 61140) | $Al_2O_3$ | |
| Creepage distance | $d_{Creep}$ | terminal to heatsink | 11.5 | mm |
| Creepage distance | $d_{Creep}$ | terminal to terminal | 6.3 | mm |
| Clearance | $d_{Clear}$ | terminal to heatsink | 10.0 | mm |
| Clearance | $d_{Clear}$ | terminal to terminal | 5.0 | mm |
| 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 | $L_{sCE}$ | | | 10 | | nH |
| Module lead resistance, terminals - chip | $R_{AA'+CC'}$ | $T_H$ = 25 °C, per switch | | 3.2 | | mΩ |
| Module lead resistance, terminals - chip | $R_{CC'+EE'}$ | $T_H$ = 25 °C, per switch | | 3.2 | | mΩ |
| Storage temperature | $T_{stg}$ | | -40 | | 125 | °C |
| Mounting force per clamp | *F* | | 20 | | 50 | N |
| Weight | *G* | | | 24 | | g |

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

# 2 MOSFET

**Table 3 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Drain-source voltage | $V_{DSS}$ | | $T_{vj}$ = 25 °C | 1200 | V |
| Continuous DC drain current | $I_{DDC}$ | $T_{vj}$ = 175 °C, $V_{GS}$ = 18 V | $T_H$ = 70 °C | 25 | A |
| Repetitive peak drain current | $I_{DRM}$ | verified by design, $t_p$ limited by $T_{vjmax}$ | | 50 | A |
| Gate-source voltage, max. transient voltage | $V_{GS}$ | *D* < 0.01 | | -10/23 | V |

**(table continues...)**

**Table 3 (continued) Maximum rated values**

| Parameter | Symbol | Note or test condition | Values | Unit |
|---|---|---|---|---|
| Gate-source voltage, max. static voltage | $V_{GS}$ | | -7/20 | V |

**Table 4 Recommended values**

| Parameter | Symbol | Note or test condition | Values | Unit |
|---|---|---|---|---|
| On-state gate voltage | $V_{GS(on)}$ | | 15...18 | V |
| Off-state gate voltage | $V_{GS(off)}$ | | -5...0 | V |

**Table 5 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Drain-source on-resistance | $R_{DS(on)}$ | $I_D$ = 25 A | $V_{GS}$ = 18 V, $T_{vj}$ = 25 °C | | 32.3 | | mΩ |
| | | | $V_{GS}$ = 18 V, $T_{vj}$ = 125 °C | | 52.2 | | |
| | | | $V_{GS}$ = 18 V, $T_{vj}$ = 175 °C | | 69.4 | | |
| | | | $V_{GS}$ = 15 V, $T_{vj}$ = 25 °C | | 38.8 | | |
| Gate threshold voltage | $V_{GS(th)}$ | $I_D$ = 10 mA, $V_{DS}$ = $V_{GS}$, $T_{vj}$ = 25 °C, (tested after 1ms pulse at $V_{GS}$ = +20 V) | | 3.45 | 4.3 | 5.15 | V |
| Total gate charge | $Q_G$ | $V_{DD}$ = 800 V, $V_{GS}$ = -3/18 V | | | 0.074 | | µC |
| Internal gate resistor | $R_{Gint}$ | $T_{vj}$ = 25 °C | | | 8.2 | | Ω |
| Input capacitance | $C_{ISS}$ | $f$ = 100 kHz, $V_{DS}$ = 800 V, $V_{GS}$ = 0 V | $T_{vj}$ = 25 °C | | 2.2 | | nF |
| Output capacitance | $C_{OSS}$ | $f$ = 100 kHz, $V_{DS}$ = 800 V, $V_{GS}$ = 0 V | $T_{vj}$ = 25 °C | | 0.105 | | nF |
| Reverse transfer capacitance | $C_{rss}$ | $f$ = 100 kHz, $V_{DS}$ = 800 V, $V_{GS}$ = 0 V | $T_{vj}$ = 25 °C | | 0.007 | | nF |
| $C_{OSS}$ stored energy | $E_{OSS}$ | $V_{DS}$ = 800 V, $V_{GS}$ = -3/18 V, $T_{vj}$ = 25 °C | | | 43 | | µJ |
| Drain-source leakage current | $I_{DSS}$ | $V_{DS}$ = 1200 V, $V_{GS}$ = -3 V | $T_{vj}$ = 25 °C | | 0.015 | 120 | µA |
| Gate-source leakage current | $I_{GSS}$ | $V_{DS}$ = 0 V, $T_{vj}$ = 25 °C | $V_{GS}$ = 20 V | | | 400 | nA |
| Turn-on delay time (inductive load) | $t_{d\,on}$ | $I_D$ = 25 A, $R_{Gon}$ = 5.6 Ω, $V_{DD}$ = 600 V, $V_{GS}$ = -3/18 V | $T_{vj}$ = 25 °C | | 32 | | ns |
| | | | $T_{vj}$ = 125 °C | | 32 | | |
| | | | $T_{vj}$ = 175 °C | | 32 | | |

**(table continues...)**

**Table 5 (continued) Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Rise time (inductive load) | $t_r$ | $I_D$ = 25 A, $R_{Gon}$ = 5.6 Ω, $V_{DD}$ = 600 V, $V_{GS}$ = -3/18 V | $T_{vj}$ = 25 °C | | 26 | | ns |
| | | | $T_{vj}$ = 125 °C | | 26 | | |
| | | | $T_{vj}$ = 175 °C | | 26 | | |
| Turn-off delay time (inductive load) | $t_{d\,off}$ | $I_D$ = 25 A, $R_{Goff}$ = 1.5 Ω, $V_{DD}$ = 600 V, $V_{GS}$ = -3/18 V | $T_{vj}$ = 25 °C | | 48 | | ns |
| | | | $T_{vj}$ = 125 °C | | 53 | | |
| | | | $T_{vj}$ = 175 °C | | 55 | | |
| Fall time (inductive load) | $t_f$ | $I_D$ = 25 A, $R_{Goff}$ = 1.5 Ω, $V_{DD}$ = 600 V, $V_{GS}$ = -3/18 V | $T_{vj}$ = 25 °C | | 11 | | ns |
| | | | $T_{vj}$ = 125 °C | | 11 | | |
| | | | $T_{vj}$ = 175 °C | | 11 | | |
| Turn-on energy loss per pulse | $E_{on}$ | $I_D$ = 25 A, $V_{DD}$ = 600 V, $L_\sigma$ = 35 nH, $V_{GS}$ = -3/18 V, $R_{Gon}$ = 5.6 Ω, di/dt = 2.3 kA/µs ($T_{vj}$ = 175 °C) | $T_{vj}$ = 25 °C | | 0.297 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.297 | | |
| | | | $T_{vj}$ = 175 °C | | 0.297 | | |
| Turn-off energy loss per pulse | $E_{off}$ | $I_D$ = 25 A, $V_{DD}$ = 600 V, $L_\sigma$ = 35 nH, $V_{GS}$ = -3/18 V, $R_{Goff}$ = 1.5 Ω, dv/dt = 43.6 kV/µs ($T_{vj}$ = 175 °C) | $T_{vj}$ = 25 °C | | 0.057 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.057 | | |
| | | | $T_{vj}$ = 175 °C | | 0.057 | | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per MOSFET | | | 1.85 | | K/W |
| Temperature under switching conditions | $T_{vj\,op}$ | | | -40 | | 175 | °C |

*Note: The selection of positive and negative gate-source voltages impacts losses and the long-term behavior of the MOSFET and body diode. The design guidelines described in Application Notes AN 2018-09 and AN2021-13 must be considered to ensure sound operation of the device over the planned lifetime.*

*$T_{vj,op}$ > 150°C is allowed for operation at overload conditions for MOSFET and body diode. For detailed specifications, please refer to AN 2021-13.*

# 3 Body diode

**Table 6 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| DC body diode forward current | $I_{SD}$ | $T_{vj}$ = 175 °C, $V_{GS}$ = -3 V | $T_H$ = 70 °C | 13 | A |

**Table 7 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_{SD}$ | $I_{SD}$ = 25 A, $V_{GS}$ = -3 V | $T_{vj}$ = 25 °C | | 4.2 | 5.35 | V |
| | | | $T_{vj}$ = 125 °C | | 3.9 | | |
| | | | $T_{vj}$ = 175 °C | | 3.8 | | |

# 4 Diode, Boost

**Table 8 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 1200 | V |
| Implemented forward current | $I_{FN}$ | | | 20 | A |
| Continuous DC forward current | $I_F$ | | | 25 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_P$ = 1 ms | | 40 | A |
| $I^2t$ - value | $I^2t$ | $t_P$ = 10 ms, $V_R$ = 0 V | $T_{vj}$ = 25 °C | 193 | $A^2s$ |
| | | | $T_{vj}$ = 125 °C | 169 | |
| | | | $T_{vj}$ = 150 °C | 165 | |

**Table 9 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 25 A, $V_{GE}$ = 0 V | $T_{vj}$ = 25 °C | | 1.55 | 2.05 | V |
| | | | $T_{vj}$ = 125 °C | | 1.95 | | |
| | | | $T_{vj}$ = 150 °C | | 2.10 | | |
| Peak reverse recovery current | $I_{RM}$ | $V_{CC}$ = 600 V, $I_F$ = 25 A, $-di_F/dt$ = 2300 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 21 | | A |
| | | | $T_{vj}$ = 125 °C | | 21 | | |
| | | | $T_{vj}$ = 150 °C | | 21 | | |
| Recovered charge | $Q_r$ | $V_{CC}$ = 600 V, $I_F$ = 25 A, $-di_F/dt$ = 2300 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.21 | | µC |
| | | | $T_{vj}$ = 125 °C | | 0.21 | | |
| | | | $T_{vj}$ = 150 °C | | 0.21 | | |
| Reverse recovery energy | $E_{rec}$ | $V_{CC}$ = 600 V, $I_F$ = 25 A, $-di_F/dt$ = 2300 A/µs ($T_{vj}$ = 150 °C) | $T_{vj}$ = 25 °C | | 0.03 | | mJ |
| | | | $T_{vj}$ = 125 °C | | 0.03 | | |
| | | | $T_{vj}$ = 150 °C | | 0.03 | | |

**(table continues...)**

**Table 9 (continued) Characteristic values**

| Parameter | Symbol | Note or test condition | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode | | 1.75 | | K/W |
| Temperature under switching conditions | $T_{vj\,op}$ | | -40 | | 150 | °C |

# 5 Bypass-diode A

**Table 10 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 1200 | V |
| Maximum RMS forward current per chip | $I_{FRMSM}$ | $T_H$ = 50 °C | | 50 | A |
| Maximum RMS current at rectifier output | $I_{RMSM}$ | $T_H$ = 50 °C | | 50 | A |
| Surge forward current | $I_{FSM}$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 450 | A |
| | | | $T_{vj}$ = 150 °C | 360 | |
| $I^2t$ - value | $I^2t$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 1010 | $A^2s$ |
| | | | $T_{vj}$ = 150 °C | 648 | |

**Table 11 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 25 A | $T_{vj}$ = 150 °C | | 0.90 | | V |
| Reverse current | $I_r$ | $T_{vj}$ = 150 °C, $V_R$ = 1200 V | | | 0.1 | | mA |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode | | | 1.38 | | K/W |
| Temperature under switching conditions | $T_{vj,\,op}$ | | | -40 | | 150 | °C |

# 6 Bypass-diode B

**Table 12 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 1200 | V |

**(table continues...)**

**Table 12 (continued) Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Maximum RMS forward current per chip | $I_{FRMSM}$ | $T_H$ = 100 °C | | 25 | A |
| Maximum RMS current at rectifier output | $I_{RMSM}$ | $T_H$ = 100 °C | | 25 | A |
| Surge forward current | $I_{FSM}$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 450 | A |
| | | | $T_{vj}$ = 150 °C | 360 | |
| I²t - value | $I^2t$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 1010 | A²s |
| | | | $T_{vj}$ = 150 °C | 648 | |

**Table 13 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 25 A | $T_{vj}$ = 150 °C | | 0.90 | | V |
| Reverse current | $I_r$ | $T_{vj}$ = 150 °C, $V_R$ = 1200 V | | | 0.1 | | mA |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode | | | 1.38 | | K/W |
| Temperature under switching conditions | $T_{vj, op}$ | | | -40 | | 150 | °C |

# 7 Inverse-polarity protection diode A

**Table 14 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 1200 | V |
| Maximum RMS forward current per chip | $I_{FRMSM}$ | $T_H$ = 50 °C | | 50 | A |
| Maximum RMS current at rectifier output | $I_{RMSM}$ | $T_H$ = 50 °C | | 50 | A |
| Surge forward current | $I_{FSM}$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 450 | A |
| | | | $T_{vj}$ = 150 °C | 360 | |
| I²t - value | $I^2t$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 1010 | A²s |
| | | | $T_{vj}$ = 150 °C | 648 | |

**Table 15 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 50 A | $T_{vj}$ = 150 °C | | 1.10 | | V |
| Reverse current | $I_r$ | $T_{vj}$ = 150 °C, $V_R$ = 1200 V | | | 0.1 | | mA |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode | | | 1.38 | | K/W |
| Temperature under switching conditions | $T_{vj, op}$ | | | -40 | | 150 | °C |

# 8 Inverse-polarity protection diode B

**Table 16 Maximum rated values**

| Parameter | Symbol | Note or test condition | | Values | Unit |
|---|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | | $T_{vj}$ = 25 °C | 1200 | V |
| Maximum RMS forward current per chip | $I_{FRMSM}$ | $T_H$ = 100 °C | | 25 | A |
| Maximum RMS current at rectifier output | $I_{RMSM}$ | $T_H$ = 100 °C | | 25 | A |
| Surge forward current | $I_{FSM}$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 450 | A |
| | | | $T_{vj}$ = 150 °C | 360 | |
| $I^2t$ - value | $I^2t$ | $t_P$ = 10 ms | $T_{vj}$ = 25 °C | 1010 | $A^2s$ |
| | | | $T_{vj}$ = 150 °C | 648 | |

**Table 17 Characteristic values**

| Parameter | Symbol | Note or test condition | | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Forward voltage | $V_F$ | $I_F$ = 25 A | $T_{vj}$ = 150 °C | | 0.90 | | V |
| Reverse current | $I_r$ | $T_{vj}$ = 150 °C, $V_R$ = 1200 V | | | 0.1 | | mA |
| Thermal resistance, junction to heat sink | $R_{thJH}$ | per diode | | | 1.38 | | K/W |
| Temperature under switching conditions | $T_{vj, op}$ | | | -40 | | 150 | °C |

# 9 NTC-Thermistor

**Table 18 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 | $B_{25/50}$ | $R_2 = R_{25} \exp[B_{25/50}(1/T_2-1/(298{,}15\ K))]$ | | 3375 | | K |
| B-value | $B_{25/80}$ | $R_2 = R_{25} \exp[B_{25/80}(1/T_2-1/(298{,}15\ K))]$ | | 3411 | | K |
| B-value | $B_{25/100}$ | $R_2 = R_{25} \exp[B_{25/100}(1/T_2-1/(298{,}15\ K))]$ | | 3433 | | K |

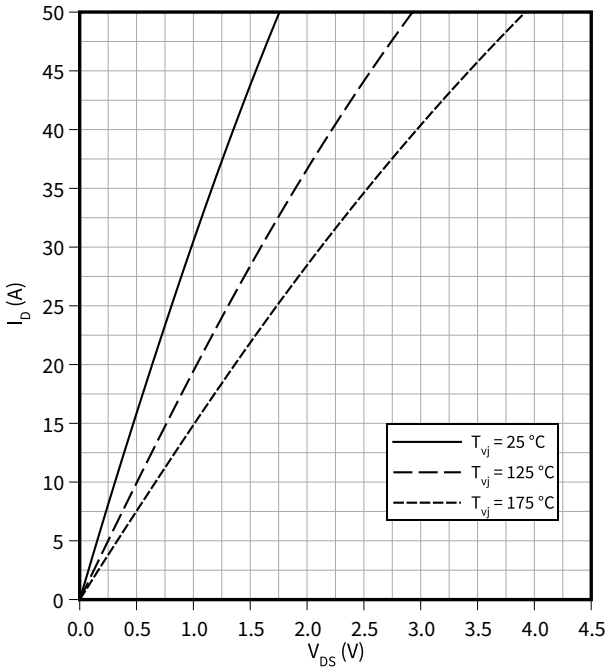
*Note: Specification according to the valid application note.*

# 10 Characteristics diagrams

**Output characteristic (typical), MOSFET**

$I_D = f(V_{DS})$

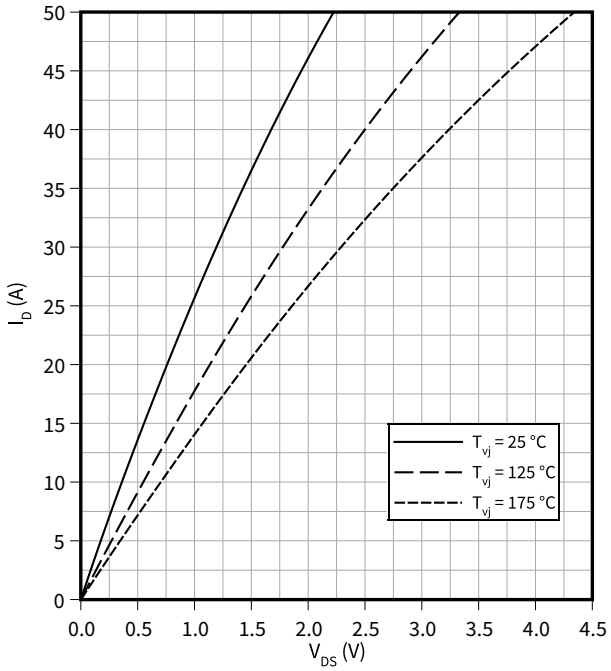
$V_{GS} = 18$ V




**Output characteristic (typical), MOSFET**

$I_D = f(V_{DS})$

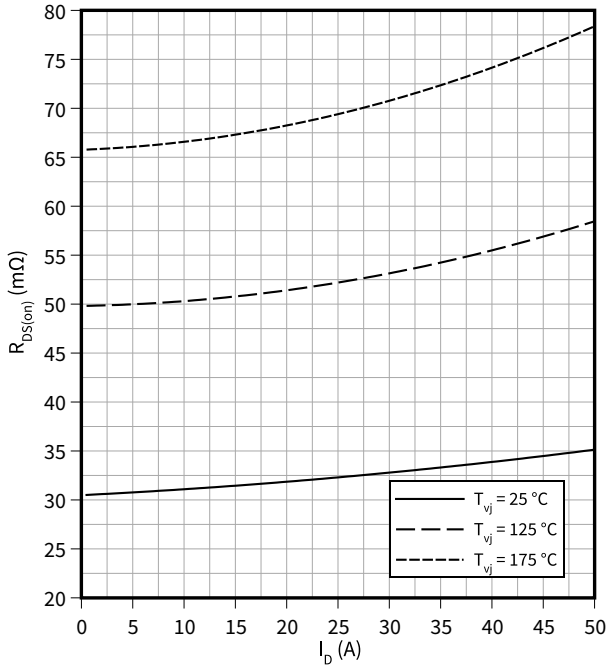
$V_{GS} = 15$ V




**Drain source on-resistance (typical), MOSFET**

$R_{DS(on)} = f(I_D)$

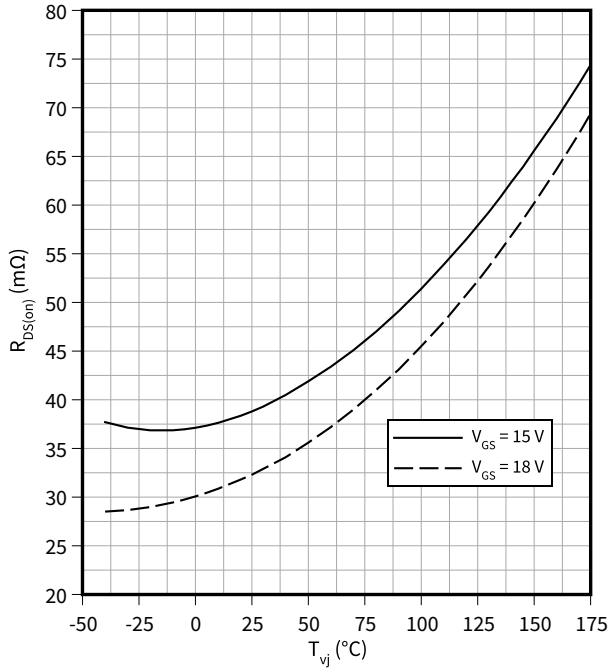
$V_{GS} = 18$ V




**Drain source on-resistance (typical), MOSFET**

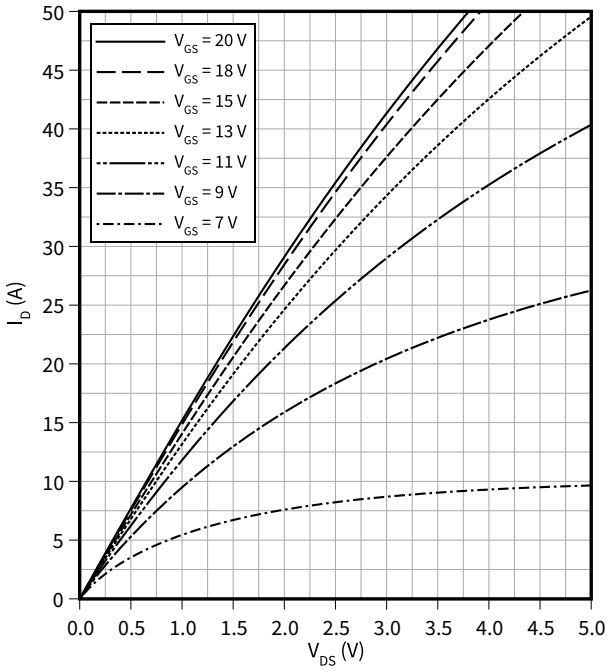
$R_{DS(on)} = f(T_{vj})$

$I_D = 25$ A



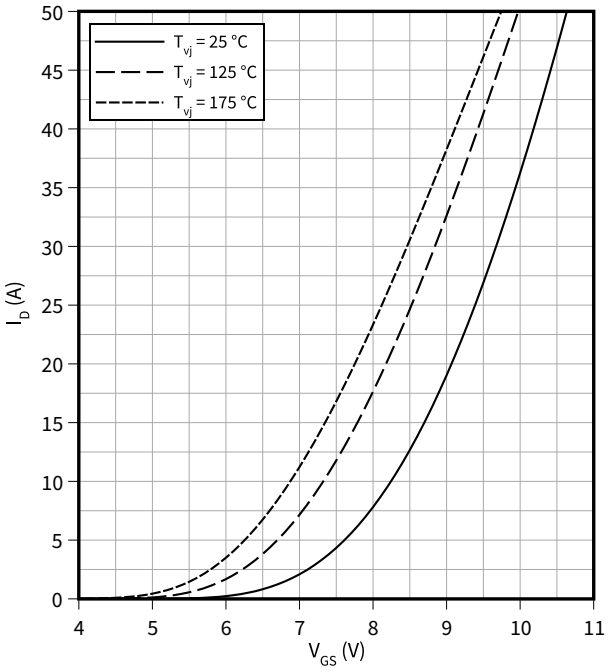
### Output characteristic field (typical), MOSFET

$I_D = f(V_{DS})$
$T_{vj} = 175\ °C$



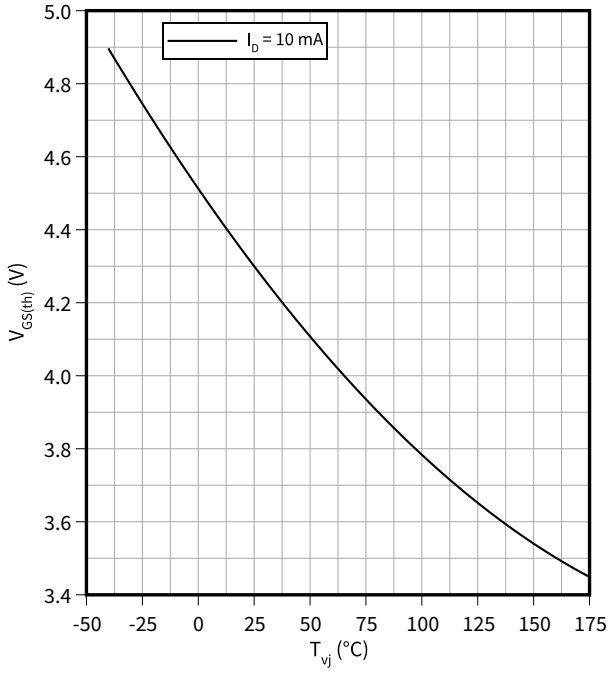

### Transfer characteristic (typical), MOSFET

$I_D = f(V_{GS})$
$V_{DS} = 20\ V$



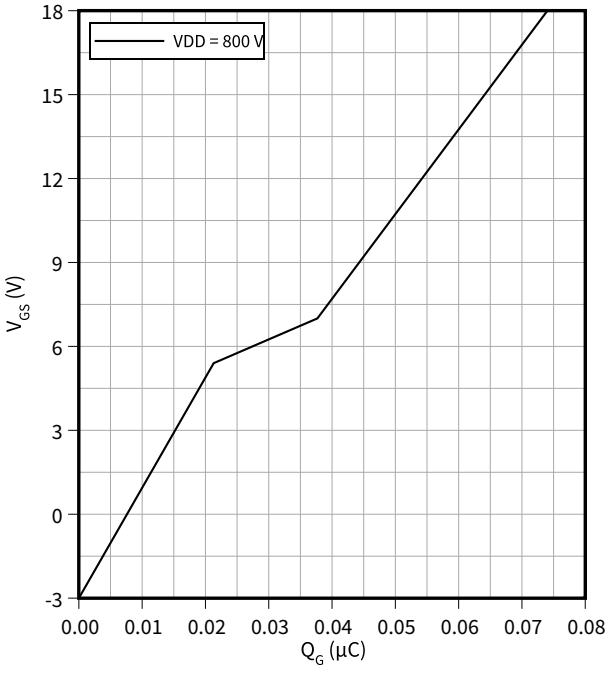

### Gate-source threshold voltage (typical), MOSFET

$V_{GS(th)} = f(T_{vj})$
$I_D = 10\ mA, V_{GS} = V_{DS}$




### Gate charge characteristic (typical), MOSFET

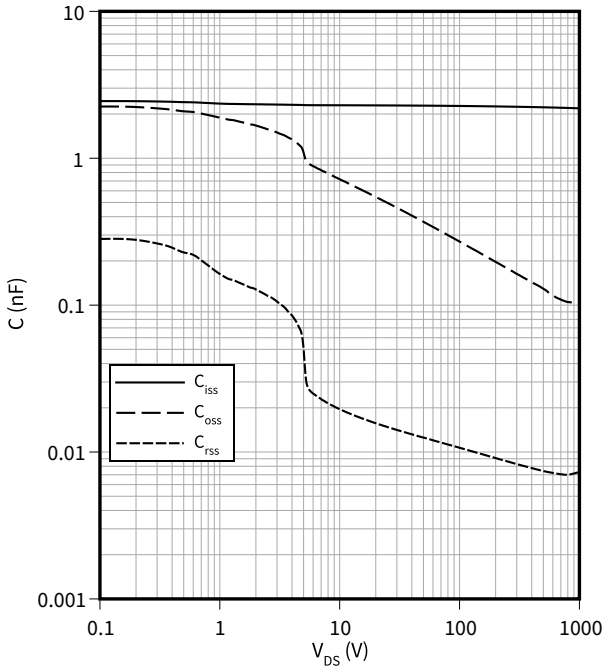
$V_{GS} = f(Q_G)$
$I_D = 25\ A, T_{vj} = 25\ °C$



### Capacity characteristic (typical), MOSFET

$C = f(V_{DS})$

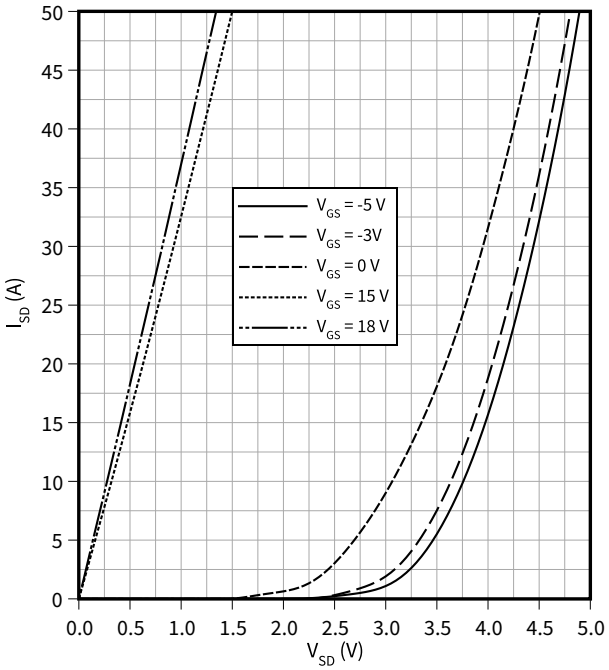
$f = 100\ kHz$, $T_{vj} = 25\ °C$, $V_{GS} = 0\ V$




### Forward characteristic body diode (typical), MOSFET

$I_{SD} = f(V_{SD})$

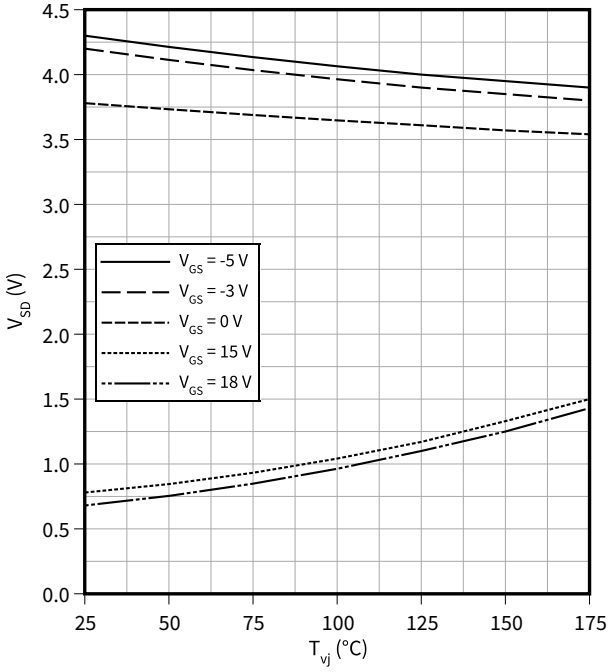
$T_{vj} = 25\ °C$




### Forward voltage of body diode (typical), MOSFET

$V_{SD} = f(T_{vj})$

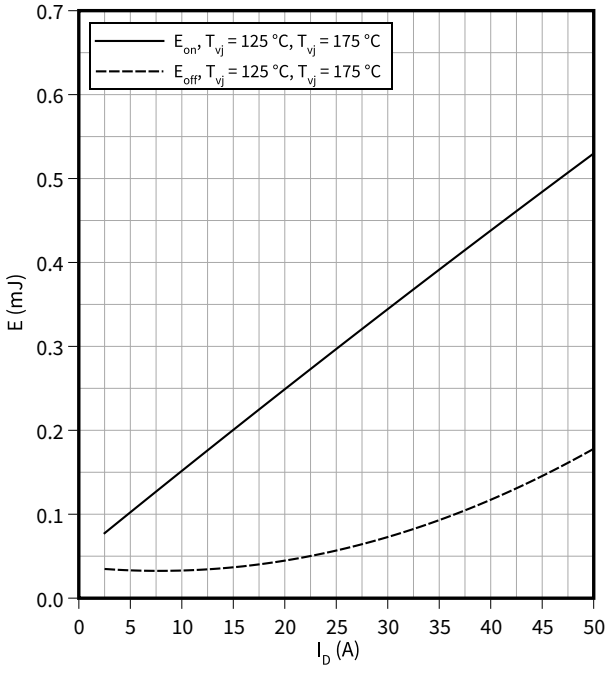
$I_{SD} = 25\ A$




### Switching losses (typical), MOSFET

$E = f(I_D)$

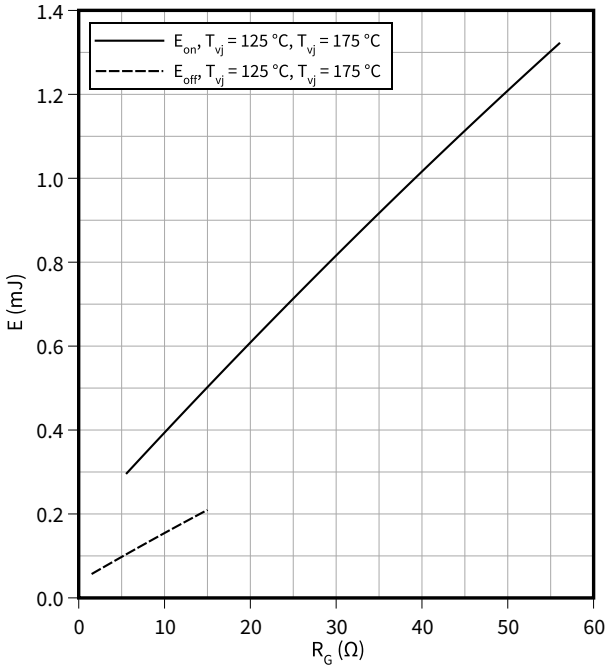
$R_{Goff} = 1.5\ \Omega$, $R_{Gon} = 5.6\ \Omega$, $V_{DD} = 600\ V$, $V_{GS} = -3/18\ V$



### Switching losses (typical), MOSFET

$E = f(R_G)$

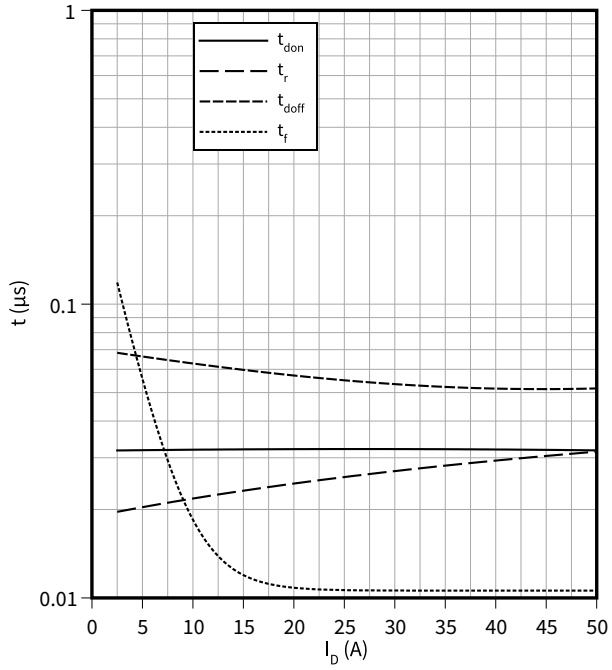
$V_{DD}$ = 600 V, $I_D$ = 25 A, $V_{GS}$ = -3/18 V




### Switching times (typical), MOSFET

$t = f(I_D)$

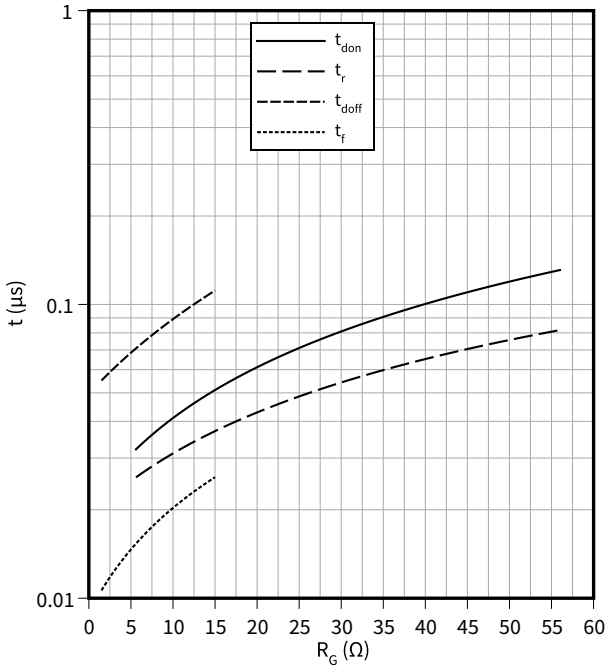
$R_{Goff}$ = 1.5 Ω, $R_{Gon}$ = 5.6 Ω, $V_{DD}$ = 600 V, $T_{vj}$ = 175 °C, $V_{GS}$ = -3/18 V




### Switching times (typical), MOSFET

$t = f(R_G)$

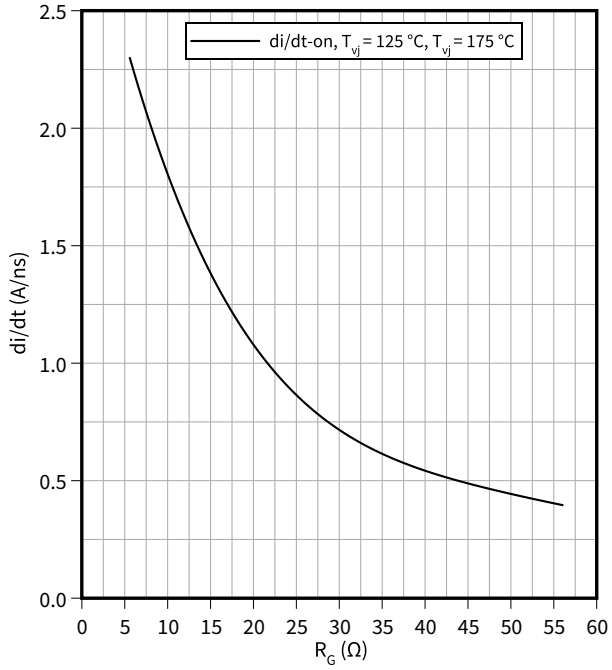
$V_{DD}$ = 600 V, $I_D$ = 25 A, $T_{vj}$ = 175 °C, $V_{GS}$ = -3/18 V




### Current slope (typical), MOSFET

$di/dt = f(R_G)$

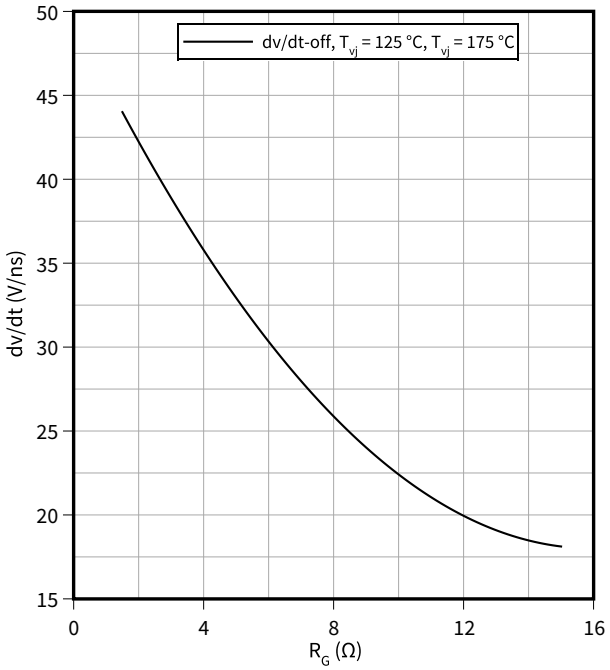
$V_{DD}$ = 600 V, $I_D$ = 25 A, $V_{GS}$ = -3/18 V



### Voltage slope (typical), MOSFET

$dv/dt = f(R_G)$

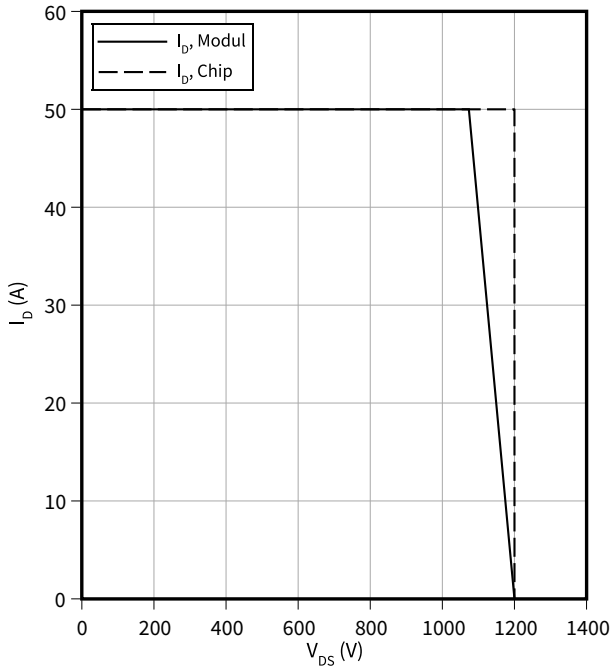
$V_{DD}$ = 600 V, $I_D$ = 25 A, $V_{GS}$ = -3/18 V




### Reverse bias safe operating area (RBSOA), MOSFET

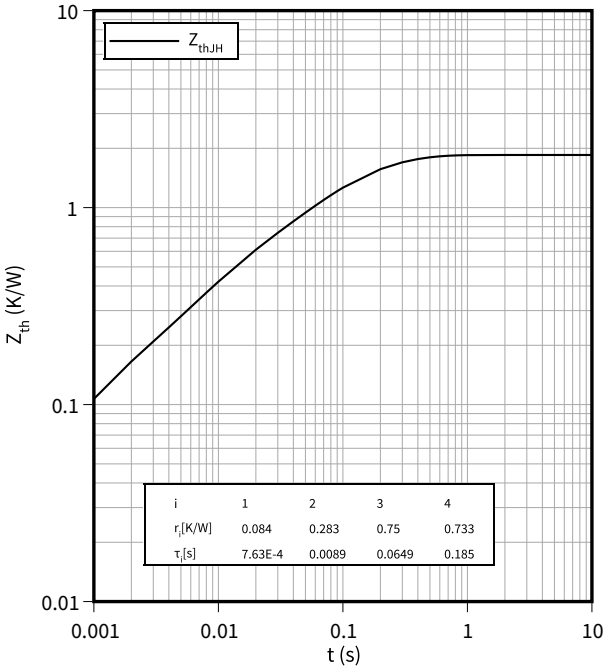
$I_D = f(V_{DS})$

$R_{Goff}$ = 1.5 Ω, $T_{vj}$ = 175 °C, $V_{GS}$ = -3/18 V



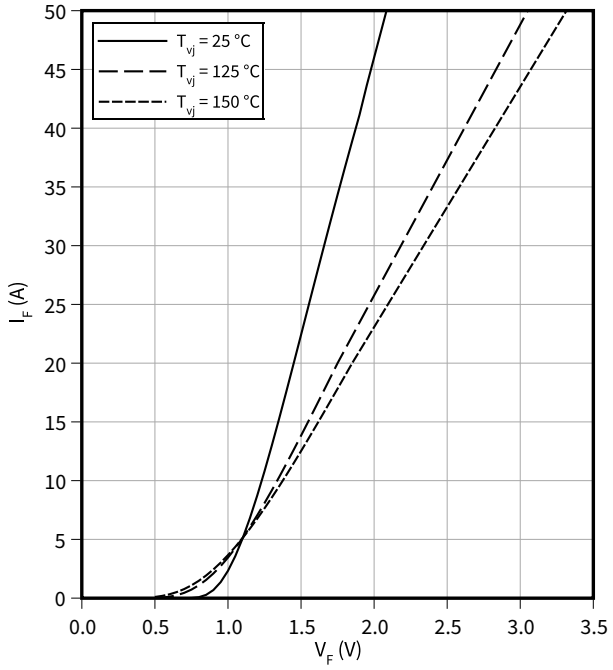

### Transient thermal impedance , MOSFET

$Z_{th} = f(t)$




### Forward characteristic (typical), Diode, Boost

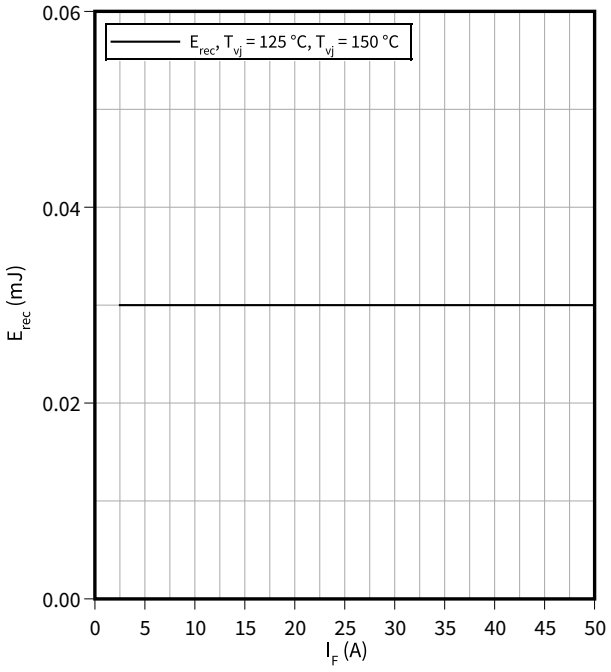
$I_F = f(V_F)$



### Switching losses (typical), Diode, Boost

$E_{rec} = f(I_F)$

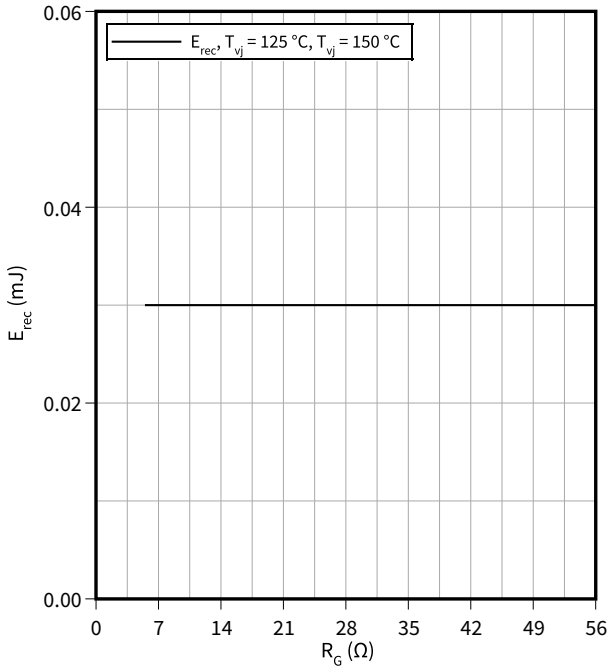
$R_{Gon} = 5.6\ \Omega$, $V_{CC} = 600$ V




### Switching losses (typical), Diode, Boost

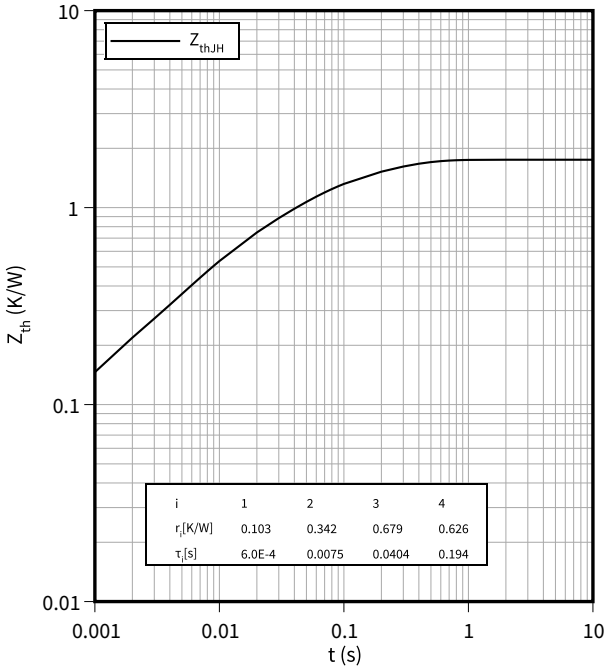
$E_{rec} = f(R_G)$

$I_F = 25$ A, $V_{CC} = 600$ V



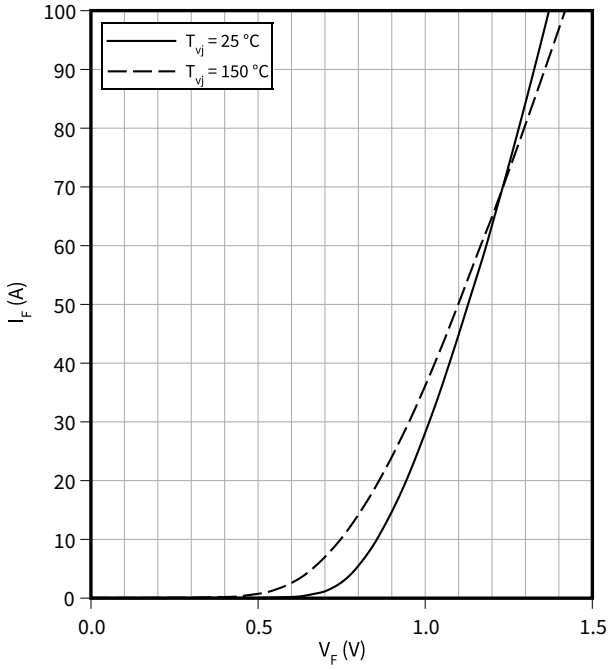

### Transient thermal impedance, Diode, Boost

$Z_{th} = f(t)$



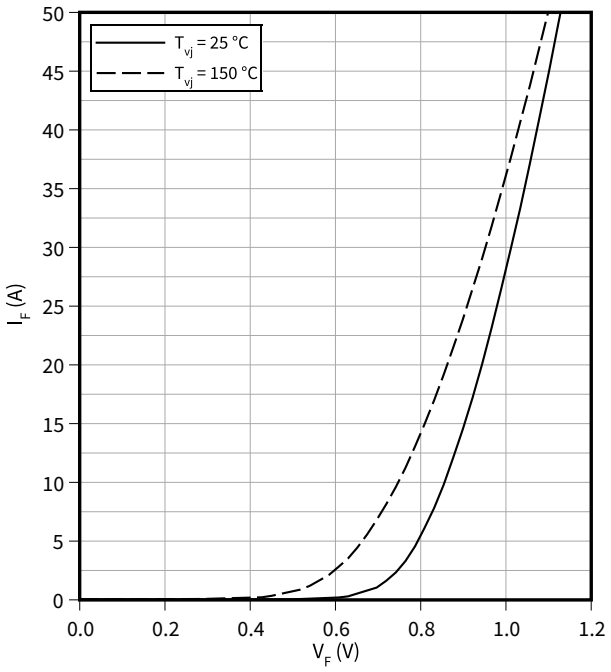

### Forward characteristic (typical), Bypass-diode A

$I_F = f(V_F)$



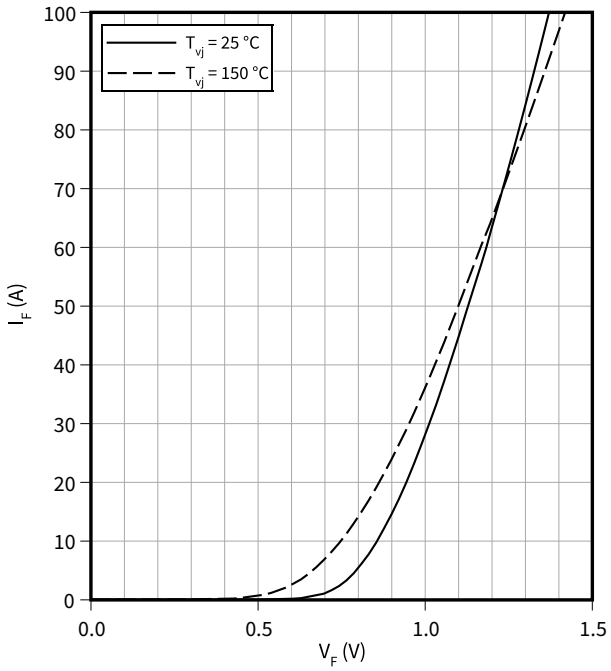
### Forward characteristic (typical), Bypass-diode B

$I_F = f(V_F)$



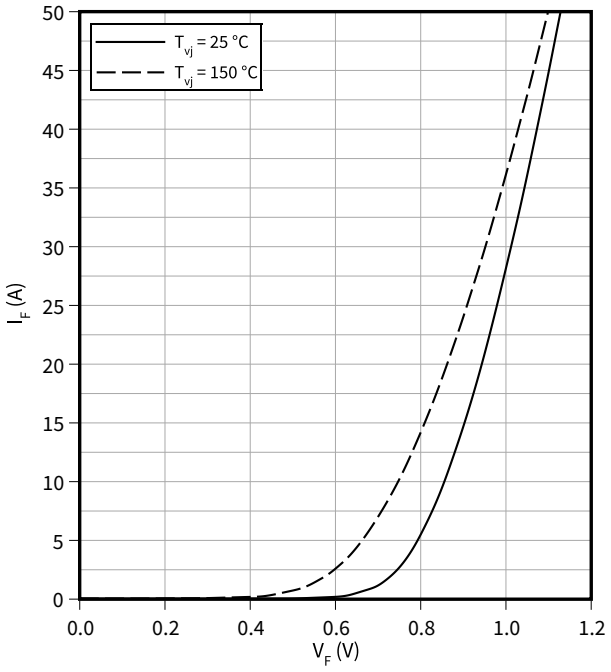

### Forward characteristic (typical), Inverse-polarity protection diode A

$I_F = f(V_F)$



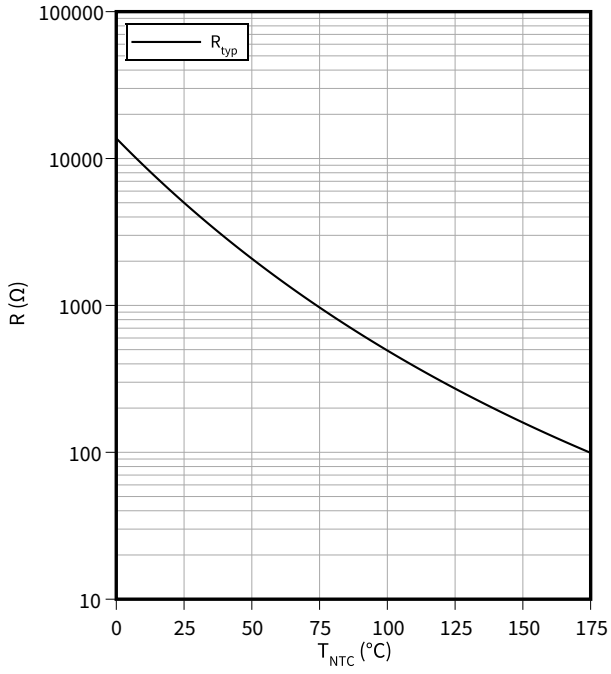

### Forward characteristic (typical), Inverse-polarity protection diode B

$I_F = f(V_F)$




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

$R = f(T_{NTC})$



# 11 Circuit diagram

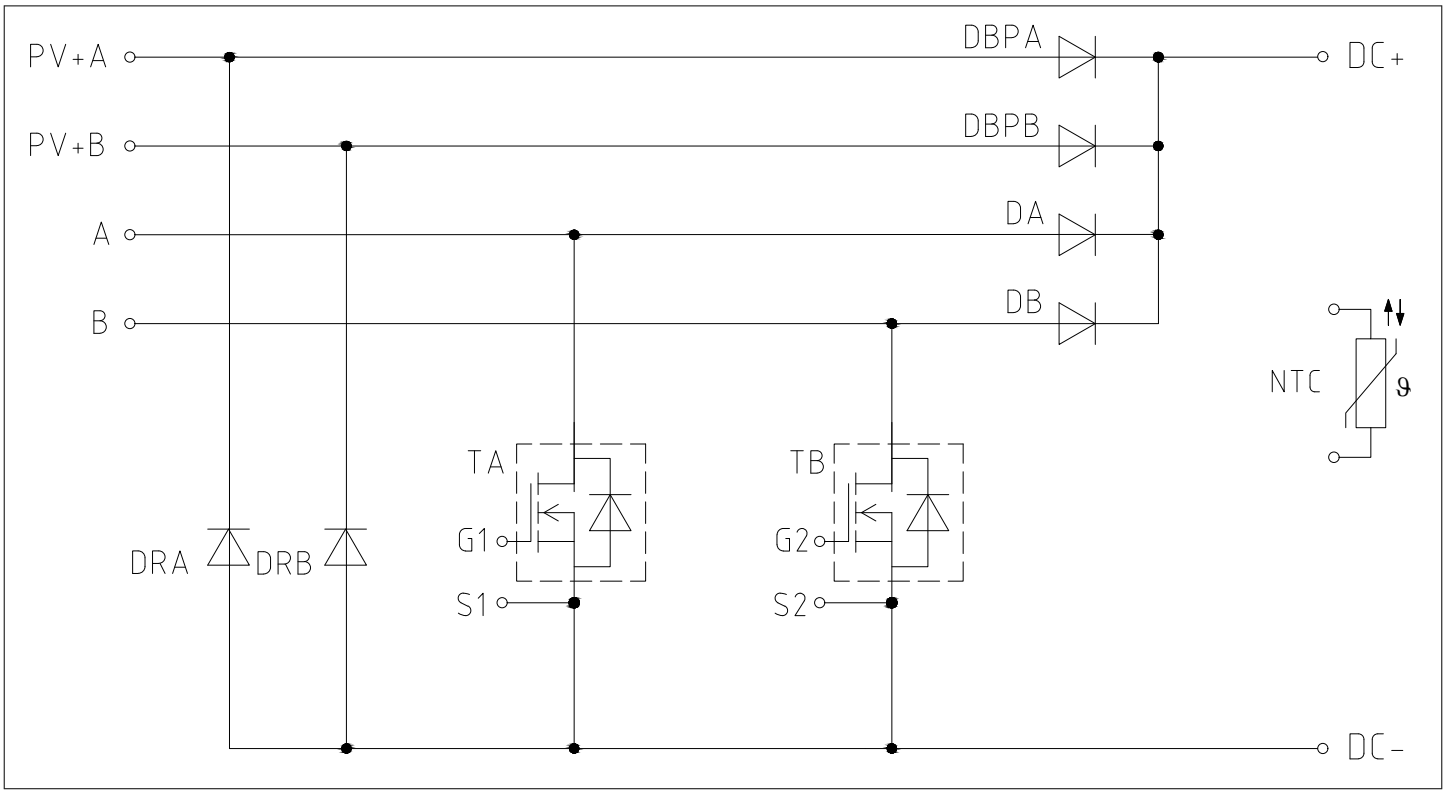



**Figure 1**

# 12 Package outlines

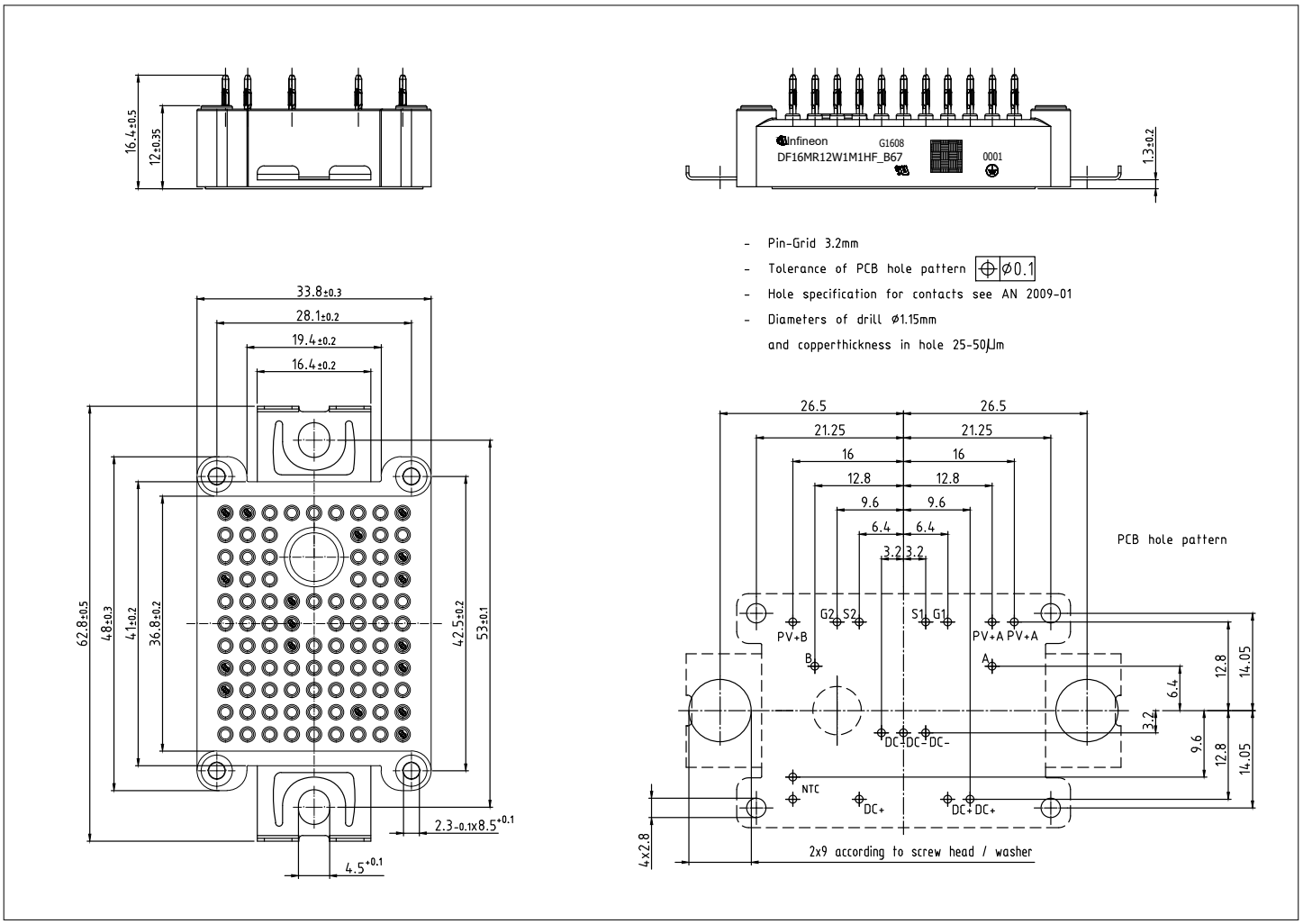



**Figure 2**

# 13 Module label code

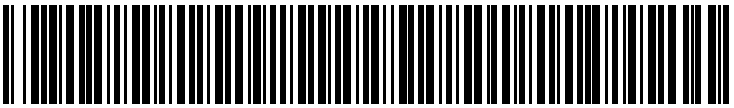
| Module label code | | | |
|---|---|---|---|
| Code format | Data Matrix | | Barcode Code128 |
| Encoding | ASCII text | | Code Set A |
| Symbol size | 16x16 | | 23 digits |
| Standard | IEC24720 and IEC16022 | | IEC8859-1 |
| Code content | *Content*<br>Module serial number<br>Module material number<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 |  715491428465505499115 30 |  715491428465505499115 30 | |

**Figure 3**

# Revision history

| Document version | Date of release | Description of changes |
|---|---|---|
| 0.10 | 2022-12-05 | Initial version |

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