
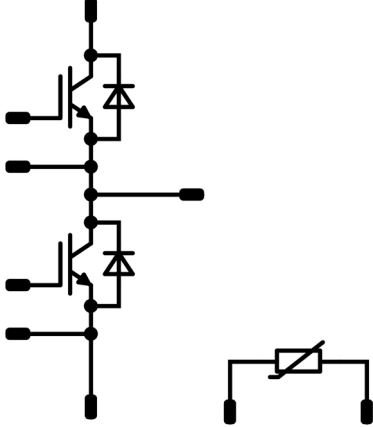




Vincotech

| MiniSKiiP®DUAL 2 | 1200 V / 200 A |
|--|--|
| <div style="background-color: #eee; padding: 5px; margin-bottom: 5px;">Features</div> <ul style="list-style-type: none"> IGBT M7 technology with low V_{CESat} and improved EMC behavior Solder-free spring contact technology Standard MiniSKiiP package sizes Built-in NTC | <div style="background-color: #eee; padding: 5px; margin-bottom: 5px;">MiniSKiiP® 2 housing</div>  |
| <div style="background-color: #eee; padding: 5px; margin-bottom: 5px;">Target applications</div> <ul style="list-style-type: none"> Industrial Drives Power Supply | <div style="background-color: #eee; padding: 5px; margin-bottom: 5px;">Schematic</div>  |
| <div style="background-color: #eee; padding: 5px; margin-bottom: 5px;">Types</div> <ul style="list-style-type: none"> 80-M2122PA200M7-K709F70 | |

Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

| Parameter | Symbol | Condition | Value | Unit |
|-----------------------------------|------------|---------------------------------------|-------|------|
| Half-Bridge Switch | | | | |
| Collector-emitter voltage | V_{CES} | | 1200 | V |
| Collector current | I_C | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 234 | A |
| Repetitive peak collector current | I_{CRM} | t_p limited by T_{jmax} | 400 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 460 | W |
| Gate-emitter voltage | V_{GES} | | ±20 | V |
| Maximum junction temperature | T_{jmax} | | 175 | °C |



Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

| Parameter | Symbol | Condition | Value | Unit |
|-------------------------------------|------------|---------------------------------------|-------|------|
| Half-Bridge Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1200 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 159 | A |
| Repetitive peak forward current | I_{FRM} | | 400 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 280 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |

Module Properties

Thermal Properties

| | | | | |
|---|-----------|--|---------------------------|----|
| Storage temperature | T_{stg} | | -40...+125 | °C |
| Operation temperature under switching condition | T_{jop} | | -40...($T_{jmax} - 25$) | °C |

Isolation Properties

| | | | | |
|----------------------------|------------|---|-------|----|
| Isolation voltage | V_{isol} | DC Test Voltage* $t_p = 2\text{ s}$ | 5500 | V |
| | | AC Voltage $t_p = 1\text{ min}$ | 2500 | V |
| Creepage distance | | With std lid For more informations see handling instructions | 6,3 | mm |
| Clearance | | With std lid For more informations see handling instructions | 6,3 | mm |
| Comparative Tracking Index | CTI | | > 200 | |

*100 % tested in production



Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|-----------|--------|--------------|--------------|--------------|-----------|------------|-------|-----|-----|------|
| | | V_{GS} [V] | V_{GE} [V] | V_{DS} [V] | I_D [A] | T_j [°C] | Min | Typ | Max | |

Half-Bridge Switch

Static

| Parameter | Symbol | $V_{GE} = V_{CE}$ | V_{GS} [V] | V_{CE} [V] | I_C [A] | T_j [°C] | Min | Typ | Max | Unit |
|--------------------------------------|--------------|-------------------|--------------|--------------|-----------|------------------|-----|----------------------|------|------|
| Gate-emitter threshold voltage | $V_{GE(th)}$ | | | | 0,02 | 25 | 5,4 | 6 | 6,6 | V |
| Collector-emitter saturation voltage | V_{CEsat} | | 15 | | 200 | 25 125 150 | | 1,53 1,70 1,75 | 1,85 | V |
| Collector-emitter cut-off current | I_{CES} | | 0 | 1200 | | 25 | | | 200 | μA |
| Gate-emitter leakage current | I_{GES} | | 20 | 0 | | 25 | | | 1000 | nA |
| Internal gate resistance | r_g | | | | | | | none | | Ω |
| Input capacitance | C_{ies} | | | | | | | 42000 | | pF |
| Output capacitance | C_{oes} | | 0 | 10 | | 25 | | 1400 | | |
| Reverse transfer capacitance | C_{res} | | | | | | | 560 | | |
| Gate charge | Q_g | | 15 | 600 | 200 | 25 | | 1400 | | nC |

Thermal

| Parameter | Symbol | $\lambda_{paste} = 2,5$ W/mK (HPTP) | Min | Typ | Max | Unit |
|-------------------------------------|---------------|-------------------------------------|-----|-----|------|------|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | | | | 0,21 | K/W |

Dynamic

| Parameter | Symbol | $R_{gon} = 2$ Ω $R_{goff} = 2$ Ω | V_{GS} [V] | V_{CE} [V] | I_D [A] | T_j [°C] | Min | Typ | Max | Unit |
|------------------------------|--------------|---|--------------|--------------|------------------|------------|-----|-----|-----|------|
| Turn-on delay time | $t_{d(on)}$ | ±15 | 600 | 200 | 25 125 150 | 25 | | 206 | | ns |
| Rise time | t_r | | | | | | 25 | 19 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | | | 125 | 23 | | |
| | | | | | | | 150 | 24 | | |
| Fall time | t_f | 25 | 235 | | | | | | | |
| | | 125 | 259 | | | | | | | |
| | | 150 | 267 | | | | | | | |
| Turn-on energy (per pulse)* | E_{on} | $Q_{t,FWD} = 22,4$ μC $Q_{t,FWD} = 31,9$ μC $Q_{t,FWD} = 35,6$ μC | 25 | 78 | 6,95 | | | | | |
| | | | 125 | 91 | 10,13 | | | | | |
| | | | 150 | 102 | 11,22 | | | | | |
| Turn-off energy (per pulse)* | E_{off} | | 25 | 13,74 | mWs | | | | | |
| | | | 125 | 18,37 | | | | | | |
| | | | 150 | 19,95 | | | | | | |

* $L_s = 12$ nH



Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|-----------|--------|--------------|--------------|-----------|------------|-----|-------|-----|--|------|
| | | V_{GE} [V] | V_{CE} [V] | I_C [A] | T_j [°C] | Min | Typ | Max | | |

Half-Bridge Diode

Static

| Parameter | Symbol | V_{GS} [V] | V_{DS} [V] | I_D [A] | I_F [A] | T_j [°C] | Min | Typ | Max | Unit |
|-------------------------|--------|--------------|--------------|-----------|-----------|------------------|-----|----------------------|-----|------|
| Forward voltage | V_F | | | 200 | | 25 125 150 | | 1,82 1,96 1,97 | 2,1 | V |
| Reverse leakage current | I_R | | 1200 | | | 25 | | | 80 | μA |

Thermal

| Parameter | Symbol | Conditions | Value | Unit |
|-------------------------------------|---------------|-------------------------------------|-------|------|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 2,5$ W/mK (HPTP) | 0,34 | K/W |

Dynamic

| Parameter | Symbol | dI/dt | V_{GS} [V] | V_{DS} [V] | I_D [A] | I_F [A] | T_j [°C] | Min | Typ | Max | Unit |
|---------------------------------------|----------------------|--|--------------|--------------|-----------|-----------|------------------|-----|-------------------------|-----|------|
| Peak recovery current | I_{RRM} | | | | | | 25 125 150 | | 301 308 312 | | A |
| Reverse recovery time | t_{rr} | | | | | | 25 125 150 | | 230 306 344 | | ns |
| Recovered charge | Q_r | $dI/dt = 10487$ A/μs $dI/dt = 9406$ A/μs $dI/dt = 8683$ A/μs | ±15 | 600 | 200 | | 25 125 150 | | 22,36 31,91 35,62 | | μC |
| Reverse recovered energy | E_{rec} | | | | | | 25 125 150 | | 10,11 14,40 16,05 | | mWs |
| Peak rate of fall of recovery current | $(di_{rr}/dt)_{max}$ | | | | | | 25 125 150 | | 6707 5623 4972 | | A/μs |

Thermistor

| Parameter | Symbol | Conditions | Value | Unit |
|----------------------------|----------------|-------------------|-------|------|
| Rated resistance | R | | 25 | kΩ |
| Deviation of R_{100} | $\Delta_{R/R}$ | $R_{100} = 493$ Ω | 100 | % |
| Power dissipation | P | | 25 | mW |
| Power dissipation constant | | | 25 | mW/K |
| B-value | $B_{(25/50)}$ | Tol. ±2 % | 25 | K |
| B-value | $B_{(25/100)}$ | Tol. ±2 % | 25 | K |
| Vincotech NTC Reference | | | | K |

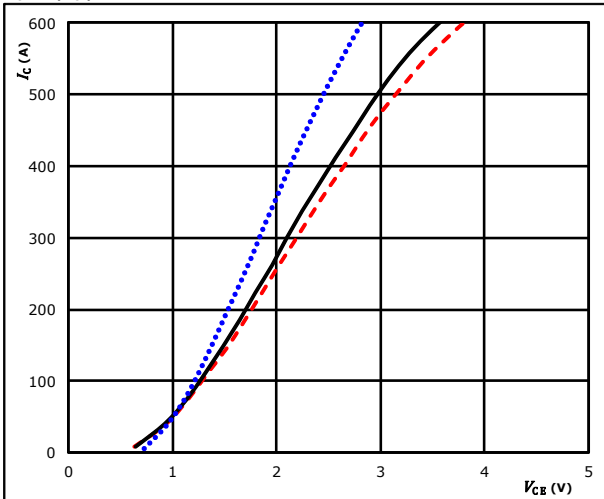


Half-Bridge Switch Characteristics

figure 1. IGBT

Typical output characteristics

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

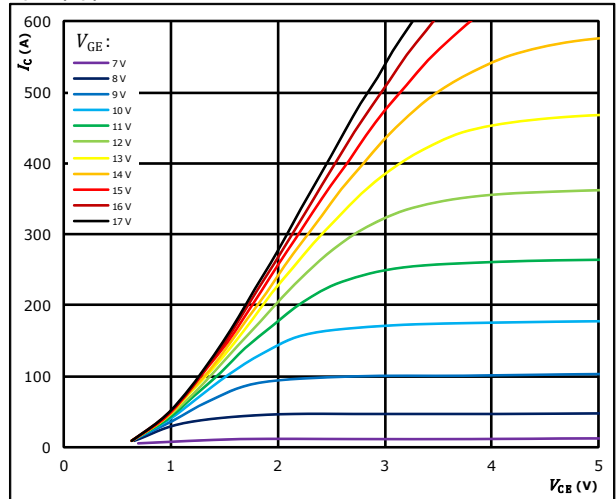


$t_p = 250 \mu s$
 $V_{GE} = 15 V$
 $T_j: 25 \text{ }^\circ C$ (dotted blue line)
 $125 \text{ }^\circ C$ (solid black line)
 $150 \text{ }^\circ C$ (dashed red line)

figure 2. IGBT

Typical output characteristics

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

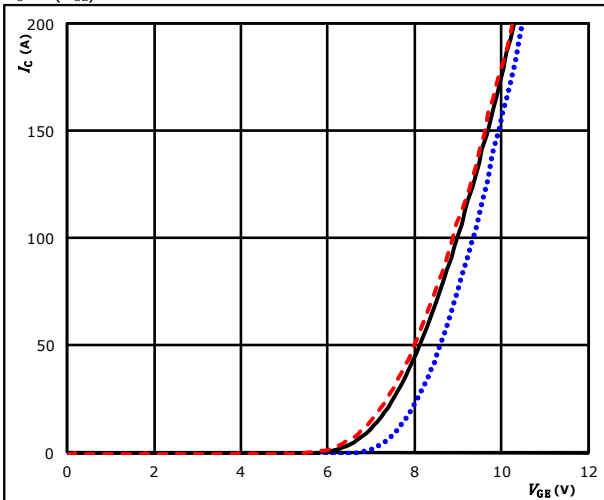


$t_p = 250 \mu s$
 $T_j = 150 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

figure 3. IGBT

Typical transfer characteristics

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

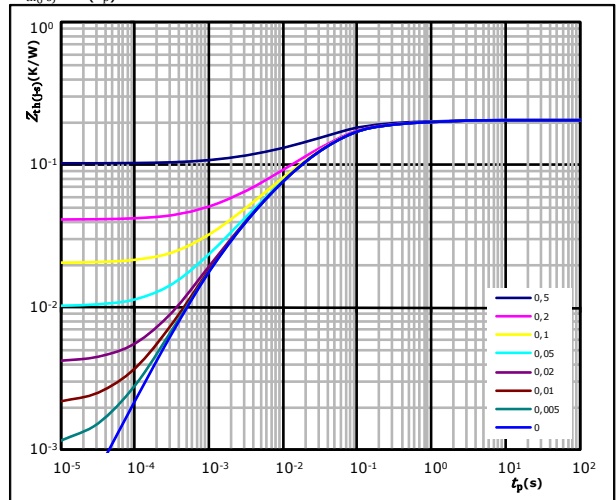


$t_p = 100 \mu s$
 $V_{CE} = 10 V$
 $T_j: 25 \text{ }^\circ C$ (dotted blue line)
 $125 \text{ }^\circ C$ (solid black line)
 $150 \text{ }^\circ C$ (dashed red line)

figure 4. IGBT

Transient thermal impedance as function of pulse duration

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



$D = t_p / T$
 $R_{th(j-s)} = 0,21 \text{ K/W}$

IGBT thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 1,31E-02 | 1,77E-01 |
| 3,15E-02 | 2,05E-02 |
| 1,01E-01 | 5,06E-03 |
| 4,55E-02 | 9,66E-04 |
| 1,33E-02 | 1,79E-04 |
| 1,91E-03 | 1,01E-04 |

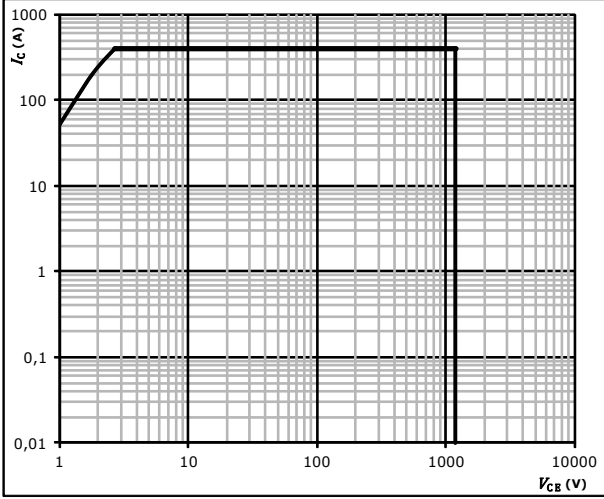


Half-Bridge Switch Characteristics

figure 5. IGBT

Safe operating area

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



- $D =$ single pulse
- $T_s =$ 80 °C
- $V_{GE} =$ ±15 V
- $T_j =$ T_{jmax}

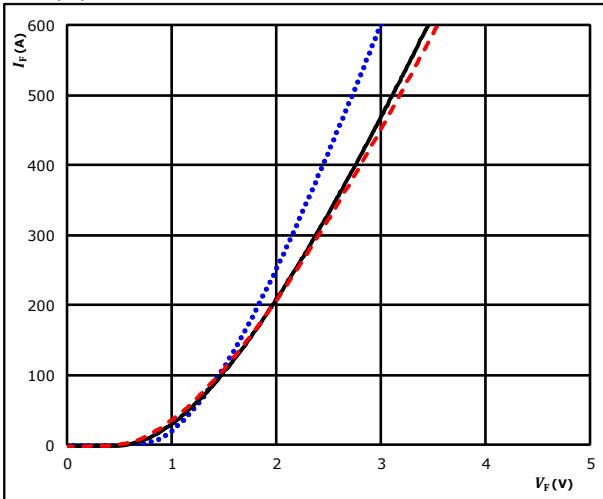


Half-Bridge Diode Characteristics

figure 1. FWD

Typical forward characteristics

$$I_F = f(V_F)$$

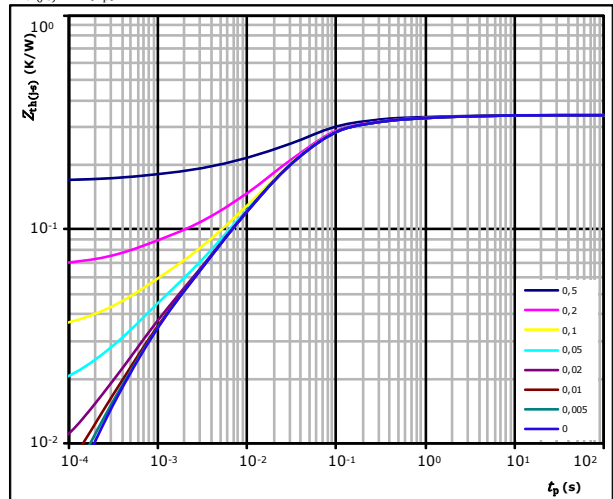


$t_p = 250 \mu s$
 T_j : 25 °C
 125 °C ———
 150 °C - - - -

figure 2. FWD

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$
 $R_{th(j-s)} = 0,34$ K/W
 FWD thermal model values

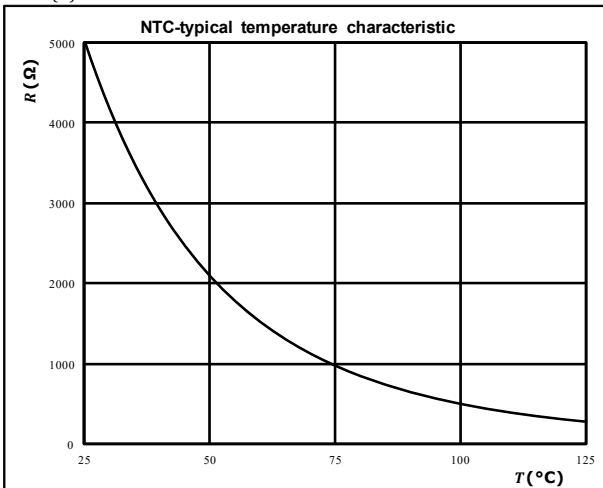
| R (K/W) | τ (s) |
|-----------|------------|
| 1,20E-02 | 5,43E-01 |
| 2,94E-02 | 7,14E-02 |
| 1,66E-01 | 9,89E-03 |
| 7,33E-02 | 3,38E-03 |
| 3,85E-02 | 7,21E-04 |
| 2,04E-02 | 1,03E-04 |

Thermistor Characteristics

figure 1. Thermistor

Typical NTC characteristic
as a function of temperature

$$R = f(T)$$



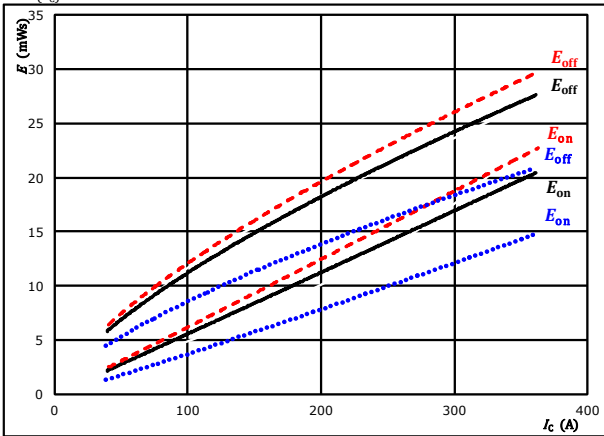


Half-Bridge Switching Characteristics

figure 1. IGBT

Typical switching energy losses as a function of collector current

$$E = f(I_c)$$

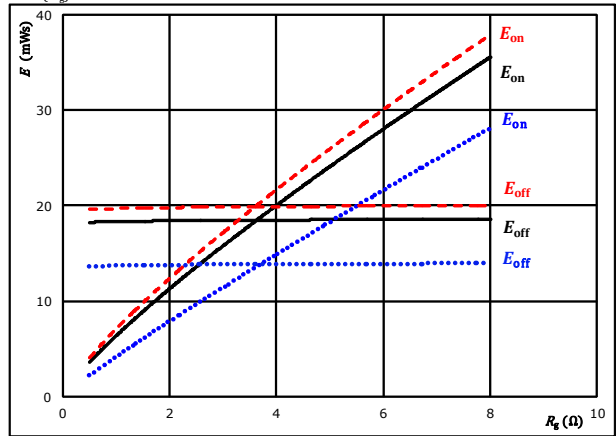


With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{g\text{on}} = 2$ Ω
 $R_{g\text{off}} = 2$ Ω
 $T_j: 25$ $^{\circ}\text{C}$ (dotted blue)
 125 $^{\circ}\text{C}$ (solid black)
 150 $^{\circ}\text{C}$ (dashed red)

figure 2. IGBT

Typical switching energy losses as a function of gate resistor

$$E = f(R_g)$$

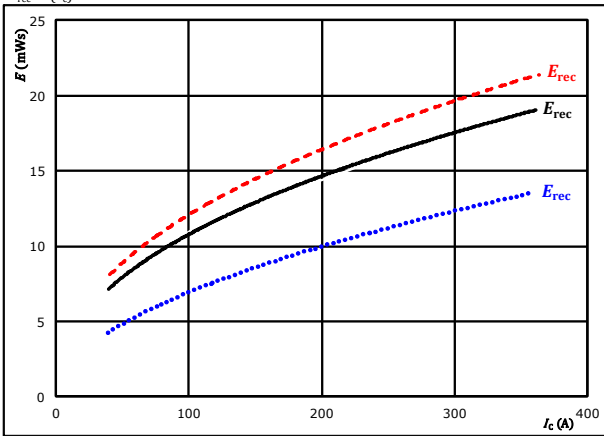


With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $I_c = 200$ A
 $T_j: 25$ $^{\circ}\text{C}$ (dotted blue)
 125 $^{\circ}\text{C}$ (solid black)
 150 $^{\circ}\text{C}$ (dashed red)

figure 3. FWD

Typical reverse recovered energy loss as a function of collector current

$$E_{\text{rec}} = f(I_c)$$

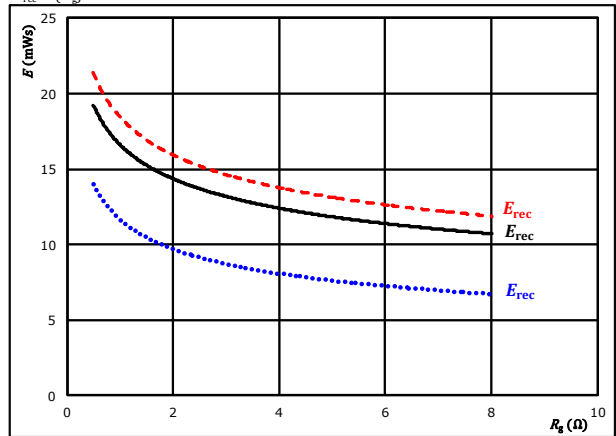


With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{g\text{on}} = 2$ Ω
 $T_j: 25$ $^{\circ}\text{C}$ (dotted blue)
 125 $^{\circ}\text{C}$ (solid black)
 150 $^{\circ}\text{C}$ (dashed red)

figure 4. FWD

Typical reverse recovered energy loss as a function of gate resistor

$$E_{\text{rec}} = f(R_g)$$



With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $I_c = 200$ A
 $T_j: 25$ $^{\circ}\text{C}$ (dotted blue)
 125 $^{\circ}\text{C}$ (solid black)
 150 $^{\circ}\text{C}$ (dashed red)



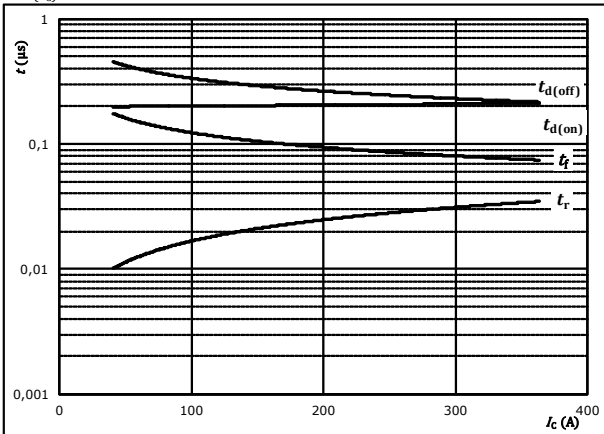
Vincotech

Half-Bridge Switching Characteristics

figure 5. IGBT

Typical switching times as a function of collector current

$$t = f(I_C)$$



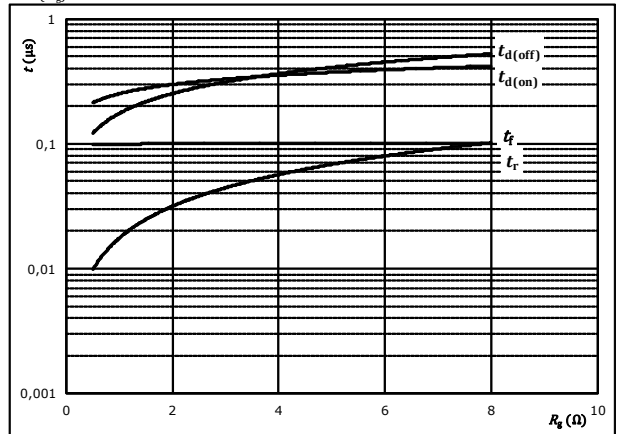
With an inductive load at

| | | |
|--------------|-----|----|
| $T_j =$ | 150 | °C |
| $V_{CE} =$ | 600 | V |
| $V_{GE} =$ | ±15 | V |
| $R_{gon} =$ | 2 | Ω |
| $R_{goff} =$ | 2 | Ω |

figure 6. IGBT

Typical switching times as a function of gate resistor

$$t = f(R_g)$$



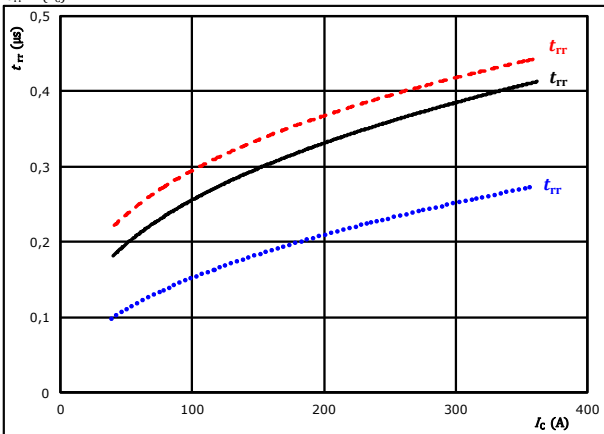
With an inductive load at

| | | |
|------------|-----|----|
| $T_j =$ | 150 | °C |
| $V_{CE} =$ | 600 | V |
| $V_{GE} =$ | ±15 | V |
| $I_C =$ | 200 | A |

figure 7. FWD

Typical reverse recovery time as a function of collector current

$$t_{rr} = f(I_C)$$

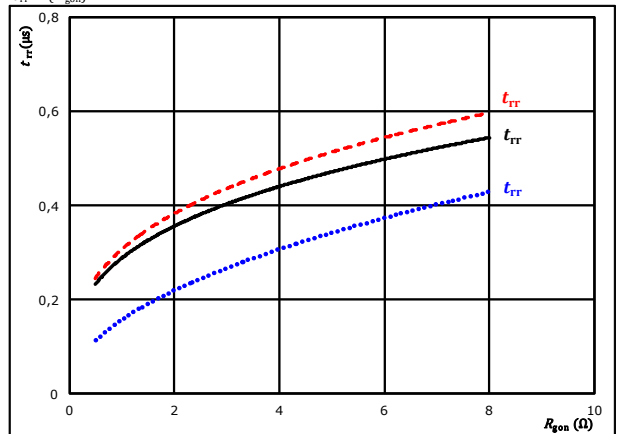


| | | | | | | |
|----|-------------|-----|---|--------|--------|-------|
| At | $V_{CE} =$ | 600 | V | $T_j:$ | 25 °C | |
| | $V_{GE} =$ | ±15 | V | | 125 °C | ———— |
| | $R_{gon} =$ | 2 | Ω | | 150 °C | ----- |

figure 8. FWD

Typical reverse recovery time as a function of IGBT turn on gate resistor

$$t_{rr} = f(R_{gon})$$



| | | | | | | |
|----|------------|-----|---|--------|--------|-------|
| At | $V_{CE} =$ | 600 | V | $T_j:$ | 25 °C | |
| | $V_{GE} =$ | ±15 | V | | 125 °C | ———— |
| | $I_C =$ | 200 | A | | 150 °C | ----- |

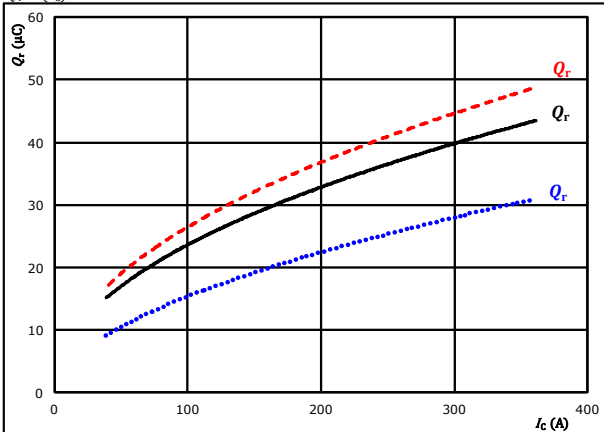


Half-Bridge Switching Characteristics

figure 9. FWD

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$

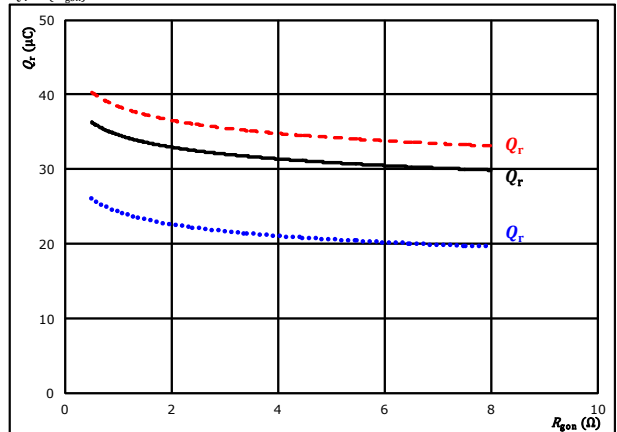


At $V_{CE} = 600$ V $T_j: 25$ °C $R_{gon} = 2$ Ω $V_{GE} = \pm 15$ V $T_j: 125$ °C $V_{GE} = \pm 15$ V $T_j: 150$ °C

figure 10. FWD

Typical recovered charge as a function of IGBT turn on gate resistor

$$Q_r = f(R_{gon})$$

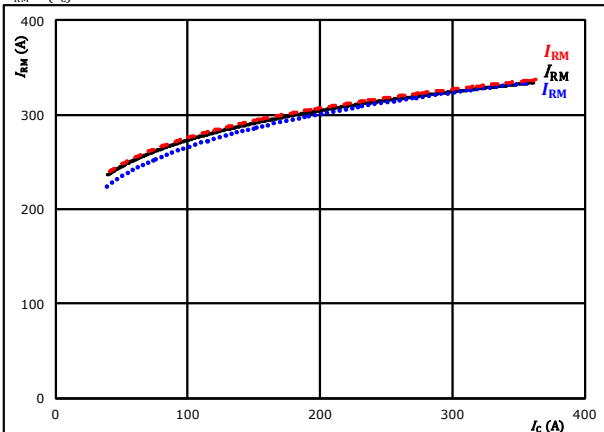


At $V_{CE} = 600$ V $T_j: 25$ °C $V_{GE} = \pm 15$ V $T_j: 125$ °C $I_c = 200$ A $V_{GE} = \pm 15$ V $T_j: 150$ °C

figure 11. FWD

Typical peak reverse recovery current current as a function of collector current

$$I_{RM} = f(I_c)$$

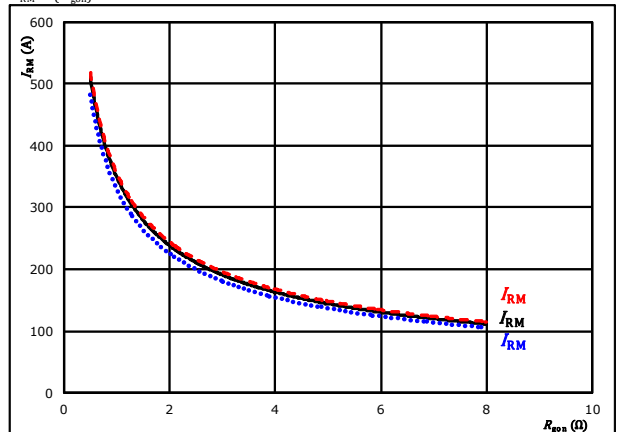


At $V_{CE} = 600$ V $T_j: 25$ °C $R_{gon} = 2$ Ω $V_{GE} = \pm 15$ V $T_j: 125$ °C $V_{GE} = \pm 15$ V $T_j: 150$ °C

figure 12. FWD

Typical peak reverse recovery current as a function of IGBT turn on gate resistor

$$I_{RM} = f(R_{gon})$$



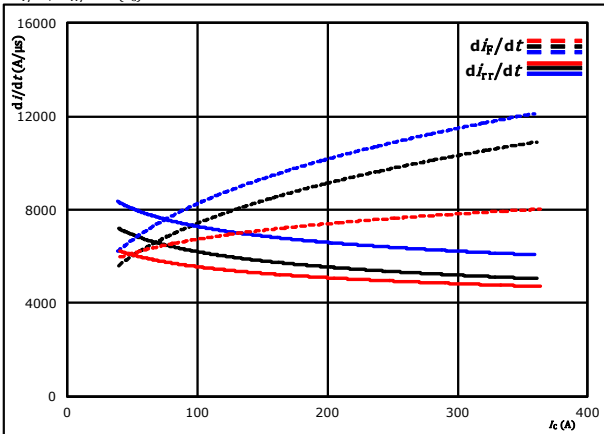
At $V_{CE} = 600$ V $T_j: 25$ °C $V_{GE} = \pm 15$ V $T_j: 125$ °C $I_c = 200$ A $V_{GE} = \pm 15$ V $T_j: 150$ °C



Half-Bridge Switching Characteristics

figure 13. FWD

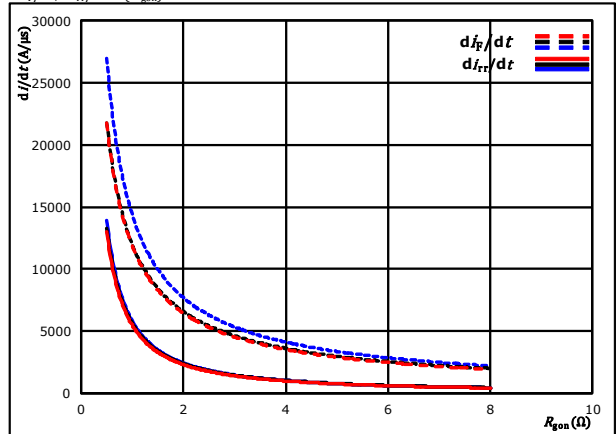
Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_{rr}/dt = f(I_c)$



At $V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $R_{g\text{on}} = 2$ Ω $T_j = 150$ °C

figure 14. FWD

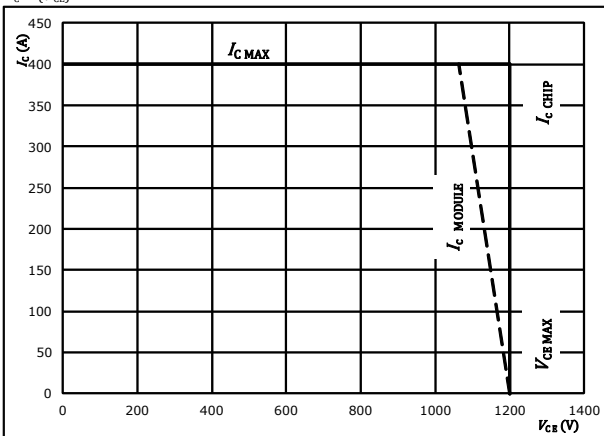
Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{g\text{on}})$



At $V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $I_c = 200$ A $T_j = 150$ °C

figure 15. IGBT

Reverse bias safe operating area
 $I_c = f(V_{CB})$



At $T_j = 125$ °C
 $R_{g\text{on}} = 2$ Ω
 $R_{g\text{off}} = 2$ Ω



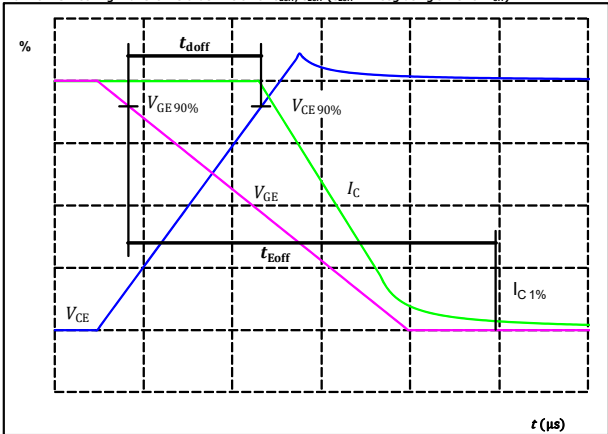
Half-Bridge Switching Definitions

General conditions

| | | |
|------------|---|------------|
| T_j | = | 125 °C |
| R_{gon} | = | 2 Ω |
| R_{goff} | = | 2 Ω |

figure 1. IGBT

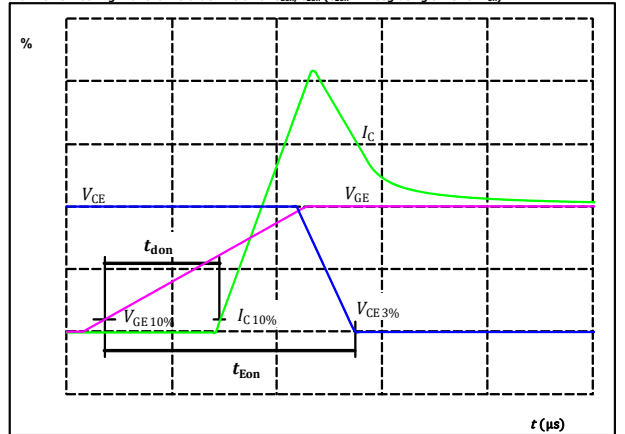
Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff} (t_{Eoff} = integrating time for E_{off})



| | | |
|-------------------|-----|----|
| $V_{CE}(0\%) =$ | -15 | V |
| $V_{GE}(100\%) =$ | 15 | V |
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 200 | A |
| $t_{doff} =$ | 259 | ns |

figure 2. IGBT

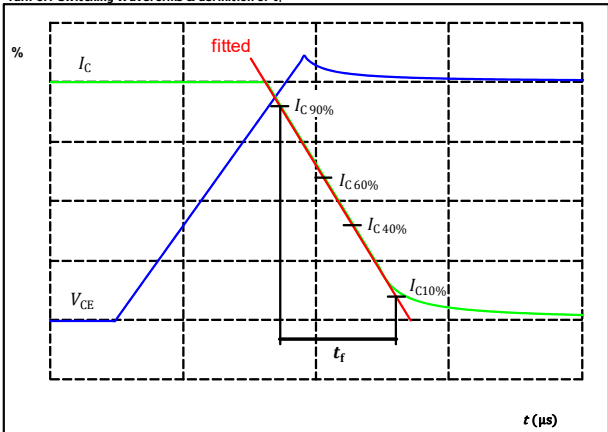
Turn-on Switching Waveforms & definition of t_{don} , t_{Eon} (t_{Eon} = integrating time for E_{on})



| | | |
|-------------------|-----|----|
| $V_{CE}(0\%) =$ | -15 | V |
| $V_{GE}(100\%) =$ | 15 | V |
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 200 | A |
| $t_{don} =$ | 205 | ns |

figure 3. IGBT

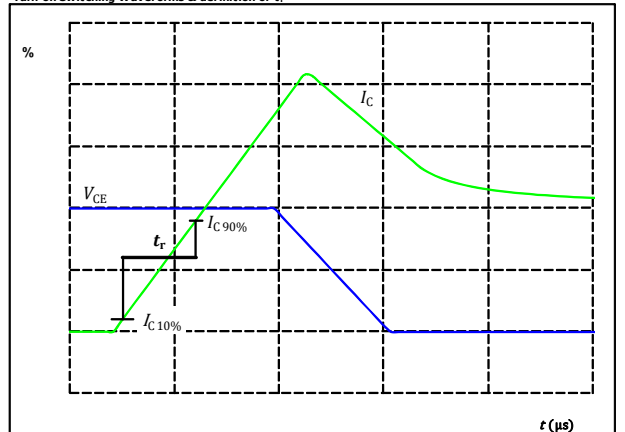
Turn-off Switching Waveforms & definition of t_f



| | | |
|----------------|-----|----|
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 200 | A |
| $t_f =$ | 91 | ns |

figure 4. IGBT

Turn-on Switching Waveforms & definition of t_r



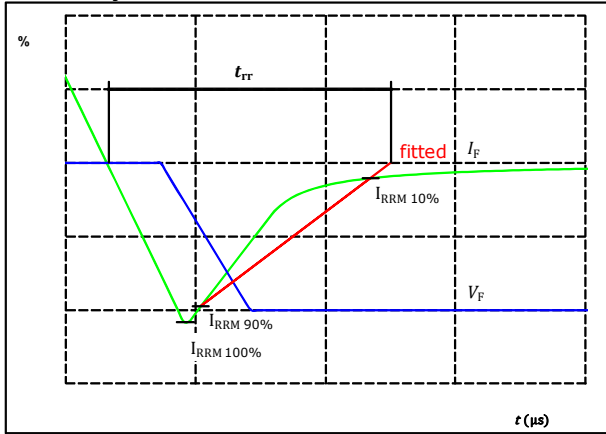
| | | |
|----------------|-----|----|
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 200 | A |
| $t_r =$ | 23 | ns |



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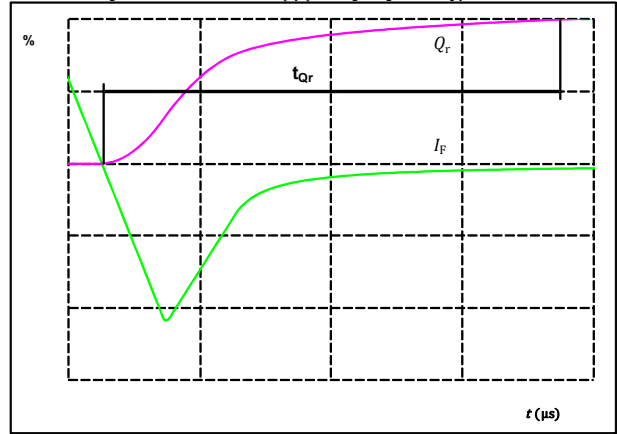
Half-Bridge Switching Characteristics

figure 5. FWD
Turn-off Switching Waveforms & definition of t_{rr}



| | | |
|--------------------|-----|----|
| $V_F(100\%) =$ | 600 | V |
| $I_F(100\%) =$ | 200 | A |
| $I_{RRM}(100\%) =$ | 308 | A |
| $t_{rr} =$ | 306 | ns |

figure 6. FWD
Turn-on Switching Waveforms & definition of t_{qr} ($t_{qr} =$ integrating time for Q_r)



| | | |
|----------------|-------|---------------|
| $I_F(100\%) =$ | 200 | A |
| $Q_r(100\%) =$ | 31,91 | μC |



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| Ordering Code & Marking | | | | | | | | |
|--|--|--|------------------------------|------------|-----------|-----------|-------|--------|
| Version | | | Ordering Code | | | | | |
| With std lid (6.5mm height) + no thermal grease | | | 80-M2122PA200M7-K709F70-/0A/ | | | | | |
| With thin lid (2.8mm height) + no thermal grease | | | 80-M2122PA200M7-K709F70-/0B/ | | | | | |
| With std lid (6.5mm height) + thermal grease (0,8 W/mK, P12, silicone-based) | | | 80-M2122PA200M7-K709F70-/1A/ | | | | | |
| With thin lid (2.8mm height) + thermal grease (0,8 W/mK, P12, silicone-based) | | | 80-M2122PA200M7-K709F70-/1B/ | | | | | |
| With std lid (6.5mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free) | | | 80-M2122PA200M7-K709F70-/4A/ | | | | | |
| With thin lid (2.8mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free) | | | 80-M2122PA200M7-K709F70-/4B/ | | | | | |
| With std lid (6.5mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based) | | | 80-M2122PA200M7-K709F70-/5A/ | | | | | |
| With thin lid (2.8mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based) | | | 80-M2122PA200M7-K709F70-/5B/ | | | | | |
| NN-NNNNNNNNNNNN TTTTWWWWYY UL VIN LLLLL SSSS | | | Text | | Date code | UL & VIN | Lot | Serial |
| | | | Name | | WWYY | UL VIN | LLLLL | SSSS |
| | | | Type&Ver | Lot number | Serial | Date code | | |
| Datamatrix | | | TTTTTWW | LLLLL | SSSS | WWYY | | |

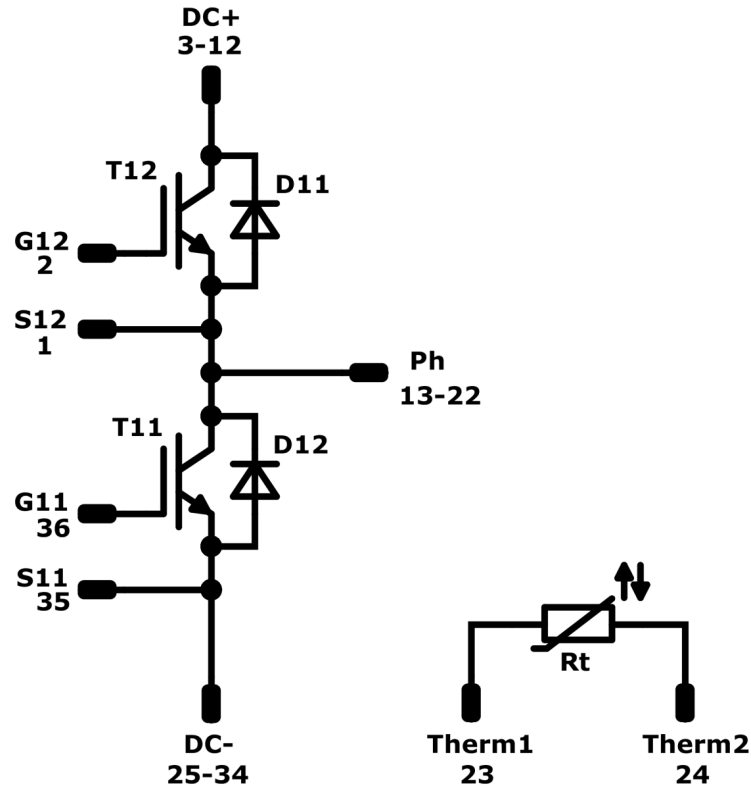
| PCB pad table | | | | Outline | |
|---------------|-------|-------|----------|---------|--|
| Pin | X | Y | Function | | |
| 1 | -7,6 | 21,9 | S12 | | |
| 2 | 4,7 | 21,9 | G12 | | |
| 3 | 18,6 | 21,8 | DC+ | | |
| 4 | 18,6 | 18,6 | DC+ | | |
| 5 | 18,6 | 15,4 | DC+ | | |
| 6 | 18,6 | 12,2 | DC+ | | |
| 7 | 18,6 | 9 | DC+ | | |
| 8 | 22,5 | 21,8 | DC+ | | |
| 9 | 22,5 | 18,6 | DC+ | | |
| 10 | 22,5 | 15,4 | DC+ | | |
| 11 | 22,5 | 12,2 | DC+ | | |
| 12 | 22,5 | 9 | DC+ | | |
| 13 | -22,5 | 7,8 | Ph | | |
| 14 | -22,5 | 4,6 | Ph | | |
| 15 | -22,5 | 1,4 | Ph | | |
| 16 | -22,5 | -1,8 | Ph | | |
| 17 | -22,5 | -5 | Ph | | |
| 18 | -18,6 | 7,8 | Ph | | |
| 19 | -18,6 | 4,6 | Ph | | |
| 20 | -18,6 | 1,4 | Ph | | |
| 21 | -18,6 | -1,8 | Ph | | |
| 22 | -18,6 | -5 | Ph | | |
| 23 | -6,8 | 1,6 | Therm1 | | |
| 24 | -6,8 | -1,6 | Therm2 | | |
| 25 | 18,6 | -9 | DC- | | |
| 26 | 18,6 | -12,2 | DC- | | |
| 27 | 18,6 | -15,4 | DC- | | |
| 28 | 18,6 | -18,6 | DC- | | |
| 29 | 18,6 | -21,8 | DC- | | |
| 30 | 22,5 | -9 | DC- | | |
| 31 | 22,5 | -12,2 | DC- | | |
| 32 | 22,5 | -15,4 | DC- | | |
| 33 | 22,5 | -18,6 | DC- | | |
| 34 | 22,5 | -21,8 | DC- | | |
| 35 | 4,6 | -18,7 | S11 | | |
| 36 | 1,7 | -21,9 | G11 | | |

Pad positions refers to center point. For more informations on pad design please see package data



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Pinout



Identification

| ID | Component | Voltage | Current | Function | Comment |
|----------|-----------|---------|---------|--------------------|---------|
| T11, T12 | IGBT | 1200 V | 200 A | Half-Bridge Switch | |
| D11, D12 | FWD | 1200 V | 200 A | Half-Bridge Diode | |
| Rt | NTC | | | Thermistor | |




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| Packaging instruction | | | |
|--------------------------------------|------|----------|-------------|
| Standard packaging quantity (SPQ) 72 | >SPQ | Standard | <SPQ Sample |

| Handling instruction |
|--|
| Handling instructions for MiniSkiiP® 2 packages see vincotech.com website. |

| Package data |
|---|
| Package data for MiniSkiiP® 2 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.  |

| Document No.: | Date: | Modification: | Pages |
|-------------------------------|--------------|---|-------|
| 80-M2122PA200M7-K709F70-D3-14 | 05 Mar. 2019 | Correction of I _c /I _f values | 1 |

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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.