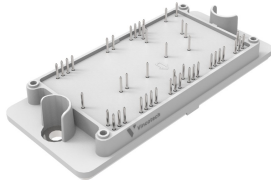
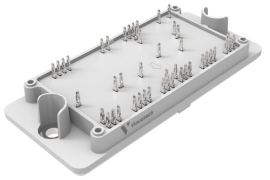
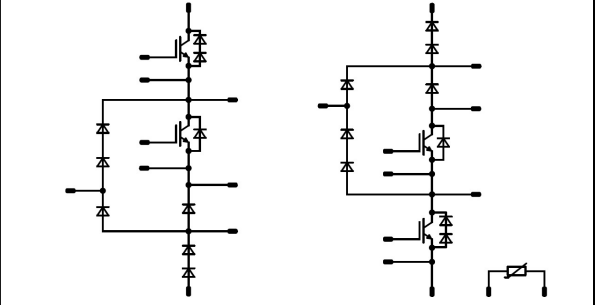




| <i>flowNPC 2</i> | 1500 V / 150 A |
|---|--|
| <div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Features</div> <ul style="list-style-type: none"> 1200 V components for 1500 V_{DC} systems Four quadrant operation | <div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">flow 2 13 mm housing</div> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; font-size: small;"> Solder pin Press-fit pin </div> |
| <div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Target applications</div> <ul style="list-style-type: none"> Solar Inverters Special Application | <div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Schematic</div>  |
| <div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Types</div> <ul style="list-style-type: none"> 30-FT12NIA150SH-LG09F08 30-PT12NIA150SH-LG09F08Y | |

Maximum Ratings

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

| Parameter | Symbol | Condition | Value | Unit |
|-----------------------------------|------------|--|-------|------|
| Buck Switch | | | | |
| Collector-emitter voltage | V_{CES} | | 1200 | V |
| Collector current | I_C | $T_j = T_{jmax}$ $T_s = 80\text{ }^\circ\text{C}$ | 137 | A |
| Repetitive peak collector current | I_{CRM} | t_p limited by T_{jmax} | 450 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ }^\circ\text{C}$ | 345 | W |
| Gate-emitter voltage | V_{GES} | | ±20 | V |
| Short circuit ratings | t_{SC} | $V_{GE} = 15\text{ V}$ $V_{CE} = 800\text{ V}$ $T_j = 150\text{ }^\circ\text{C}$ | 10 | µs |
| Maximum junction temperature | T_{jmax} | | 175 | °C |



Maximum Ratings

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

| Parameter | Symbol | Condition | Value | Unit |
|-------------------------------------|------------|--|-------|------|
| Buck Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1300 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 94 | A |
| Repetitive peak forward current | I_{FRM} | | 300 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 233 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |
| Buck Sw. Protection Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1300 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 28 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 97 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |
| Boost Switch | | | | |
| Collector-emitter voltage | V_{CES} | | 1200 | V |
| Collector current | I_C | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 137 | A |
| Repetitive peak collector current | I_{CRM} | t_p limited by T_{jmax} | 450 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 345 | W |
| Gate-emitter voltage | V_{GES} | | ±20 | V |
| Short circuit ratings | t_{SC} | $V_{GE} = 15\text{ V}$ $V_{CE} = 800\text{ V}$ $T_j = 150\text{ °C}$ | 10 | µs |
| Maximum junction temperature | T_{jmax} | | 175 | °C |
| Boost Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1300 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 94 | A |
| Repetitive peak forward current | I_{FRM} | | 300 | A |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 233 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |



Maximum Ratings

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

| Parameter | Symbol | Condition | Value | Unit |
|--|------------|---|-------|------------------|
| Boost Sw. Protection Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1200 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 30 | A |
| Surge (non-repetitive) forward current | I_{FSM} | 50 Hz Single Half Sine Wave $T_j = 150\text{ °C}$ $t_p = 10\text{ ms}$ | 100 | A |
| Surge current capability | I^2t | | 50 | A ² s |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 74 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |

| | | | | |
|--|------------|---|------|------------------|
| Boost D. Protection Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1200 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 30 | A |
| Surge (non-repetitive) forward current | I_{FSM} | 50 Hz Single Half Sine Wave $T_j = 150\text{ °C}$ $t_p = 10\text{ ms}$ | 100 | A |
| Surge current capability | I^2t | | 50 | A ² s |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 74 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |

| | | | | |
|--|------------|---|------|------------------|
| Boost Sw.Inv.Diode | | | | |
| Peak repetitive reverse voltage | V_{RRM} | | 1200 | V |
| Continuous (direct) forward current | I_F | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 121 | A |
| Surge (non-repetitive) forward current | I_{FSM} | 50 Hz Single Half Sine Wave $T_j = 150\text{ °C}$ $t_p = 10\text{ ms}$ | 860 | A |
| Surge current capability | I^2t | | 3700 | A ² s |
| Total power dissipation | P_{tot} | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$ | 234 | W |
| Maximum junction temperature | T_{jmax} | | 175 | °C |



Maximum Ratings

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

| Parameter | Symbol | Condition | Value | Unit |
|-----------|--------|-----------|-------|------|
|-----------|--------|-----------|-------|------|

Module Properties

Thermal Properties

| | | | | |
|---|-----------|--|-------------------------------|----|
| Storage temperature | T_{stg} | | -40...+125 | °C |
| Operation temperature under switching condition | T_{top} | | -40...(T _{max} - 25) | °C |

Isolation Properties

| | | | | |
|----------------------------|------------|-------------------------------------|-----------|----|
| Isolation voltage | V_{isol} | DC Test Voltage* $t_p = 2\text{ s}$ | 6000 | V |
| | | AC Voltage $t_p = 1\text{ min}$ | 2500 | V |
| Creepage distance | | | min. 12,7 | mm |
| Clearance | | | min. 12,7 | mm |
| Comparative Tracking Index | CTI | | = 525 | |

*100 % tested in production



Characteristic Values

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

Buck Switch

Static

| | | | | | | | | | | |
|--------------------------------------|--------------|-------------------|----|------|--------|------------------|------|----------------------|------|----------|
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{GE} = V_{CE}$ | | | 0,0052 | 25 | 5,3 | 5,8 | 6,3 | V |
| Collector-emitter saturation voltage | V_{CEsat} | | 15 | | 150 | 25 125 150 | 1,78 | 2,16 2,48 2,56 | 2,42 | V |
| Collector-emitter cut-off current | I_{CES} | | 0 | 1200 | | 25 | | | 2 | μ A |
| Gate-emitter leakage current | I_{GES} | | 20 | 0 | | 25 | | | 240 | nA |
| Internal gate resistance | r_g | | | | | | | none | | Ω |
| Input capacitance | C_{ies} | $f = 1$ Mhz | 0 | 25 | | 25 | | 8800 | | pF |
| Reverse transfer capacitance | C_{res} | | | | | | | 470 | | |
| Gate charge | Q_g | | 15 | | | 25 | | 1140 | | nC |

Thermal

| | | | | | | | | | | |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|--|------|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | | 0,28 | | K/W |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|--|------|--|-----|

Dynamic

| | | | | | | | | | | |
|-----------------------------|--------------|---|----------|-----|-----|-----|--|-------|-----|----|
| Turn-on delay time | $t_{d(on)}$ | $R_{gon} = 4 \Omega$ $R_{goff} = 4 \Omega$ | ± 15 | 600 | 150 | 25 | | 116 | | ns |
| | | | | | | 125 | | 120 | | |
| | | | | | | 150 | | 120 | | |
| Rise time | t_r | | | | | 25 | | 20 | | |
| | | | | | | 125 | | 23 | | |
| | | | | | | 150 | | 24 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25 | | 213 | | |
| | | 125 | | 267 | | | | | | |
| | | 150 | | 279 | | | | | | |
| Fall time | t_f | 25 | | 20 | | | | | | |
| | | 125 | | 66 | | | | | | |
| | | 150 | | 75 | | | | | | |
| Turn-on energy (per pulse) | E_{on} | $Q_{t-FWD} = 4,4 \mu$ C | | | | 25 | | 6,23 | mWs | |
| | | $Q_{t-FWD} = 8,4 \mu$ C | | | | 125 | | 8,57 | | |
| | | $Q_{t-FWD} = 9,7 \mu$ C | | | | 150 | | 9,33 | | |
| Turn-off energy (per pulse) | E_{off} | | | | | 25 | | 5,36 | | |
| | | | | | | 125 | | 9,58 | | |
| | | | | | | 150 | | 10,74 | | |



Characteristic Values

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

Buck Diode

Static

| | | | | | | | | | |
|-------------------------|-------|--|------|-----|-----------|--|--------------|------|---------|
| Forward voltage | V_F | | | 150 | 25 125 | | 3,35 3,10 | 3,84 | V |
| Reverse leakage current | I_R | | 1300 | | 25 | | | 7,6 | μ A |

Thermal

| | | | | | | | | | |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|------|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | 0,41 | | K/W |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|------|--|-----|

Dynamic

| | | | | | | | | | |
|---------------------------------------|----------------------|---|----------|-----|------------------|------------------|----------------------|--|------------|
| Peak recovery current | I_{RRM} | | | | 25 125 150 | | 110 139 151 | | A |
| Reverse recovery time | t_{rr} | | | | 25 125 150 | | 79 111 124 | | ns |
| Recovered charge | Q_r | $di/dt = 8628$ A/ μ s $di/dt = 8113$ A/ μ s $di/dt = 8006$ A/ μ s | ± 15 | 600 | 150 | 25 125 150 | 4,42 8,38 9,74 | | μ C |
| Reverse recovered energy | E_{rec} | | | | 25 125 150 | | 1,50 3,08 3,62 | | mWs |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | 25 125 150 | | 7069 1003 1214 | | A/ μ s |

Buck Sw. Protection Diode

Static

| | | | | | | | | | |
|-------------------------|-------|--|------|----|-----------|--|--------------|------|---------|
| Forward voltage | V_F | | | 30 | 25 125 | | 3,56 3,62 | 4,44 | V |
| Reverse leakage current | I_R | | 1300 | | 25 | | | 1,6 | μ A |

Thermal

| | | | | | | | | | |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|------|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | 0,97 | | K/W |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|------|--|-----|



Characteristic Values

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

Boost Switch

Static

| Parameter | Symbol | Conditions | V_{GS} [V] | V_{GE} [V] | V_{DS} [V] | I_C [A] | T_j [°C] | Min | Typ | Max | Unit |
|--------------------------------------|--------------|---------------------|--------------|--------------|--------------|-----------|------------------|------|----------------------|------|------|
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{GE} = V_{CE}$ | | | | 0,0052 | 25 | 5,3 | 5,8 | 6,3 | V |
| Collector-emitter saturation voltage | V_{CEsat} | | 15 | | | 150 | 25 125 150 | 1,78 | 2,16 2,48 2,56 | 2,42 | V |
| Collector-emitter cut-off current | I_{CES} | | 0 | 1200 | | | 25 | | | 2 | μA |
| Gate-emitter leakage current | I_{GES} | | 20 | 0 | | | 25 | | | 240 | nA |
| Internal gate resistance | r_g | | | | | | | | none | | Ω |
| Input capacitance | C_{ies} | $f = 1 \text{ Mhz}$ | 0 | 25 | | | 25 | | 8800 | | pF |
| Reverse transfer capacitance | C_{res} | | | | | | | | 470 | | |
| Gate charge | Q_g | | 15 | | | | 25 | | 1140 | | nC |

Thermal

| Parameter | Symbol | Conditions | V_{GS} [V] | V_{GE} [V] | V_{DS} [V] | I_C [A] | T_j [°C] | Min | Typ | Max | Unit |
|-------------------------------------|---------------|---|--------------|--------------|--------------|-----------|------------|-----|------|-----|------|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX) | | | | | | | 0,28 | | K/W |

Dynamic

| Parameter | Symbol | Conditions | V_{GS} [V] | V_{GE} [V] | V_{DS} [V] | I_C [A] | T_j [°C] | Min | Typ | Max | Unit |
|-----------------------------|--------------|--|--------------|--------------|--------------|-----------|------------|-----|------|-----|------|
| Turn-on delay time | $t_{d(on)}$ | $R_{gon} = 4 \Omega$ $R_{goff} = 4 \Omega$ | ±15 | 600 | 150 | | 25 | | 111 | | ns |
| | | | | | | | | 125 | 118 | | |
| | | | | | | | | 150 | 118 | | |
| Rise time | t_r | | | | | | | 25 | 21 | | |
| | | | | | | | | 125 | 23 | | |
| | | | | | | | | 150 | 23 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | | | | 25 | 209 | | |
| | | 125 | 266 | | | | | | | | |
| | | 150 | 285 | | | | | | | | |
| Fall time | t_f | 25 | 25 | | | | | | | | |
| | | 125 | 65 | | | | | | | | |
| | | 150 | 84 | | | | | | | | |
| Turn-on energy (per pulse) | E_{on} | $Q_{t-FWD} = 4,2 \mu\text{C}$ $Q_{t-FWD} = 8,7 \mu\text{C}$ $Q_{t-FWD} = 10,3 \mu\text{C}$ | | | | | 25 | | 5,76 | | mWs |
| | | | 125 | 8,31 | | | | | | | |
| | | | 150 | 9,10 | | | | | | | |
| Turn-off energy (per pulse) | E_{off} | | | | | | 25 | | 5,12 | | mWs |
| | | | 125 | 8,86 | | | | | | | |
| | | | 150 | 10,49 | | | | | | | |



Characteristic Values

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

Boost Diode

Static

| | | | | | | | | | | |
|-------------------------|-------|--|--|------|-----|-----------|--|--------------|------|----|
| Forward voltage | V_F | | | | 150 | 25 125 | | 3,35 3,10 | 3,84 | V |
| Reverse leakage current | I_R | | | 1300 | | 25 | | | 7,6 | μA |

Thermal

| | | | | | | | | | | |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|--|------|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | | 0,41 | | K/W |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|--|------|--|-----|

Dynamic

| | | | | | | | | | | |
|---------------------------------------|----------------------|---|-----|-----|-----|------------------|--|-----------------------|--|------|
| Peak recovery current | I_{RRM} | | | | | 25 125 150 | | 87 127 139 | | A |
| Reverse recovery time | t_{rr} | | | | | 25 125 150 | | 88 126 149 | | ns |
| Recovered charge | Q_r | $di/dt = 7944$ A/μs $di/dt = 7602$ A/μs $di/dt = 7467$ A/μs | ±15 | 600 | 150 | 25 125 150 | | 4,20 8,68 10,27 | | μC |
| Reverse recovered energy | E_{rec} | | | | | 25 125 150 | | 1,48 2,90 3,55 | | mWs |
| Peak rate of fall of recovery current | $(di_{rr}/dt)_{max}$ | | | | | 25 125 150 | | 2530 874 1472 | | A/μs |

Boost Sw. Protection Diode

Static

| | | | | | | | | | | |
|-------------------------|-------|--|--|------|----|------------------|--|----------------------|------------|----|
| Forward voltage | V_F | | | | 25 | 25 125 150 | | 2,27 2,44 2,36 | 2,74 | V |
| Reverse leakage current | I_R | | | 1200 | | 25 150 | | | 60 3300 | μA |

Thermal

| | | | | | | | | | | |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|--|------|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | | 1,29 | | K/W |
|-------------------------------------|---------------|------------------------------------|--|--|--|--|--|------|--|-----|



Characteristic Values

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

Boost D. Protection Diode

Static

| | | | | | | | | | | |
|-------------------------|-------|--|------|----|------------------|--|----------------------|------------|--|---------|
| Forward voltage | V_F | | | 25 | 25 125 150 | | 2,27 2,44 2,36 | 2,74 | | V |
| Reverse leakage current | I_R | | 1200 | | 25 150 | | | 60 3300 | | μ A |

Thermal

| | | | | | | | | | | |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|------|--|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | 1,29 | | | K/W |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|------|--|--|-----|

Boost Sw.Inv.Diode

Static

| | | | | | | | | | | |
|-------------------------|-------|--|------|-----|------------------|--|----------------------|--------------|--|---------|
| Forward voltage | V_F | | | 150 | 25 125 150 | | 2,22 2,30 2,23 | 2,49 | | V |
| Reverse leakage current | I_R | | 1200 | | 25 150 | | | 240 28000 | | μ A |

Thermal

| | | | | | | | | | | |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|------|--|--|-----|
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK (PSX) | | | | | 0,41 | | | K/W |
|-------------------------------------|---------------|---------------------------------------|--|--|--|--|------|--|--|-----|

Thermistor

| | | | | | | | | | | |
|----------------------------|----------------|---------------------------|--|--|-----|----|------|---|---|------------|
| Rated resistance | R | | | | 25 | | 22 | | | k Ω |
| Deviation of R_{100} | $\Delta_{R/R}$ | $R_{100} = 1484$ Ω | | | 100 | -5 | | 5 | | % |
| Power dissipation | P | | | | 25 | | 5 | | | mW |
| Power dissipation constant | | | | | 25 | | 1,5 | | | mW/K |
| B-value | $B_{(25/50)}$ | Tol. ± 1 % | | | 25 | | 3962 | | | K |
| B-value | $B_{(25/100)}$ | Tol. ± 1 % | | | 25 | | 4000 | | | K |
| Vincotech NTC Reference | | | | | | | | | I | |



Buck Switch Characteristics

figure 1. IGBT

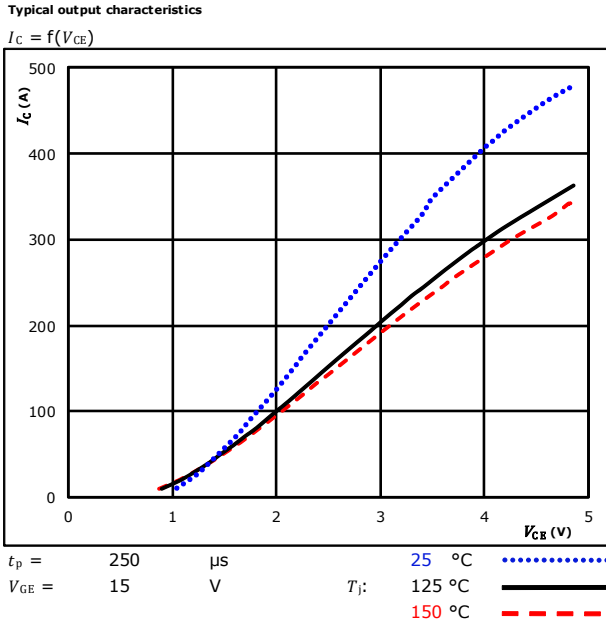


figure 2. IGBT

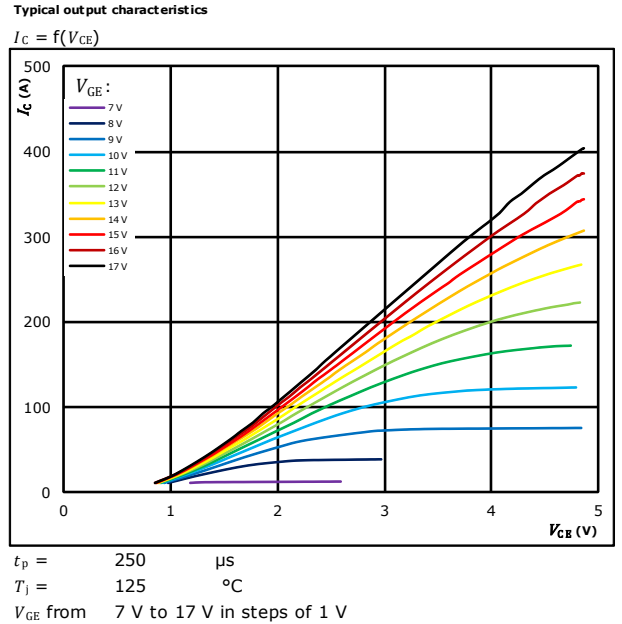


figure 3. IGBT

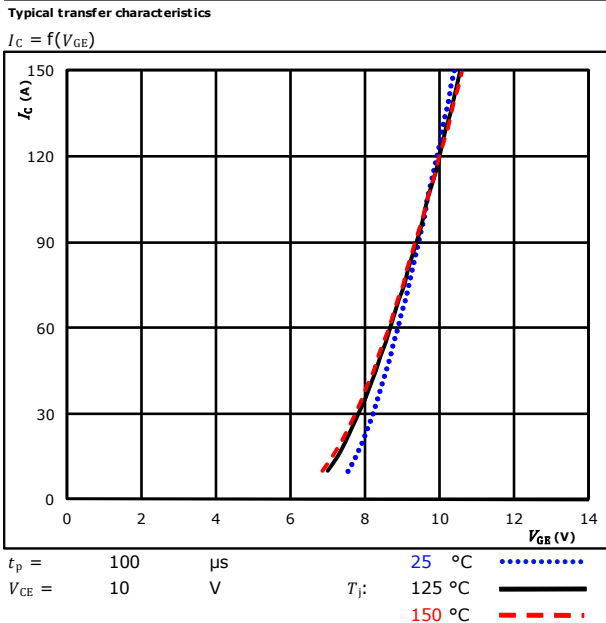
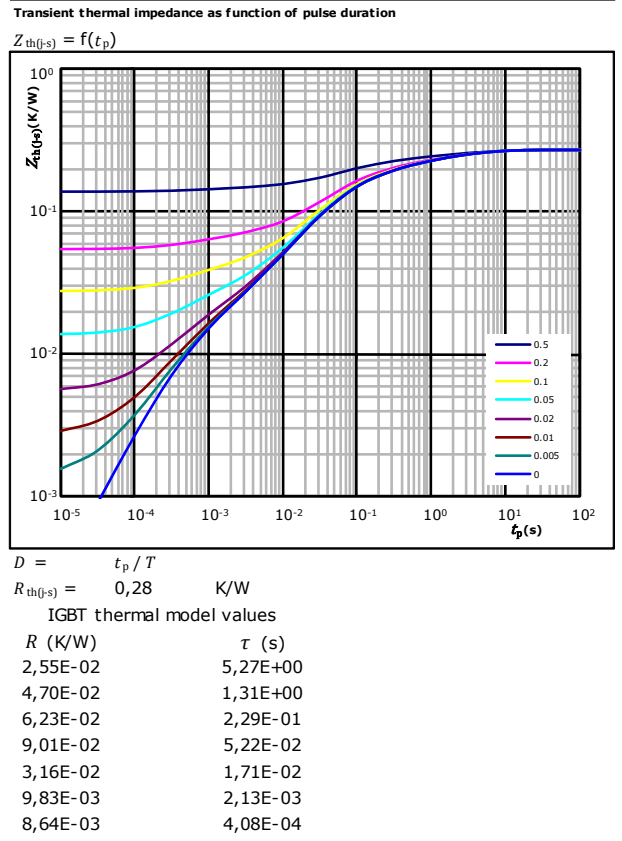


figure 4. IGBT



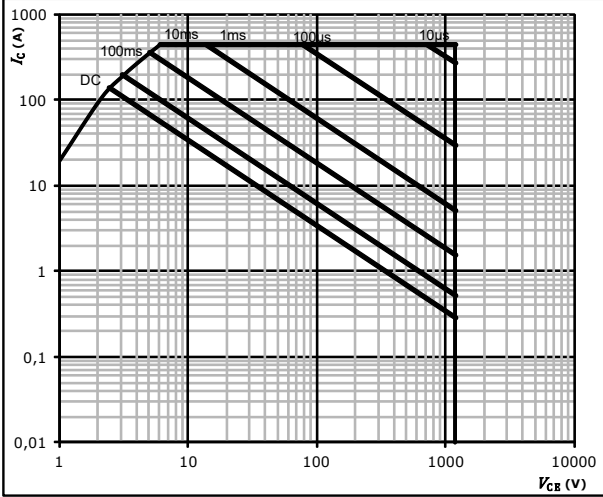


Buck Switch Characteristics

figure 5. IGBT

Safe operating area

$I_C = f(V_{CE})$



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

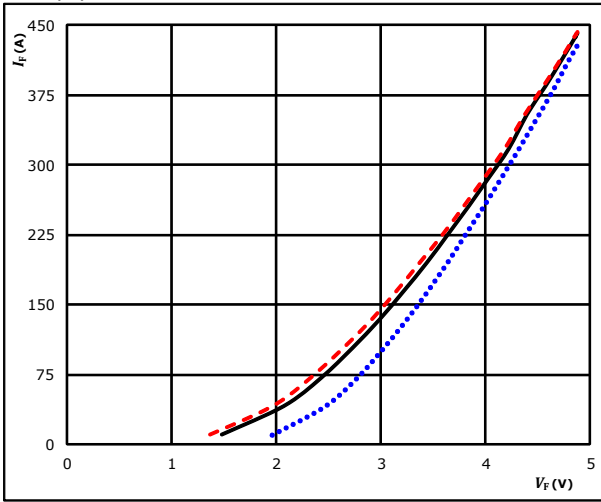


Buck Diode Characteristics

figure 1. FWD

Typical forward characteristics

$$I_F = f(V_F)$$

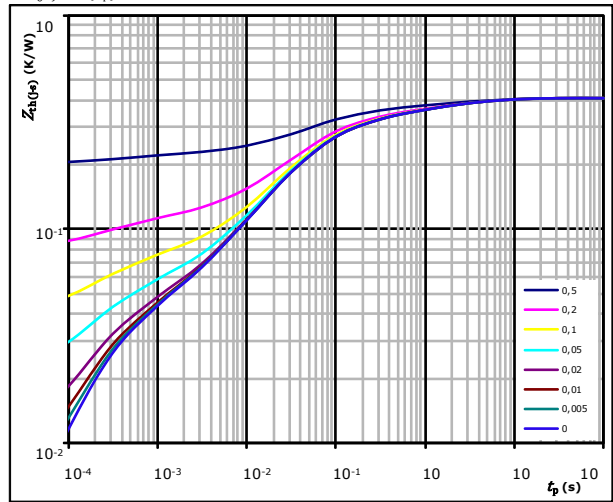


$t_p =$ 250 μ s
 T_j : 25 °C
 125 °C ———
 150 °C - - - -

figure 2. FWD

Transient thermal impedance as a function of pulse width

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



$D =$ t_p / T
 $R_{th(j-s)} =$ 0,41 K/W

FWD thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 3,46E-02 | 5,29E+00 |
| 5,25E-02 | 9,84E-01 |
| 8,36E-02 | 1,62E-01 |
| 1,54E-01 | 3,91E-02 |
| 4,14E-02 | 9,22E-03 |
| 1,35E-02 | 1,28E-03 |
| 2,79E-02 | 2,39E-04 |

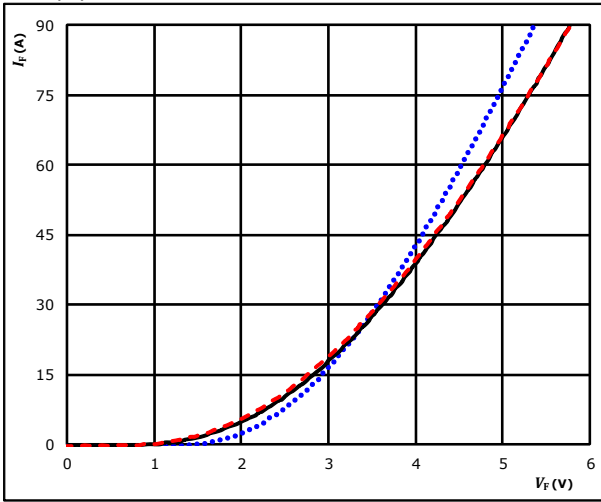


Buck Sw. Protection Diode Characteristics

figure 1. Prot. Diode

Typical forward characteristics

$$I_F = f(V_F)$$

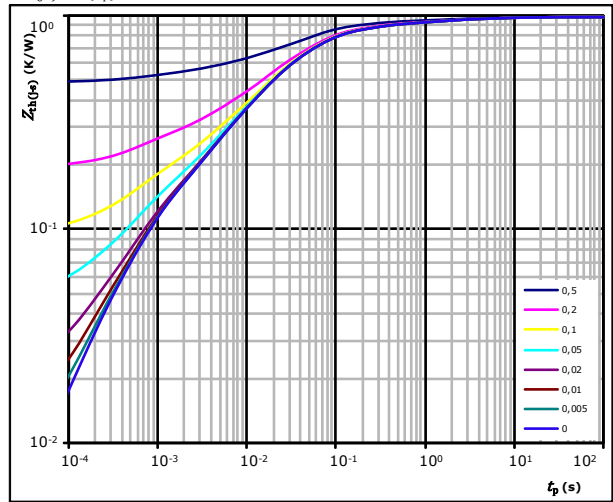


$t_p = 250 \mu s$
 T_j : 25 °C
 125 °C ———
 150 °C - - - -

figure 2. Prot. Diode

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$
 $R_{th(j-s)} = 0,97 \text{ K/W}$
 Prot. Diode thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 3,38E-02 | 6,50E+00 |
| 7,05E-02 | 9,48E-01 |
| 1,87E-01 | 1,18E-01 |
| 4,58E-01 | 2,73E-02 |
| 1,41E-01 | 4,93E-03 |
| 8,48E-02 | 6,22E-04 |

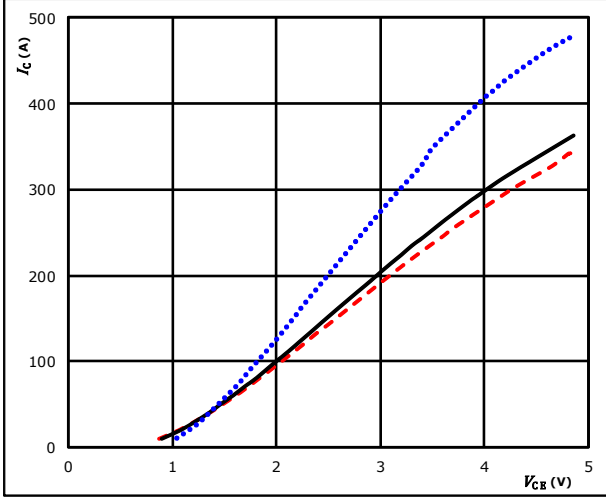


Boost Switch Characteristics

figure 1. IGBT

Typical output characteristics

$I_C = f(V_{CE})$

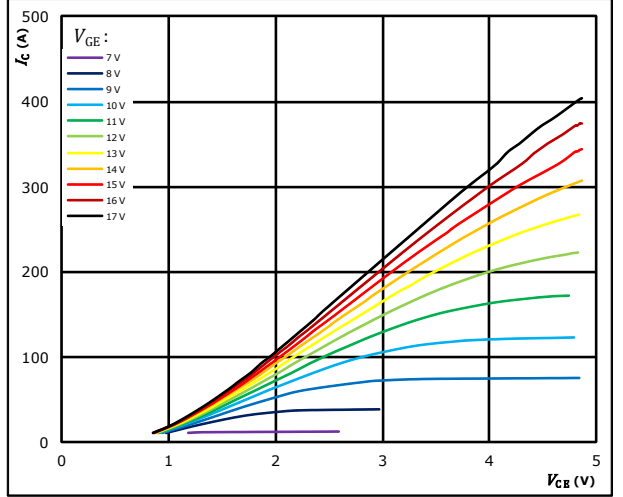


$t_p = 250 \mu s$ $T_j: 25 \text{ }^\circ C$ (blue dotted line)
 $V_{GE} = 15 V$ $T_j: 125 \text{ }^\circ C$ (black solid line)
 $T_j: 150 \text{ }^\circ C$ (red dashed line)

figure 2. IGBT

Typical output characteristics

$I_C = f(V_{CE})$

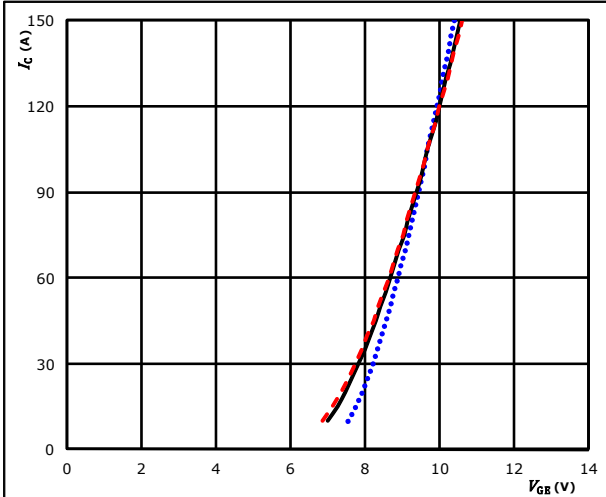


$t_p = 250 \mu s$
 $T_j = 125 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

figure 3. IGBT

Typical transfer characteristics

$I_C = f(V_{GE})$

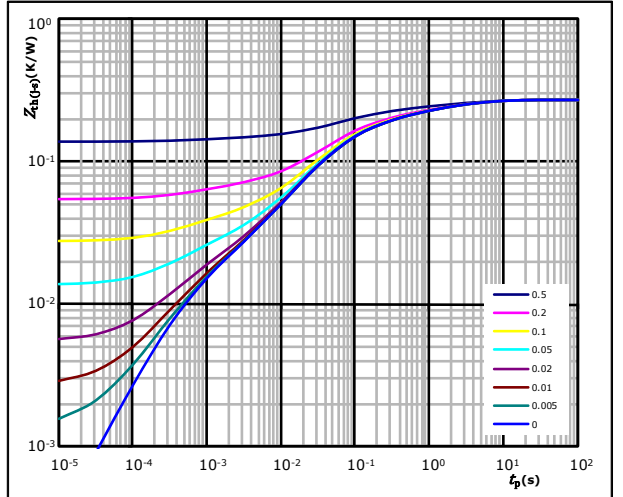


$t_p = 100 \mu s$ $T_j: 25 \text{ }^\circ C$ (blue dotted line)
 $V_{CE} = 10 V$ $T_j: 125 \text{ }^\circ C$ (black solid line)
 $T_j: 150 \text{ }^\circ C$ (red dashed line)

figure 4. IGBT

Transient thermal impedance as function of pulse duration

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



$D = t_p / T$
 $R_{th(j-s)} = 0,28 \text{ K/W}$

IGBT thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 2,55E-02 | 5,27E+00 |
| 4,70E-02 | 1,31E+00 |
| 6,23E-02 | 2,29E-01 |
| 9,01E-02 | 5,22E-02 |
| 3,16E-02 | 1,71E-02 |
| 9,83E-03 | 2,13E-03 |
| 8,64E-03 | 4,08E-04 |

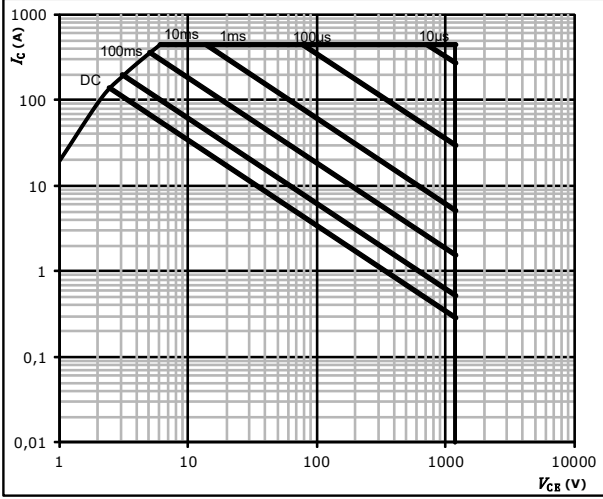


Boost Switch Characteristics

figure 5. IGBT

Safe operating area

$I_C = f(V_{CE})$



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

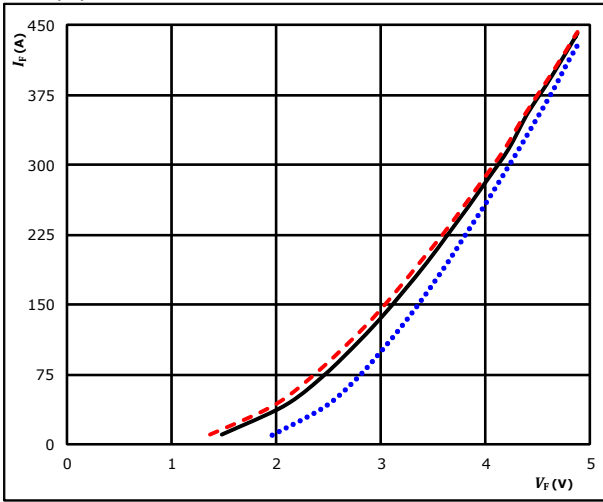


Boost Diode Characteristics

figure 1. **FWD**

Typical forward characteristics

$$I_F = f(V_F)$$

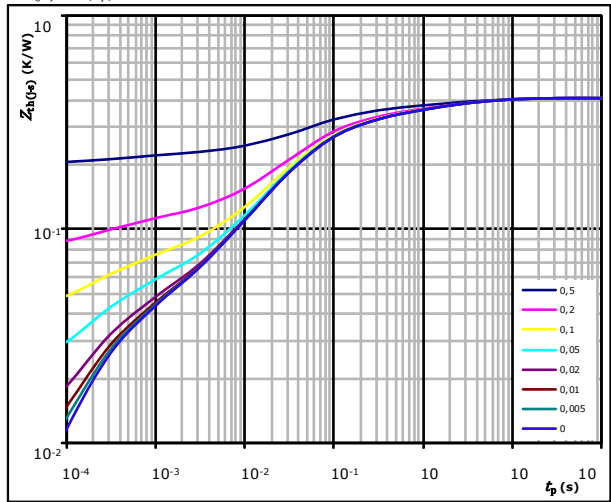


$t_p =$ 250 μ s
 T_j : 25 °C
 125 °C ———
 150 °C - - - -

figure 2. **FWD**

Transient thermal impedance as a function of pulse width

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



$D =$ t_p / T
 $R_{th(j-s)} =$ 0,41 K/W

FWD thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 3,46E-02 | 5,29E+00 |
| 5,25E-02 | 9,84E-01 |
| 8,36E-02 | 1,62E-01 |
| 1,54E-01 | 3,91E-02 |
| 4,14E-02 | 9,22E-03 |
| 1,35E-02 | 1,28E-03 |
| 2,79E-02 | 2,39E-04 |

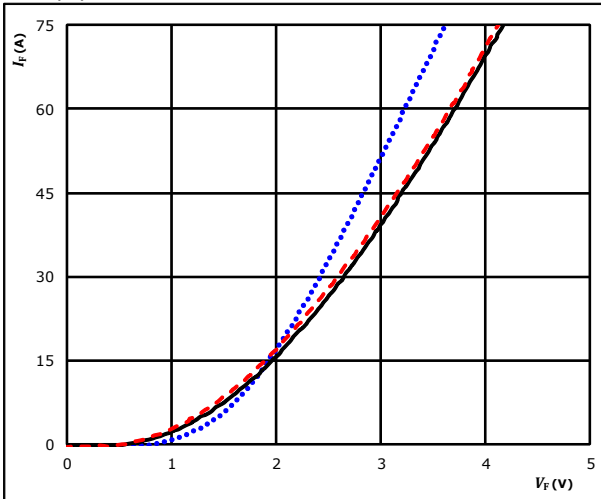


Boost Sw. Protection Diode Characteristics

figure 1. Prot. Diode

Typical forward characteristics

$$I_F = f(V_F)$$

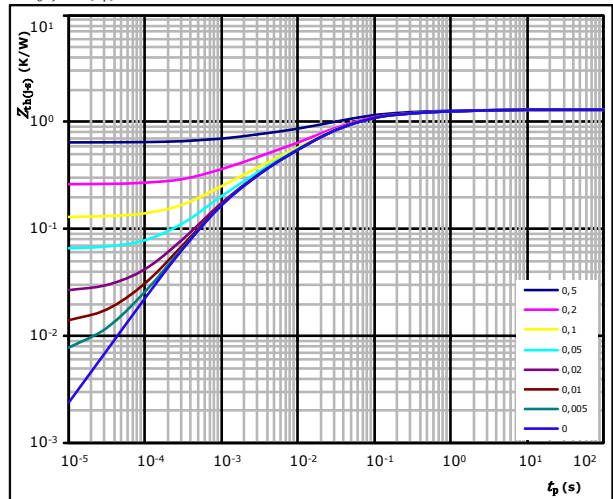


$t_p = 250 \mu s$
 T_j : 25 °C (blue dotted line)
 125 °C (black solid line)
 150 °C (red dashed line)

figure 2. Prot. Diode

Transient thermal impedance as a function of pulse width

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



$$D = \frac{t_p}{T}$$

$$R_{th(j-s)} = 1,29 \text{ K/W}$$

Prot. Diode thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 6,16E-02 | 2,03E+00 |
| 1,25E-01 | 2,79E-01 |
| 4,82E-01 | 4,69E-02 |
| 3,44E-01 | 1,34E-02 |
| 1,35E-01 | 3,30E-03 |
| 1,42E-01 | 8,91E-04 |

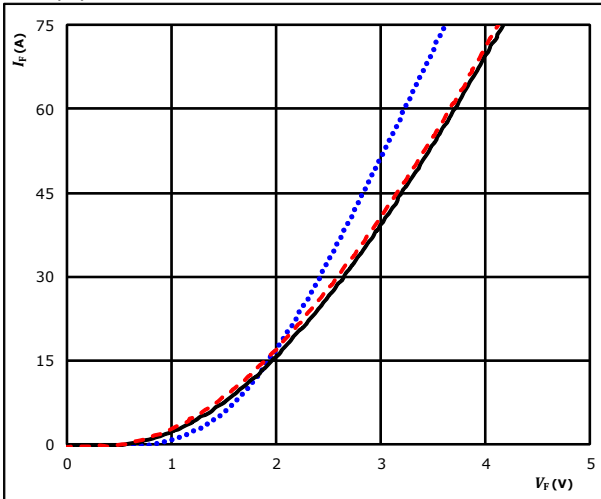


Boost D. Protection Diode Characteristics

figure 1. Prot. Diode

Typical forward characteristics

$$I_F = f(V_F)$$

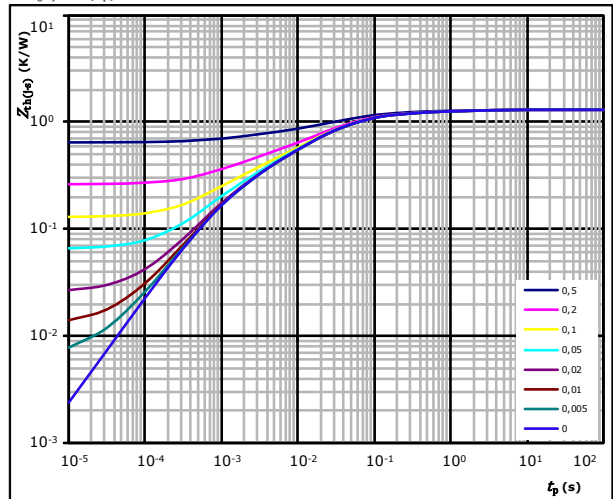


$t_p = 250 \mu s$
 T_j : 25 °C (blue dotted line)
 125 °C (black solid line)
 150 °C (red dashed line)

figure 2. Prot. Diode

Transient thermal impedance as a function of pulse width

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



$$D = \frac{t_p}{T}$$

$$R_{th(j-s)} = 1,29 \text{ K/W}$$

Prot. Diode thermal model values

| R (K/W) | τ (s) |
|-----------|------------|
| 6,16E-02 | 2,03E+00 |
| 1,25E-01 | 2,79E-01 |
| 4,82E-01 | 4,69E-02 |
| 3,44E-01 | 1,34E-02 |
| 1,35E-01 | 3,30E-03 |
| 1,42E-01 | 8,91E-04 |

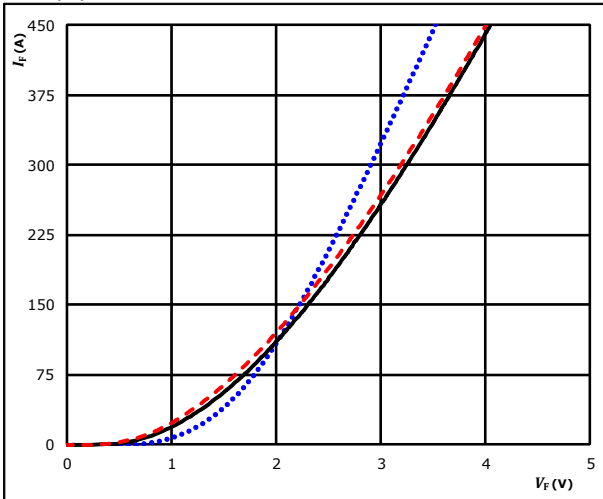


Boost Sw.Inv.Diode Characteristics

figure 1. FWD

Typical forward characteristics

$$I_F = f(V_F)$$

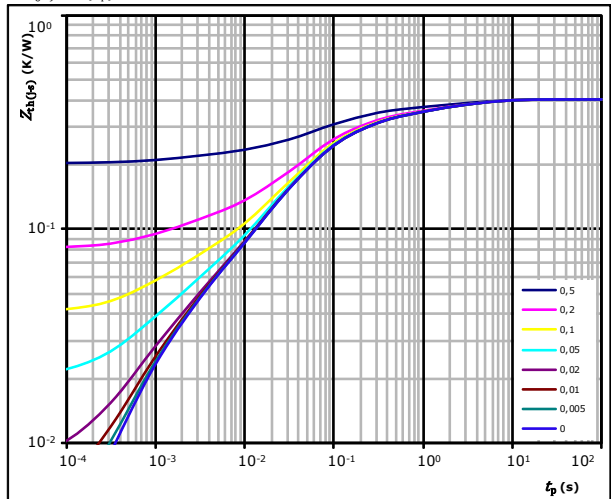


$t_p = 250 \mu s$
 T_j : 25 °C
 125 °C ———
 150 °C - - - -

figure 2. FWD

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$
 $R_{th(j-s)} = 0,41 \text{ K/W}$
 FWD thermal model values

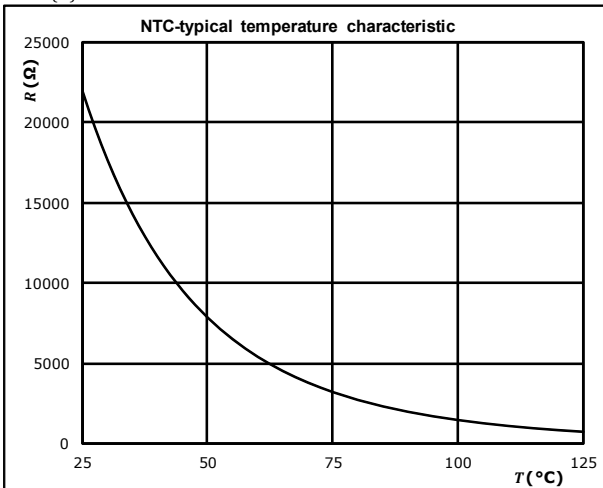
| R (K/W) | τ (s) |
|-----------|------------|
| 4,46E-02 | 3,97E+00 |
| 5,69E-02 | 7,74E-01 |
| 1,16E-01 | 1,33E-01 |
| 1,34E-01 | 3,91E-02 |
| 2,84E-02 | 7,16E-03 |
| 2,55E-02 | 1,10E-03 |

Thermistor Characteristics

figure 1. Thermistor

Typical NTC characteristic as a function of temperature

$$R = f(T)$$

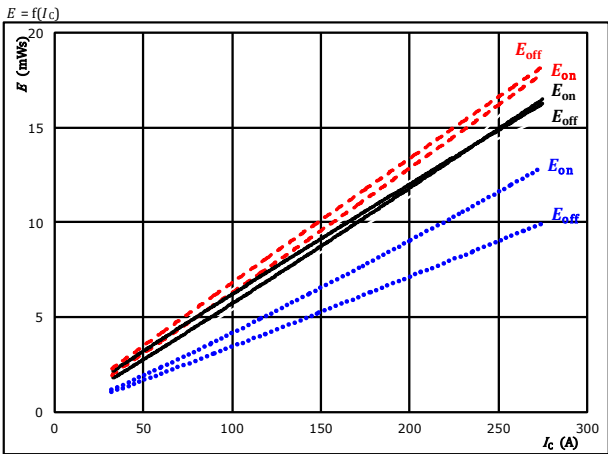




Buck Switching Characteristics

figure 1. IGBT

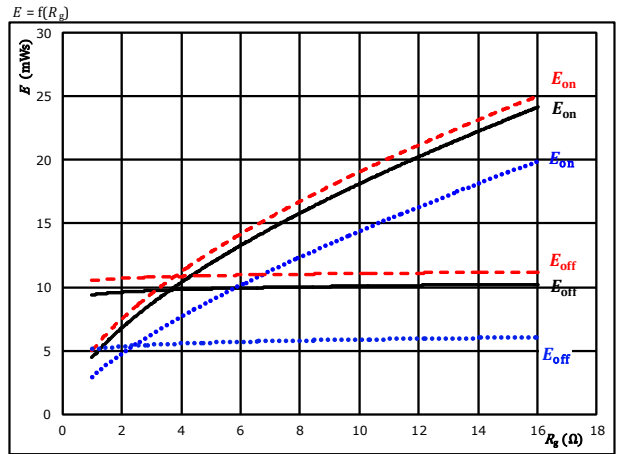
Typical switching energy losses as a function of collector current



With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{gon} = 4$ Ω
 $R_{goff} = 4$ Ω
 $T_j: 25$ $^{\circ}\text{C}$ (blue dotted)
 125 $^{\circ}\text{C}$ (black solid)
 150 $^{\circ}\text{C}$ (red dashed)

figure 2. IGBT

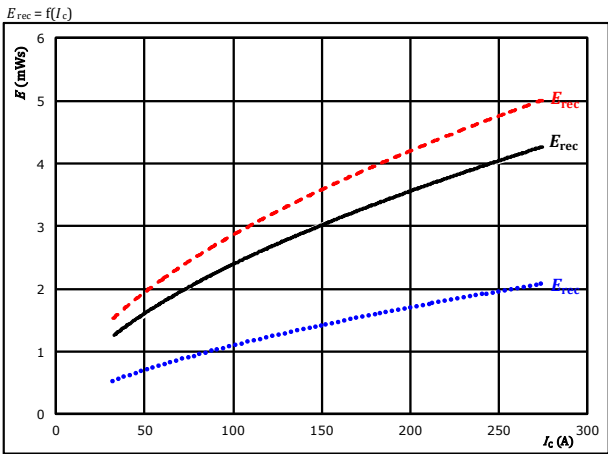
Typical switching energy losses as a function of gate resistor



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

figure 3. FWD

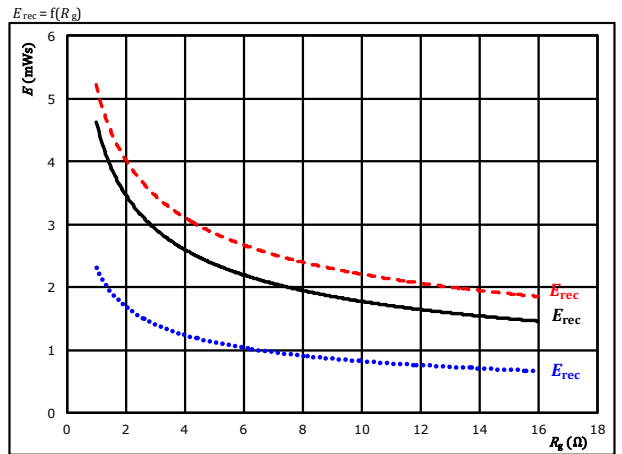
Typical reverse recovered energy loss as a function of collector current



With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{gon} = 4$ Ω
 $T_j: 25$ $^{\circ}\text{C}$ (blue dotted)
 125 $^{\circ}\text{C}$ (black solid)
 150 $^{\circ}\text{C}$ (red dashed)

figure 4. FWD

Typical reverse recovered energy loss as a function of gate resistor



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

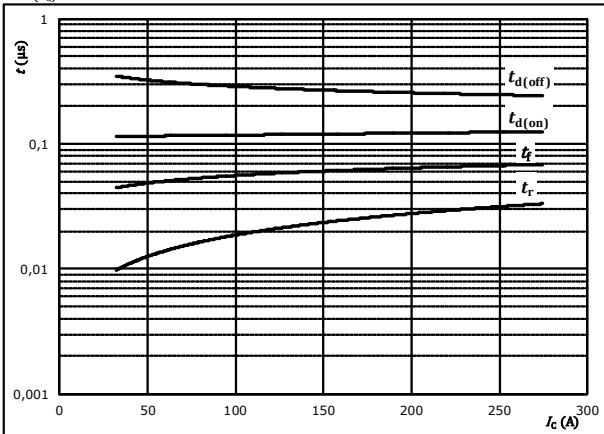


Buck Switching Characteristics

figure 5. IGBT

Typical switching times as a function of collector current

$$t = f(I_C)$$



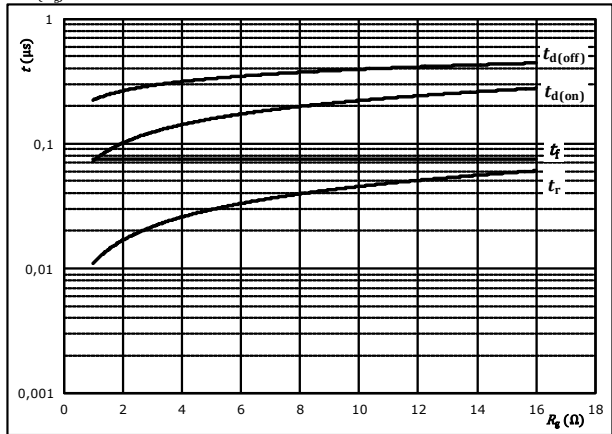
With an inductive load at

| | | |
|--------------|-----|----|
| $T_j =$ | 150 | °C |
| $V_{CE} =$ | 600 | V |
| $V_{GE} =$ | ±15 | V |
| $R_{gon} =$ | 4 | Ω |
| $R_{goff} =$ | 4 | Ω |

figure 6. IGBT

Typical switching times as a function of gate resistor

$$t = f(R_g)$$



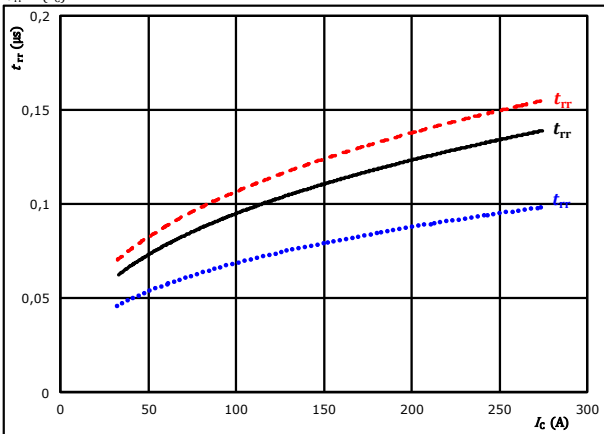
With an inductive load at

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

figure 7. FWD

Typical reverse recovery time as a function of collector current

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

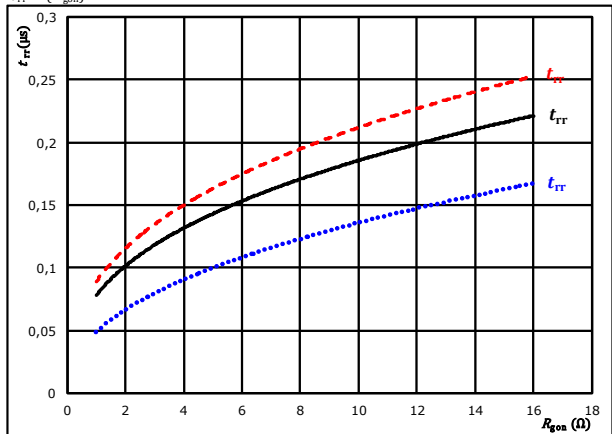


| | | | | | | |
|----|-------------|-----|---|---------|--------|-------|
| At | $V_{CE} =$ | 600 | V | $T_j =$ | 25 °C | |
| | $V_{GE} =$ | ±15 | V | | 125 °C | ———— |
| | $R_{gon} =$ | 4 | Ω | | 150 °C | ----- |

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 | ———— |
| | $I_C =$ | 150 | A | | 150 °C | ----- |

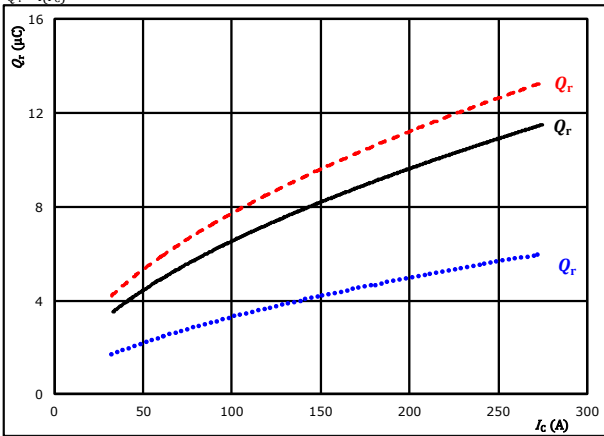


Buck Switching Characteristics

figure 9. FWD

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$

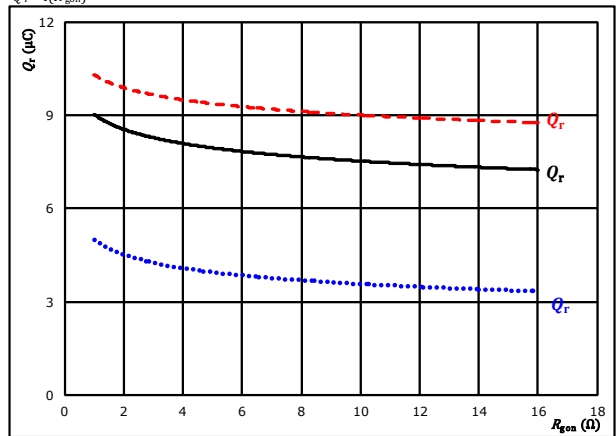


At $V_{CE} = 600$ V $T_j = 25$ °C $V_{GE} = \pm 15$ V $T_j = 125$ °C $R_{gpn} = 4$ Ω $T_j = 150$ °C

figure 10. FWD

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

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

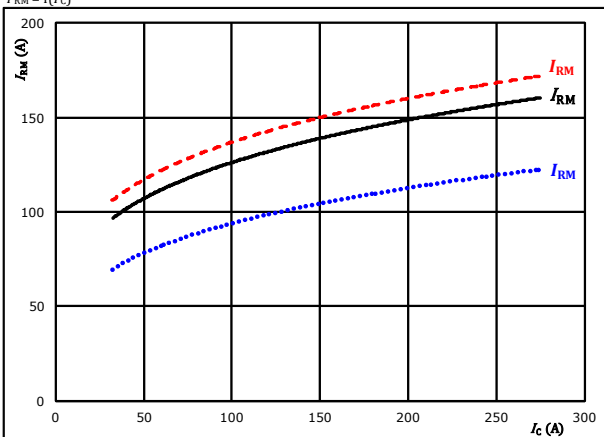


At $V_{CE} = 600$ V $T_j = 25$ °C $V_{GE} = \pm 15$ V $T_j = 125$ °C $I_c = 150$ A $T_j = 150$ °C

figure 11. FWD

Typical peak reverse recovery current as a function of collector current

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

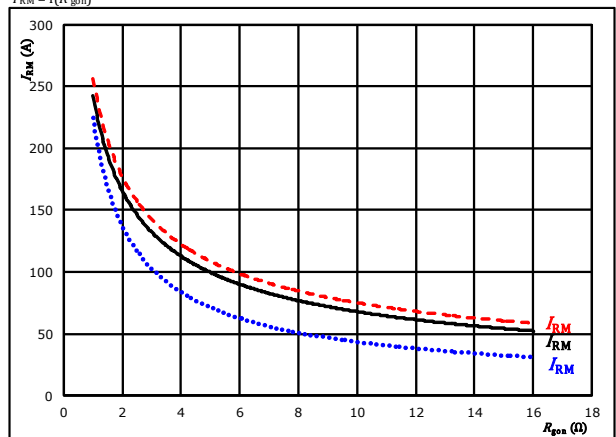


At $V_{CE} = 600$ V $T_j = 25$ °C $V_{GE} = \pm 15$ V $T_j = 125$ °C $R_{gpn} = 4$ Ω $T_j = 150$ °C

figure 12. FWD

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

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



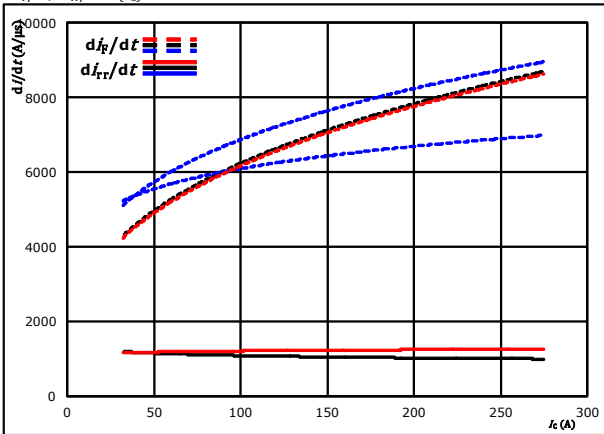
At $V_{CE} = 600$ V $T_j = 25$ °C $V_{GE} = \pm 15$ V $T_j = 125$ °C $I_c = 150$ A $T_j = 150$ °C



Buck Switching Characteristics

figure 13. FWD

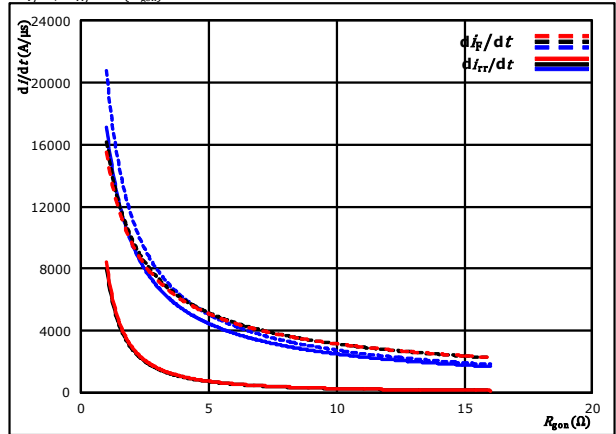
Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_{rr}/dt = f(I_c)$



At $V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $R_{g(on)} = 4$ Ω $T_j = 150$ °C

figure 14. FWD

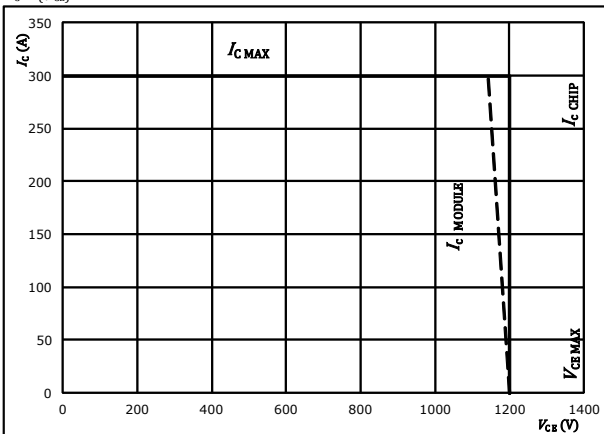
Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{g(on)})$



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

figure 15. IGBT

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



At $T_j = 125$ °C
 $R_{g(on)} = 4$ Ω
 $R_{g(off)} = 4$ Ω



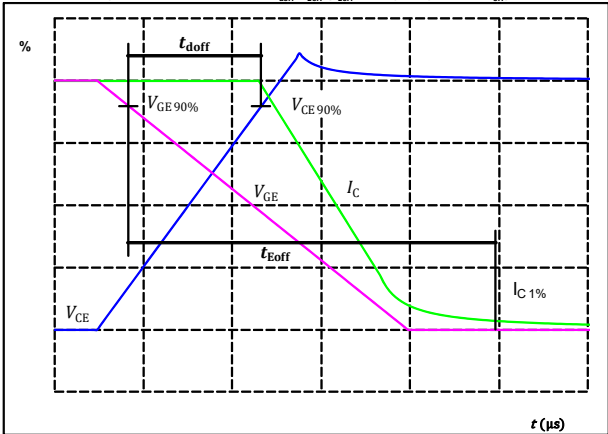
Buck Switching Definitions

General conditions

| | | |
|-------------------|---|------------|
| T_j | = | 125 °C |
| $R_{g\text{on}}$ | = | 4 Ω |
| $R_{g\text{off}}$ | = | 4 Ω |

figure 1. IGBT

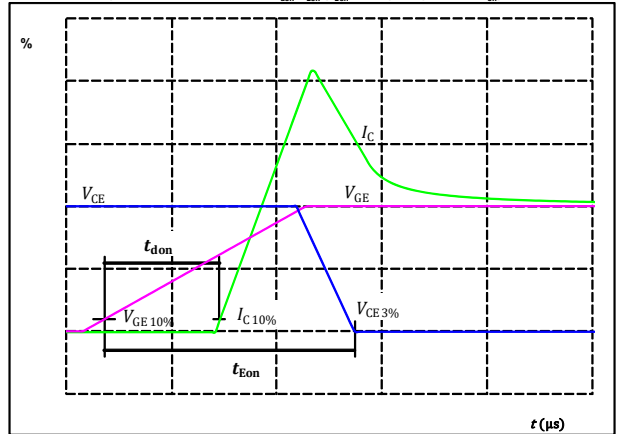
Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff} (t_{Eoff} = integrating time for E_{off})



| | | |
|---------------------|-----|----|
| $V_{CE}(0\%) =$ | -15 | V |
| $V_{GE}(100\%) =$ | 15 | V |
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 150 | A |
| $t_{\text{doff}} =$ | 267 | ns |

figure 2. IGBT

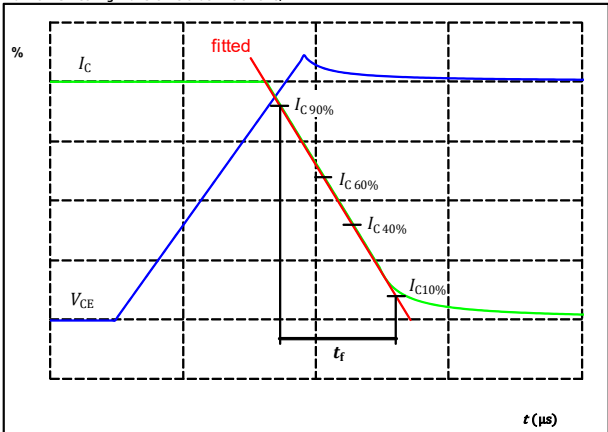
Turn-on Switching Waveforms & definition of t_{don} , t_{Eon} (t_{Eon} = integrating time for E_{on})



| | | |
|--------------------|-----|----|
| $V_{CE}(0\%) =$ | -15 | V |
| $V_{GE}(100\%) =$ | 15 | V |
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 150 | A |
| $t_{\text{don}} =$ | 120 | ns |

figure 3. IGBT

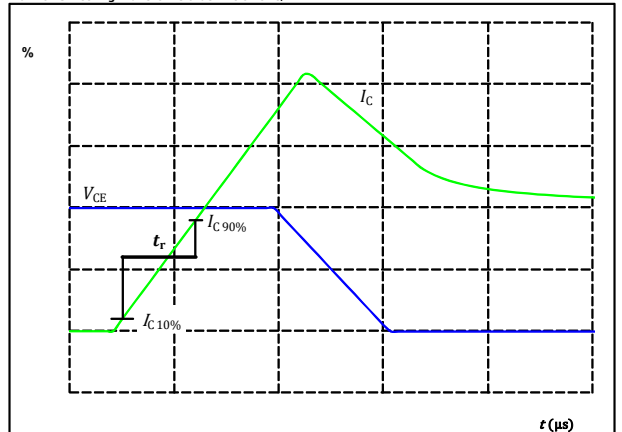
Turn-off Switching Waveforms & definition of t_r



| | | |
|----------------|-----|----|
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 150 | A |
| $t_r =$ | 66 | ns |

figure 4. IGBT

Turn-on Switching Waveforms & definition of t_r

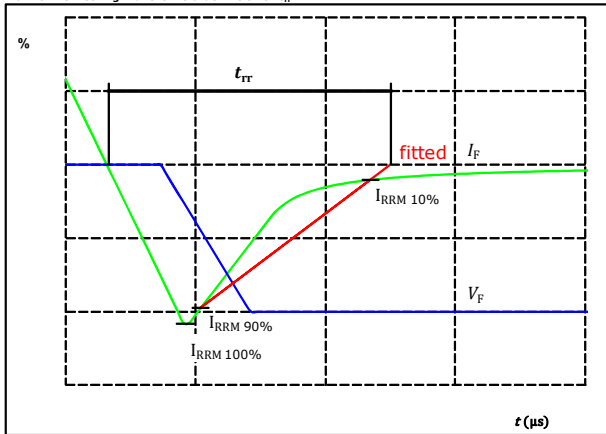


| | | |
|----------------|-----|----|
| $V_C(100\%) =$ | 600 | V |
| $I_C(100\%) =$ | 150 | A |
| $t_r =$ | 23 | ns |



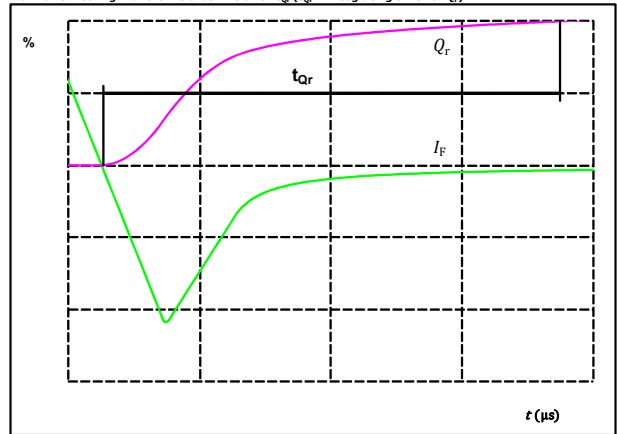
Buck Switching Characteristics

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



| | | |
|--------------------|-----|----|
| $V_F(100\%) =$ | 600 | V |
| $I_F(100\%) =$ | 150 | A |
| $I_{RRM}(100\%) =$ | 139 | A |
| $t_{rr} =$ | 111 | ns |

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



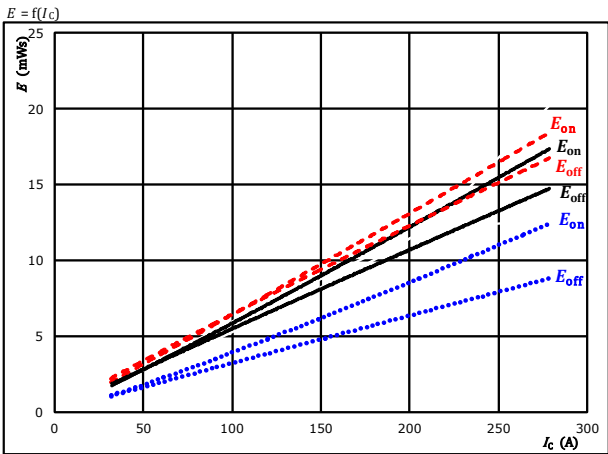
| | | |
|----------------|------|---------------|
| $I_F(100\%) =$ | 150 | A |
| $Q_r(100\%) =$ | 8,38 | μC |



Boost Switching Characteristics

figure 1. IGBT

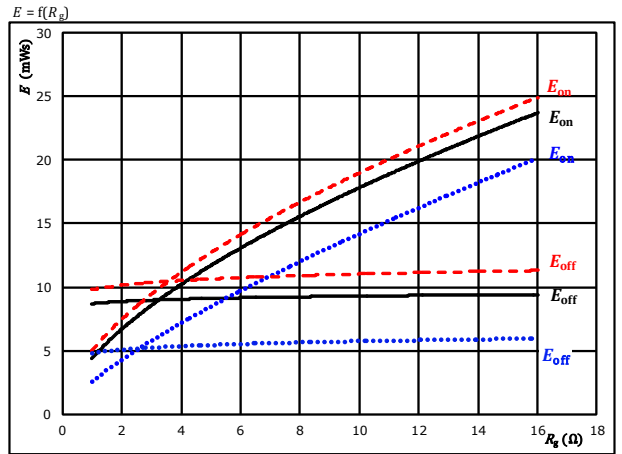
Typical switching energy losses as a function of collector current



With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{gon} = 4$ Ω
 $R_{goff} = 4$ Ω
 $T_j: 25$ $^{\circ}\text{C}$ (dotted blue)
 125 $^{\circ}\text{C}$ (solid black)
 150 $^{\circ}\text{C}$ (dashed red)

figure 2. IGBT

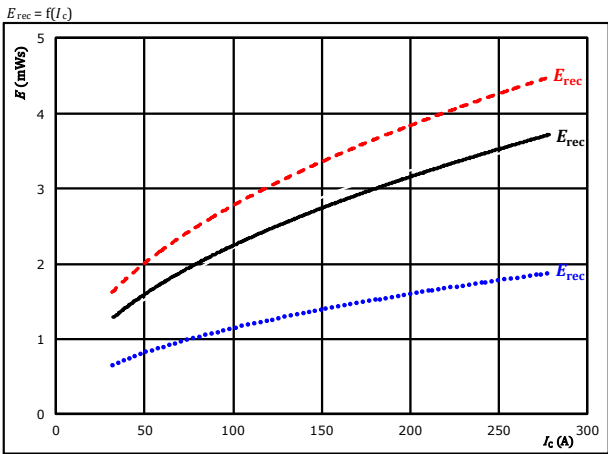
Typical switching energy losses as a function of gate resistor



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

figure 3. FWD

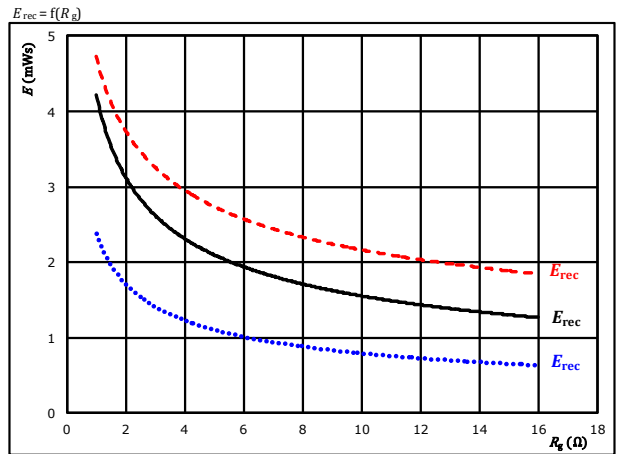
Typical reverse recovered energy loss as a function of collector current



With an inductive load at
 $V_{CE} = 600$ V
 $V_{GE} = \pm 15$ V
 $R_{gon} = 4$ 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



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

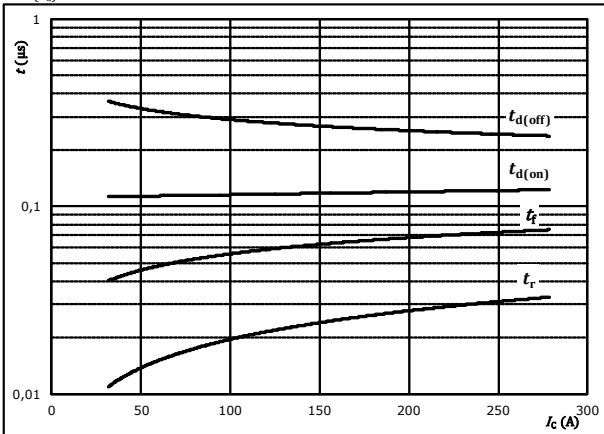


Boost Switching Characteristics

figure 5. IGBT

Typical switching times as a function of collector current

$$t = f(I_C)$$



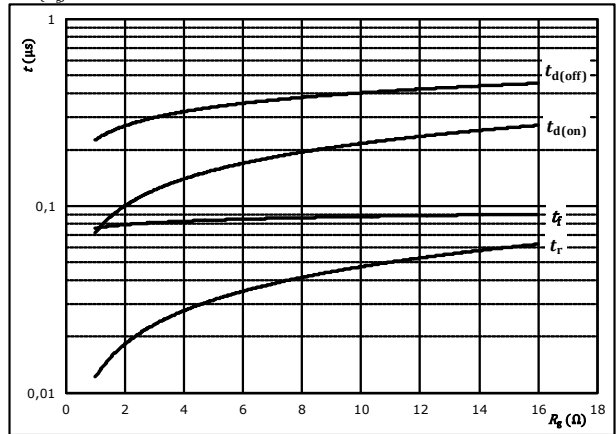
With an inductive load at

| | | |
|--------------|-----|----|
| $T_j =$ | 150 | °C |
| $V_{CE} =$ | 600 | V |
| $V_{GE} =$ | ±15 | V |
| $R_{gon} =$ | 4 | Ω |
| $R_{goff} =$ | 4 | Ω |

figure 6. IGBT

Typical switching times as a function of gate resistor

$$t = f(R_g)$$



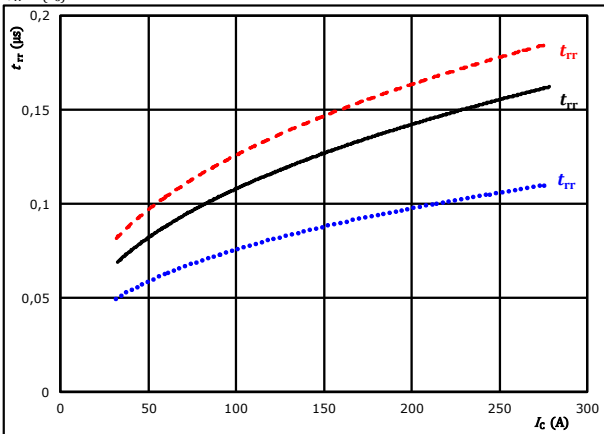
With an inductive load at

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

figure 7. FWD

Typical reverse recovery time as a function of collector current

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

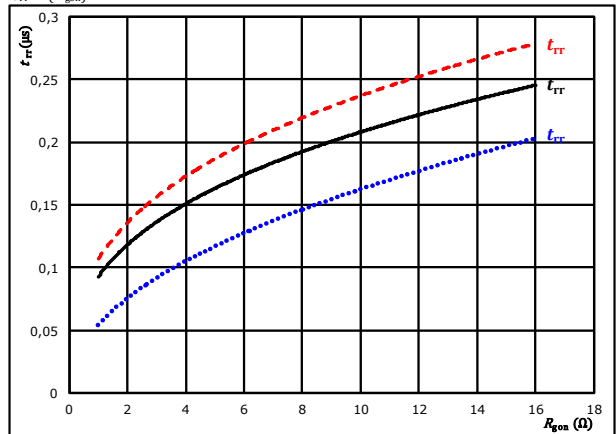


| | | | | | | |
|----|-------------|-----|---|---------|--------|---------|
| At | $V_{CE} =$ | 600 | V | $T_j =$ | 25 °C | |
| | $V_{GE} =$ | ±15 | V | | 125 °C | ———— |
| | $R_{gon} =$ | 4 | Ω | | 150 °C | - - - - |

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 | ———— |
| | $I_C =$ | 150 | A | | 150 °C | - - - - |



Boost Switching Characteristics

figure 9. FWD
Typical recovered charge as a function of collector current

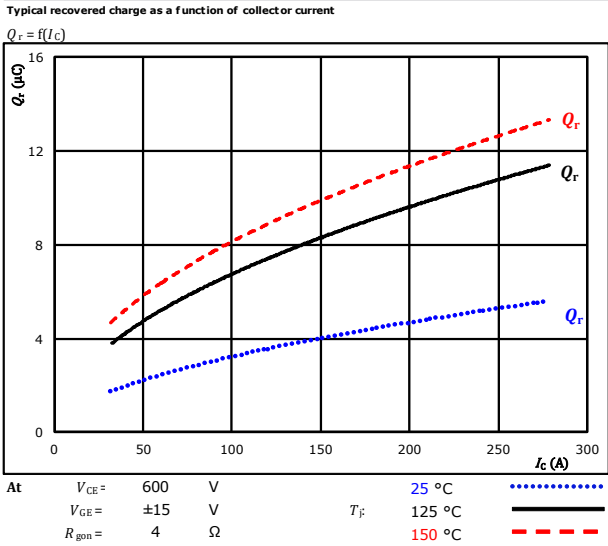


figure 10. FWD
Typical recovered charge as a function of IGBT turn on gate resistor

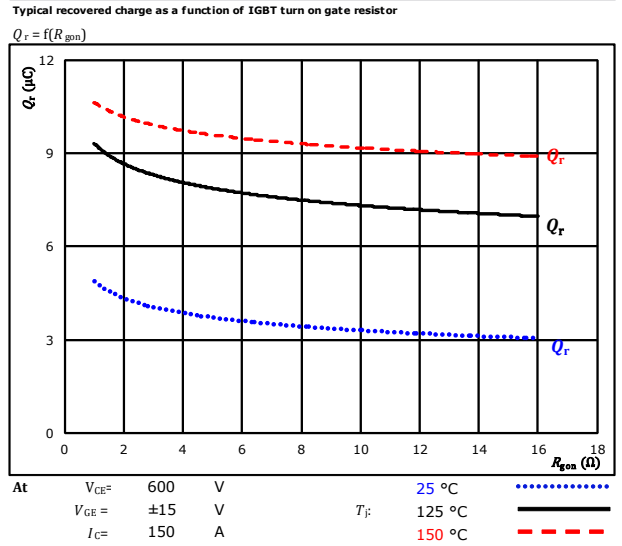


figure 11. FWD
Typical peak reverse recovery current current as a function of collector current

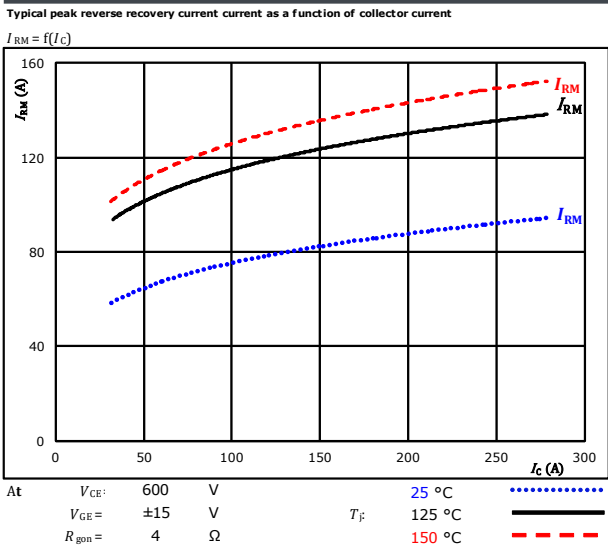
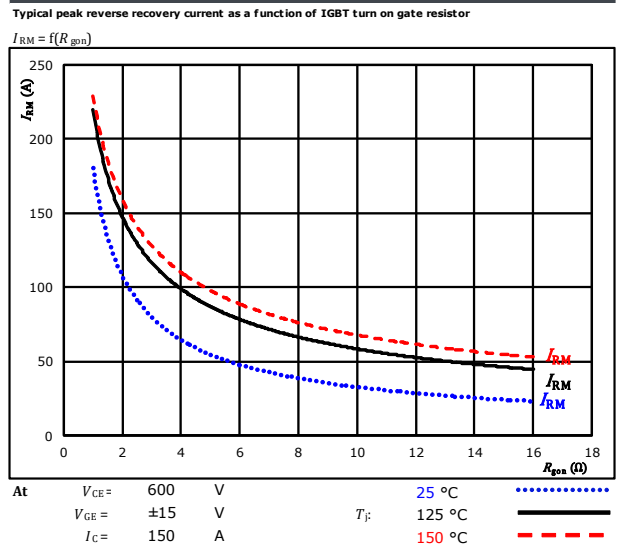


figure 12. FWD
Typical peak reverse recovery current current as a function of IGBT turn on gate resistor

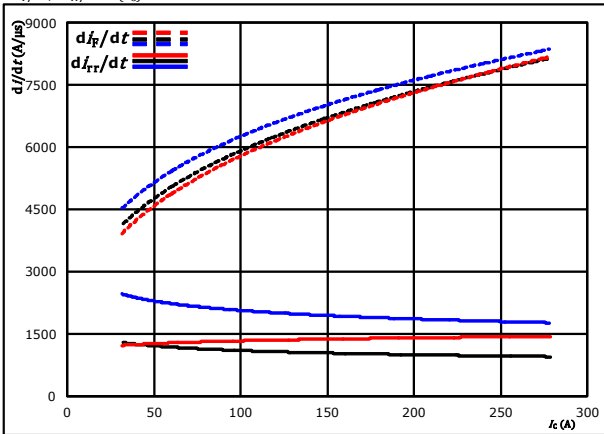




Boost Switching Characteristics

figure 13. FWD

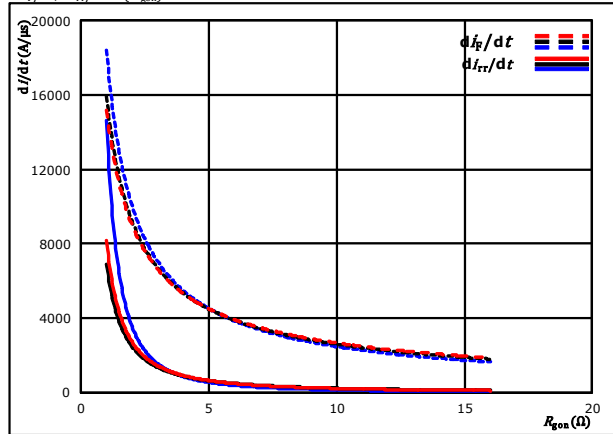
Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_{rr}/dt = f(I_c)$



At $V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $R_{g0n} = 4$ Ω $T_j = 150$ °C

figure 14. FWD

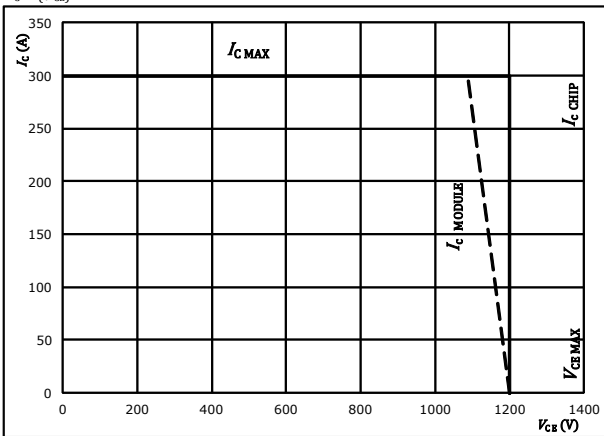
Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{g0n})$



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

figure 15. IGBT

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



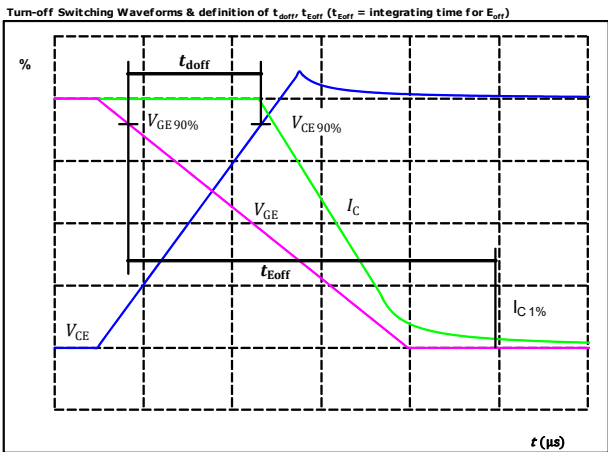
At $T_j = 125$ °C
 $R_{g0n} = 4$ Ω
 $R_{g0ff} = 4$ Ω



Boost Switching Definitions

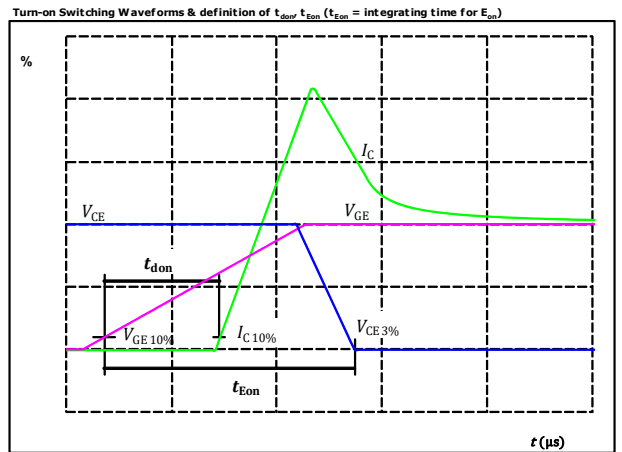
| General conditions | | |
|--------------------|---|------------|
| T_j | = | 125 °C |
| $R_{g\text{on}}$ | = | 4 Ω |
| $R_{g\text{off}}$ | = | 4 Ω |

figure 1. IGBT



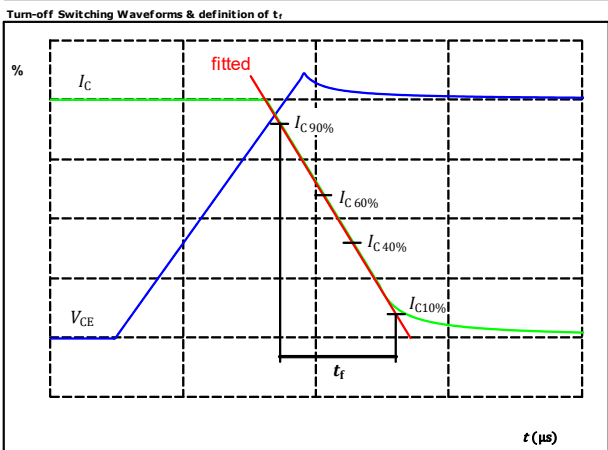
| | | |
|--------------------------|-----|----|
| $V_{\text{CE}}(0\%) =$ | -15 | V |
| $V_{\text{GE}}(100\%) =$ | 15 | V |
| $V_{\text{C}}(100\%) =$ | 600 | V |
| $I_{\text{C}}(100\%) =$ | 150 | A |
| $t_{\text{doff}} =$ | 266 | ns |

figure 2. IGBT



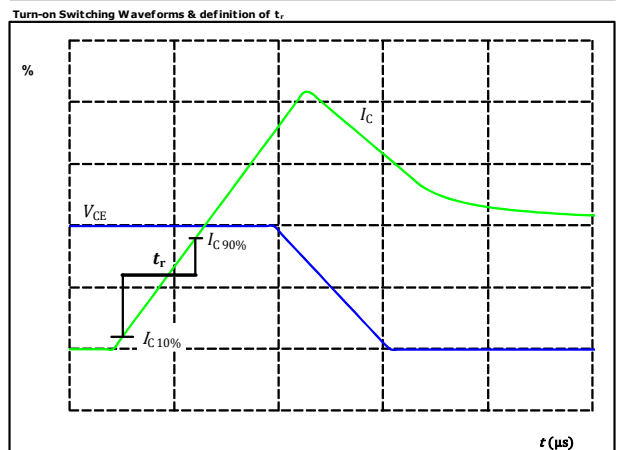
| | | |
|--------------------------|-----|----|
| $V_{\text{CE}}(0\%) =$ | -15 | V |
| $V_{\text{GE}}(100\%) =$ | 15 | V |
| $V_{\text{C}}(100\%) =$ | 600 | V |
| $I_{\text{C}}(100\%) =$ | 150 | A |
| $t_{\text{don}} =$ | 118 | ns |

figure 3. IGBT



| | | |
|-------------------------|-----|----|
| $V_{\text{C}}(100\%) =$ | 600 | V |
| $I_{\text{C}}(100\%) =$ | 150 | A |
| $t_r =$ | 65 | ns |

figure 4. IGBT

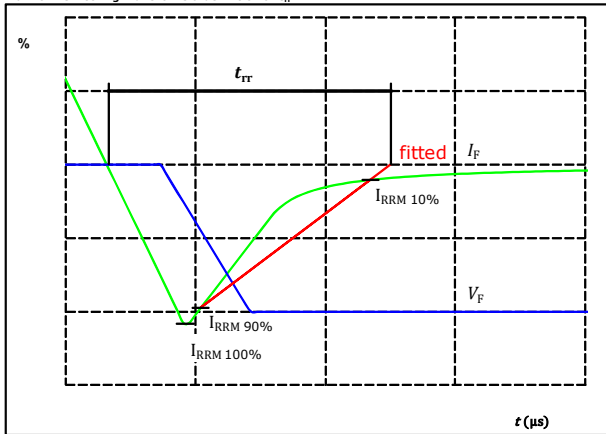


| | | |
|-------------------------|-----|----|
| $V_{\text{C}}(100\%) =$ | 600 | V |
| $I_{\text{C}}(100\%) =$ | 150 | A |
| $t_r =$ | 23 | ns |



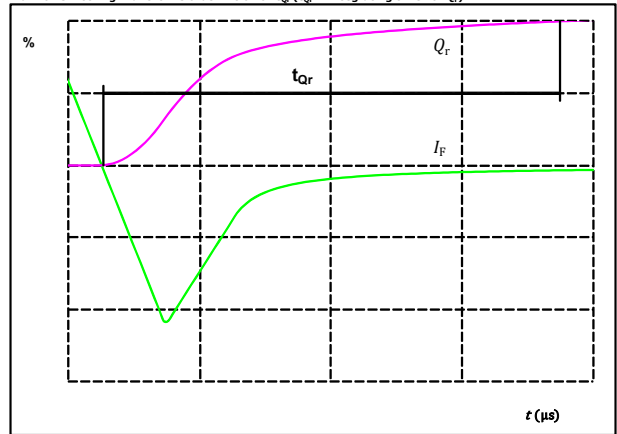
Boost Switching Characteristics

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



| | | |
|--------------------|-----|----|
| $V_F(100\%) =$ | 600 | V |
| $I_F(100\%) =$ | 150 | A |
| $I_{RRM}(100\%) =$ | 127 | A |
| $t_{rr} =$ | 126 | ns |

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



| | | |
|----------------|------|---------------|
| $I_F(100\%) =$ | 150 | A |
| $Q_r(100\%) =$ | 8,68 | μC |



30-FT12NIA150SH-LG09F08 30-PT12NIA150SH-LG09F08Y

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| Ordering Code & Marking | | | | | | | | |
|---|--|--|------------------------------|------------------------|-------------------|---------------------|------------------|---------------|
| Version | | | Ordering Code | | | | | |
| without thermal paste 13 mm housing with solder pins | | | 30-FT12NIA150SH-LG09F08 | | | | | |
| without thermal paste 13 mm housing with Press-fit pins | | | 30-PT12NIA150SH-LG09F08Y | | | | | |
| with thermal paste 13 mm housing with solder pins | | | 30-FT12NIA150SH-LG09F08-/3/ | | | | | |
| with thermal paste 13 mm housing with Press-fit pins | | | 30-PT12NIA150SH-LG09F08Y-/3/ | | | | | |
| NN-NNNNNNNNNNNN TTTTIV WWYY UL VIN LLLL SSSS | | | Text | Name | Date code | UL & VIN | Lot | Serial |
| | | | | NN-NNNNNNNNNNNN-TTTTIV | WWYY | UL VIN | LLLL | SSSS |
| | | | Datamatrix | Type&Ver | Lot number | Serial | Date code | |
| | | | TTTTIV | LLLL | SSSS | WWYY | | |

| Pin table | | | | Outline | | |
|-----------|-------|-------|----------|---------------|--|--|
| Pin | X | Y | Function | | | |
| 1 | 70,9 | 3 | DC+1 | Solder pin | | |
| 2 | 70,9 | 0 | DC+1 | | | |
| 3 | 68,4 | 0 | DC+1 | | | |
| 4 | 65,9 | 0 | DC+1 | | | |
| 5 | 58,2 | 0 | GND1 | Press-fit pin | | |
| 6 | 55,7 | 0 | GND1 | | | |
| 7 | 53,2 | 0 | GND1 | | | |
| 8 | 50,7 | 0 | GND1 | | | |
| 9 | 43 | 0 | DC-1 | | | |
| 10 | 40,5 | 0 | DC-1 | | | |
| 11 | 38 | 0 | DC-1 | | | |
| 12 | 38 | 3 | DC-1 | | | |
| 13 | 32,9 | 3 | DC-2 | | | |
| 14 | 32,9 | 0 | DC-2 | | | |
| 15 | 30,4 | 0 | DC-2 | | | |
| 16 | 27,9 | 0 | DC-2 | | | |
| 17 | 20,35 | 0 | GND2 | | | |
| 18 | 17,85 | 0 | GND2 | | | |
| 19 | 15,35 | 0 | GND2 | | | |
| 20 | 12,85 | 0 | GND2 | | | |
| 21 | 5 | 0 | DC+2 | | | |
| 22 | 2,5 | 0 | DC+2 | | | |
| 23 | 0 | 0 | DC+2 | | | |
| 24 | 0 | 3 | DC+2 | | | |
| 25 | 0 | 16,35 | TM14 | | | |
| 26 | 4,6 | 36,9 | Ph2 | | | |
| 27 | 7,1 | 36,9 | Ph2 | | | |
| 28 | 9,6 | 36,9 | Ph2 | | | |
| 29 | 12,1 | 36,9 | Ph2 | | | |
| 30 | 29,9 | 36,9 | G12 | | | |
| 31 | 33 | 36,8 | S12 | | | |
| 32 | 43 | 36,9 | Ph1 | | | |
| 33 | 45,5 | 36,9 | Ph1 | | | |
| 34 | 48 | 36,9 | Ph1 | | | |
| 35 | 50,5 | 36,9 | Ph1 | | | |
| 36 | 64,1 | 36,9 | Therm1 | | | |
| 37 | 70,9 | 36,9 | Therm2 | | | |
| 38 | 61,65 | 25,05 | G11 | | | |
| 39 | 60,65 | 22,05 | S11 | | | |
| 40 | 54,35 | 14,6 | TM11 | | | |
| 41 | 46,2 | 30,9 | S13 | | | |
| 42 | 47,2 | 33,9 | G13 | | | |
| 43 | 44,15 | 17,7 | TM15 | | | |
| 44 | 29,2 | 13,3 | TM12 | | | |
| 45 | 18,95 | 13,7 | S14 | | | |
| 46 | 15,95 | 13,7 | G14 | | | |

Tolerance of pinpositions: +0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance

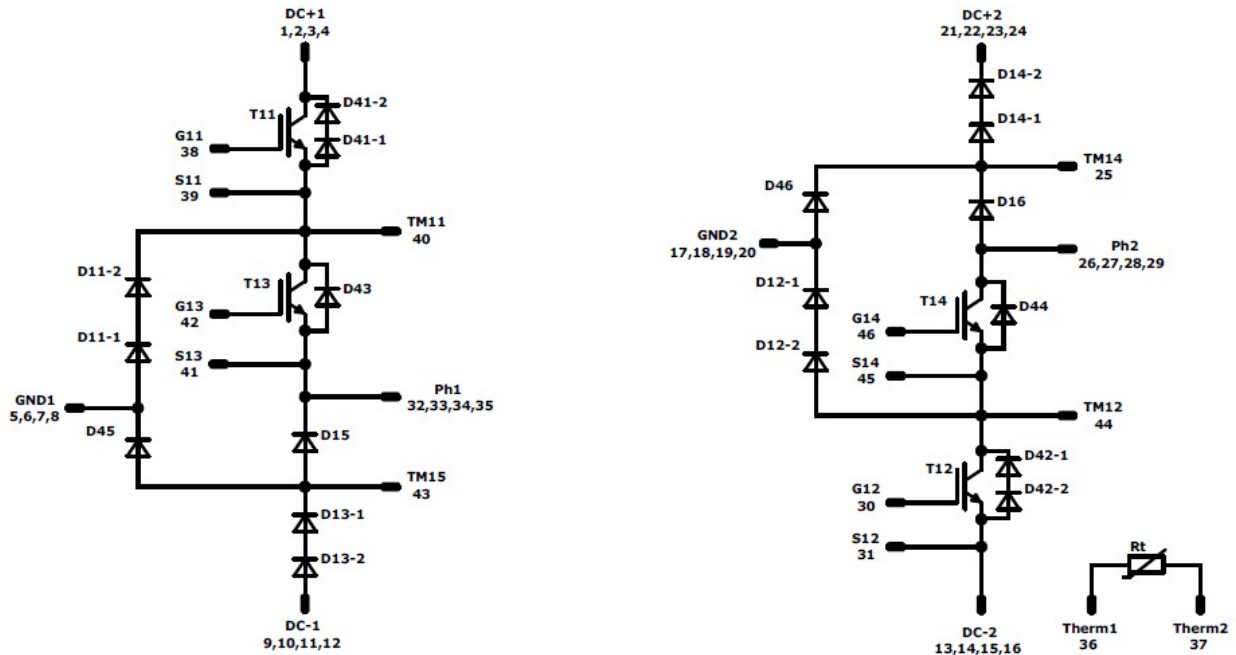


30-FT12NIA150SH-LG09F08 30-PT12NIA150SH-LG09F08Y

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datasheet

Pinout



Identification


| ID | Component | Voltage | Current | Function | Comment |
|----------|-----------|---------|---------|----------------------------|---------|
| T11, T12 | IGBT | 1200 V | 150 A | Buck Switch | |
| D11, D12 | FWD | 1300 V | 150 A | Buck Diode | |
| D41, D42 | FWD | 1300 V | 30 A | Buck Sw. Protection Diode | |
| T14, T13 | IGBT | 1200 V | 150 A | Boost Switch | |
| D13, D14 | FWD | 1300 V | 150 A | Boost Diode | |
| D43, D44 | FWD | 1200 V | 25 A | Boost Sw. Protection Diode | |
| D45, D46 | FWD | 1200 V | 25 A | Boost D. Protection Diode | |
| D15, D16 | FWD | 1200 V | 150 A | Boost Sw.Inv.Diode | |
| Rt | NTC | | | Thermistor | |



| Packaging instruction | | | |
|--------------------------------------|------|----------|-------------|
| Standard packaging quantity (SPQ) 36 | >SPQ | Standard | <SPQ Sample |

| Handling instruction |
|---|
| Handling instructions for <i>flow 2</i> packages see vincotech.com website. |

| Package data |
|--|
| Package data for <i>flow 2</i> 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 |
|--------------------------------|--------------|--|-------|
| 30-xT12NIA150SH-LG09F08x-D3-14 | 09 Jul. 2019 | Marketing application voltage modified | 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.

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