# B0-SP103BA100S704-LS69L98T

datasheet

Vincotech

***flow*BOOST S3 triple** — **950 V / 100 A**

## Features

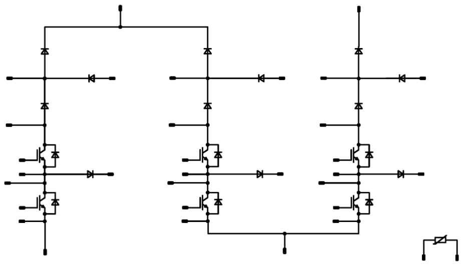
- Triple Booster
- High Performance Flying Capacitor Topology
- Optimized for 1500 V applications
- Latest IGBT & SiC Technology
- Integrated auxiliary diodes for flying capacitor precharge
- Integrated NTC
- Low Inductance Design

## *flow* S3 12 mm housing

## Target applications

- Solar Inverters

## Schematic



## Types

- B0-SP103BA100S704-LS69L98T

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# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | | Value | Unit |
|---|---|---|---|---|---|
| **Inner Boost Switch** | | | | | |
| Collector-emitter voltage | $V_{CES}$ | | | 950 | V |
| Collector current (DC current) | $I_C$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 77 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{jmax}$ | | 200 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 145 | W |
| Gate-emitter voltage | $V_{GES}$ | | | ±20 | V |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |
| **Inner Boost Diode** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 41 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_p$ limited by $T_{jmax}$ | | 141 | A |
| Surge (non-repetitive) forward current | $I_{FSM}$ | Single Half Sine Wave, $t_p$ = 10 ms | $T_j$ = 25 °C | 213 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 116 | W |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |
| **Outer Boost Switch** | | | | | |
| Collector-emitter voltage | $V_{CES}$ | | | 950 | V |
| Collector current (DC current) | $I_C$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 77 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{jmax}$ | | 200 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 145 | W |
| Gate-emitter voltage | $V_{GES}$ | | | ±20 | V |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |



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# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | | Value | Unit |
|---|---|---|---|---|---|
| **Outer Boost Diode** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 41 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_p$ limited by $T_{jmax}$ | | 141 | A |
| Surge (non-repetitive) forward current | $I_{FSM}$ | Single Half Sine Wave, $t_p$ = 10 ms | $T_j$ = 25 °C | 213 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 116 | W |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |
| **Inner Boost Sw. Protection Diode** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 40 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_p$ limited by $T_{jmax}$ | | 70 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 76 | W |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |
| **Outer Boost Sw. Protection Diode** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 40 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_p$ limited by $T_{jmax}$ | | 70 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 76 | W |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |



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# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | | Value | Unit |
|---|---|---|---|---|---|
| **Aux Diode L** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 32 | A |
| Surge (non-repetitive) forward current | $I_{FSM}$ | Single Half Sine Wave, $t_p$ = 10 ms | $T_j$ = 150 °C | 170 | A |
| Surge current capability | $I^2t$ | | | 145 | $A^2s$ |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 73 | W |
| Maximum junction temperature | $T_{jmax}$ | | | 175 | °C |
| **Aux Diode H** | | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | | 1200 | V |
| Forward current (DC current) | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 32 | A |
| Surge (non-repetitive) forward current | $I_{FSM}$ | Single Half Sine Wave, $t_p$ = 10 ms | $T_j$ = 150 °C | 170 | A |
| Surge current capability | $I^2t$ | | | 145 | $A^2s$ |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 73 | 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 s | 6000 | V |
| Isolation voltage | $V_{isol}$ | AC Voltage | $t_p$ = 1 min | 1 | V |
| Creepage distance | | | | 9,63 | mm |
| Clearance | | | | 8,33 | mm |
| Comparative Tracking Index | CTI | | | ≥ 600 | |

*100 % tested in production



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# Characteristic Values

| Parameter | Symbol | Conditions | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_{CE}$ [V]<br>$V_{DS}$ [V]<br>$V_{F}$ [V] | $I_{C}$ [A]<br>$I_{D}$ [A]<br>$I_{F}$ [A] | $T_{j}$ [°C] | Values Min | Values Typ | Values Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inner Boost Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{CE} = V_{GE}$ | | | 0,00167 | 25 | 4,35 | 5,1 | 5,85 | V |
| Collector-emitter saturation voltage | $V_{CEsat}$ | | 15 | | 100 | 25<br>125<br>150 | | 1,67<br>1,94<br>2,01 | 2,35(1) | V |
| Collector-emitter cut-off current | $I_{CES}$ | | 0 | 950 | | 25 | | | 2 | µA |
| Gate-emitter leakage current | $I_{GES}$ | | 20 | 0 | | 25 | | | 100 | nA |
| Internal gate resistance | $r_{g}$ | | | | | | | 1,5 | | Ω |
| Input capacitance | $C_{ies}$ | $f$ = 100 kHz | 0 | 25 | | 25 | | 6500 | | pF |
| Output capacitance | $C_{oes}$ | | | | | | | 139 | | pF |
| Reverse transfer capacitance | $C_{res}$ | | | | | | | 20 | | pF |
| Gate charge | $Q_{g}$ | | 15 | | 0 | 25 | | 230 | | nC |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 0,66 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $R_{gon}$ = 8 Ω<br>$R_{goff}$ = 8 Ω | ±15 | 600 | 65 | 25<br>125<br>150 | | 149,92<br>150,4<br>150,56 | | ns |
| Rise time | $t_{r}$ | | | | | 25<br>125<br>150 | | 13,76<br>15,68<br>16 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25<br>125<br>150 | | 142,4<br>172<br>181,12 | | ns |
| Fall time | $t_{f}$ | | | | | 25<br>125<br>150 | | 32,64<br>58,3<br>71,3 | | ns |
| Turn-on energy (per pulse) | $E_{on}$ | $Q_{rFWD}$=0,147 µC<br>$Q_{rFWD}$=0,157 µC<br>$Q_{rFWD}$=0,152 µC | | | | 25<br>125<br>150 | | 1,42<br>1,54<br>1,49 | | mWs |
| Turn-off energy (per pulse) | $E_{off}$ | | | | | 25<br>125<br>150 | | 1,68<br>2,66<br>2,95 | | mWs |



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## Characteristic Values

| Parameter | Symbol | Conditions | $V_{GE}$ [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 | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inner Boost Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 30 | 25<br>125<br>150 | | 1,51<br>2,03<br>2,13 | 1,8[(1)] | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25 | | 90 | 750 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink [(2)] | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 0,82 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Peak recovery current | $I_{RRM}$ | d*i*/d*t*=4142 A/µs<br>d*i*/d*t*=3944 A/µs<br>d*i*/d*t*=3969 A/µs | ±15 | 600 | 65 | 25<br>125<br>150 | | 20,2<br>20,82<br>20,44 | | A |
| Reverse recovery time | $t_{rr}$ | | | | | 25<br>125<br>150 | | 11,61<br>12,48<br>12,61 | | ns |
| Recovered charge | $Q_r$ | | | | | 25<br>125<br>150 | | 0,147<br>0,157<br>0,152 | | µC |
| Reverse recovered energy | $E_{rec}$ | | | | | 25<br>125<br>150 | | 0,038<br>0,042<br>0,04 | | mWs |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | | 25<br>125<br>150 | | 4618<br>3995<br>3943 | | A/µs |



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# Characteristic Values

| Parameter | Symbol | Conditions | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_{CE}$ [V]<br>$V_{DS}$ [V]<br>$V_F$ [V] | $I_C$ [A]<br>$I_D$ [A]<br>$I_F$ [A] | $T_j$ [°C] | Values Min | Values Typ | Values Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Outer Boost Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{CE} = V_{GE}$ | | | 0,00167 | 25 | 4,35 | 5,1 | 5,85 | V |
| Collector-emitter saturation voltage | $V_{CEsat}$ | | 15 | | 100 | 25<br>125<br>150 | | 1,67<br>1,94<br>2,01 | 2,35(1) | V |
| Collector-emitter cut-off current | $I_{CES}$ | | 0 | 950 | | 25 | | | 2 | µA |
| Gate-emitter leakage current | $I_{GES}$ | | 20 | 0 | | 25 | | | 100 | nA |
| Internal gate resistance | $r_g$ | | | | | | | 1,5 | | Ω |
| Input capacitance | $C_{ies}$ | $f$ = 100 kHz | 0 | 25 | | 25 | | 6500 | | pF |
| Output capacitance | $C_{oes}$ | | | | | | | 139 | | pF |
| Reverse transfer capacitance | $C_{res}$ | | | | | | | 20 | | pF |
| Gate charge | $Q_g$ | | 15 | | 0 | 25 | | 230 | | nC |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 0,66 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $R_{gon}$ = 8 Ω<br>$R_{goff}$ = 8 Ω | ±15 | 600 | 65 | 25<br>125<br>150 | | 149,12<br>150,24<br>150,4 | | ns |
| Rise time | $t_r$ | | | | | 25<br>125<br>150 | | 12,16<br>13,6<br>14,24 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25<br>125<br>150 | | 143,52<br>179,04<br>187,52 | | ns |
| Fall time | $t_f$ | | | | | 25<br>125<br>150 | | 32,58<br>59,3<br>72,44 | | ns |
| Turn-on energy (per pulse) | $E_{on}$ | $Q_{rFWD}$=0,168 µC<br>$Q_{rFWD}$=0,175 µC<br>$Q_{rFWD}$=0,168 µC | | | | 25<br>125<br>150 | | 1,22<br>1,24<br>1,28 | | mWs |
| Turn-off energy (per pulse) | $E_{off}$ | | | | | 25<br>125<br>150 | | 1,67<br>2,8<br>3,16 | | mWs |



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# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Values | | | 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 | |
| **Outer Boost Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 30 | 25<br>125<br>150 | | 1,51<br>2,03<br>2,13 | 1,8(1) | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25 | | 90 | 750 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 0,82 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Peak recovery current | $I_{RRM}$ | d$i$/d$t$=5570 A/µs<br>d$i$/d$t$=5323 A/µs<br>d$i$/d$t$=5215 A/µs | ±15 | 600 | 65 | 25<br>125<br>150 | | 26,44<br>26,06<br>25,67 | | A |
| Reverse recovery time | $t_{rr}$ | | | | | 25<br>125<br>150 | | 11,35<br>11,92<br>12,03 | | ns |
| Recovered charge | $Q_r$ | | | | | 25<br>125<br>150 | | 0,168<br>0,175<br>0,168 | | µC |
| Reverse recovered energy | $E_{rec}$ | | | | | 25<br>125<br>150 | | 0,054<br>0,058<br>0,054 | | mWs |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | | 25<br>125<br>150 | | 6819<br>5794<br>5769 | | A/µs |



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# Characteristic Values

| Parameter | Symbol | Conditions | $V_{GE}$ [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 | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inner Boost Sw. Protection Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 35 | 25<br>125<br>150 | | 1,66<br>1,76<br>1,75 | 2,1(1) | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25 | | | 40 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 1,26 | | K/W |
| **Outer Boost Sw. Protection Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 35 | 25<br>125<br>150 | | 1,66<br>1,76<br>1,75 | 2,1(1) | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25 | | | 40 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 1,26 | | K/W |
| **Aux Diode L** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 35 | 25<br>150 | | 2,37<br>2,35 | 2,62(1)<br>2,62(1) | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25<br>150 | | <br>2700 | 60<br>5500 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 1,31 | | K/W |



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# Characteristic Values

| Parameter | Symbol | Conditions | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_{CE}$ [V]<br>$V_{DS}$ [V]<br>$V_F$ [V] | $I_C$ [A]<br>$I_D$ [A]<br>$I_F$ [A] | $T_j$ [°C] | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Aux Diode H** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 35 | 25<br>150 | | 2,37<br>2,35 | 2,62(1)<br>2,62(1) | V |
| Reverse leakage current | $I_R$ | $V_r$ = 1200 V | | | | 25<br>150 | | <br>2700 | 60<br>5500 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink (2) | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK<br>(PTM) | | | | | | 1,31 | | K/W |
| **Thermistor** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Rated resistance | $R$ | | | | | 25 | | 22 | | kΩ |
| Deviation of $R_{100}$ | $\Delta_{R/R}$ | $R_{100}$ = 1484 Ω | | | | 100 | -5 | | 5 | % |
| Power dissipation | $P$ | | | | | 25 | | 130 | | mW |
| Power dissipation constant | $d$ | | | | | 25 | | 1,5 | | mW/K |
| B-value | $B_{(25/50)}$ | Tol. ±1 % | | | | | | 3962 | | K |
| B-value | $B_{(25/100)}$ | Tol. ±1 % | | | | | | 4000 | | K |
| Vincotech Thermistor Reference | | | | | | | | | I | |

(1) Value at chip level

(2) Only valid with pre-applied Vincotech thermal interface material.



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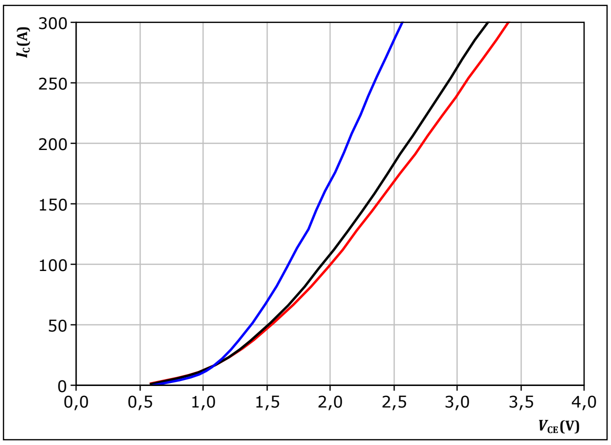
# Inner Boost Switch Characteristics

**figure 1.** **IGBT**

**Typical output characteristics**

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

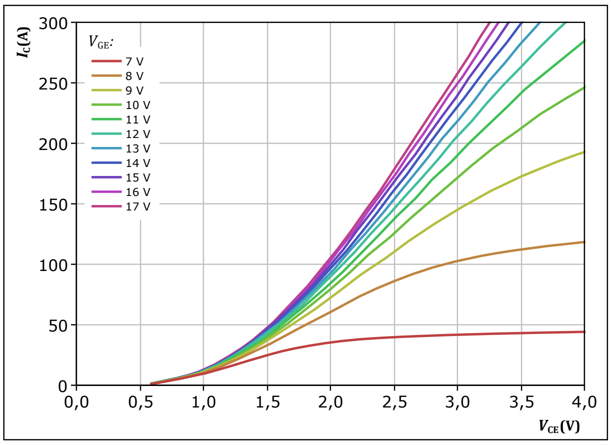



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 250 | µs | | 25 °C |
| $V_{GE}$ = | 15 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

**figure 2.** **IGBT**

**Typical output characteristics**

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



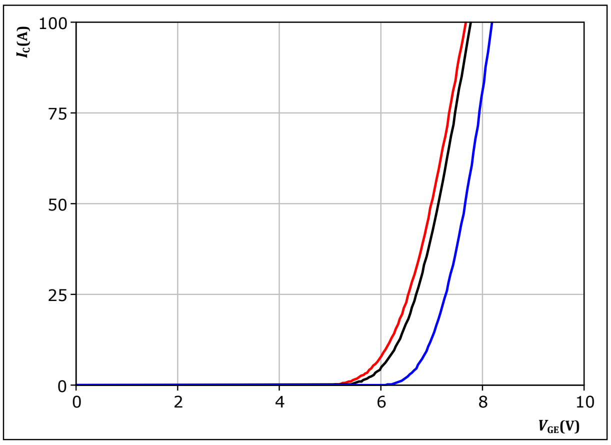

| | | |
|---|---|---|
| $t_p$ = | 250 | µs |
| $T_j$ = | 150 | °C |

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

**figure 3.** **IGBT**

**Typical transfer characteristics**

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

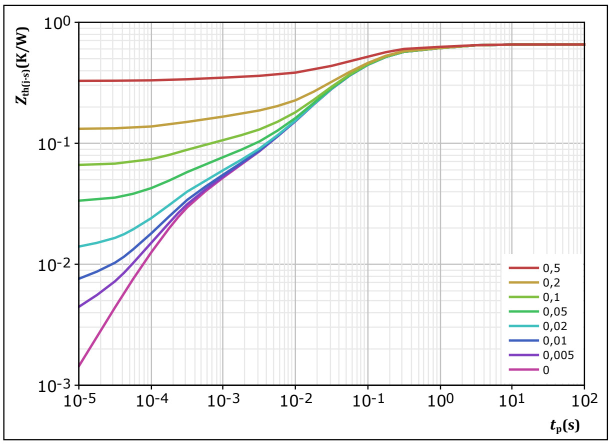



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 250 | µs | | 25 °C |
| $V_{CE}$ = | 10 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

**figure 4.** **IGBT**

**Transient thermal impedance as a function of pulse width**

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




| | | |
|---|---|---|
| $D$ = | $t_p$ / $T$ | |
| $R_{th(j-s)}$ = | 0,656 | K/W |

IGBT thermal model values

| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 8,75E-02 | 1,42E+00 |
| 3,39E-01 | 1,02E-01 |
| 1,74E-01 | 2,16E-02 |
| 2,53E-02 | 1,80E-03 |
| 3,08E-02 | 2,55E-04 |



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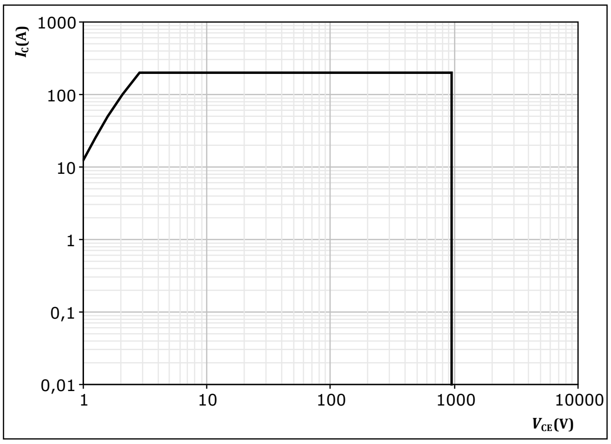
# Inner Boost Switch Characteristics

| figure 5. | IGBT |
|---|---|

**Safe operating area**

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




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



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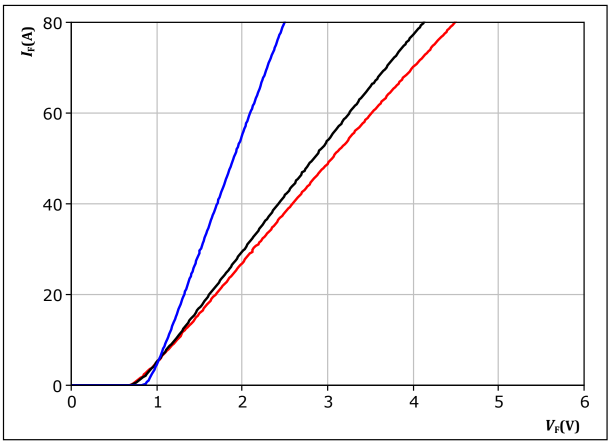
# Inner Boost Diode Characteristics

**figure 6.** **FWD**

**Typical forward characteristics**

$I_F$ = f( $V_F$)



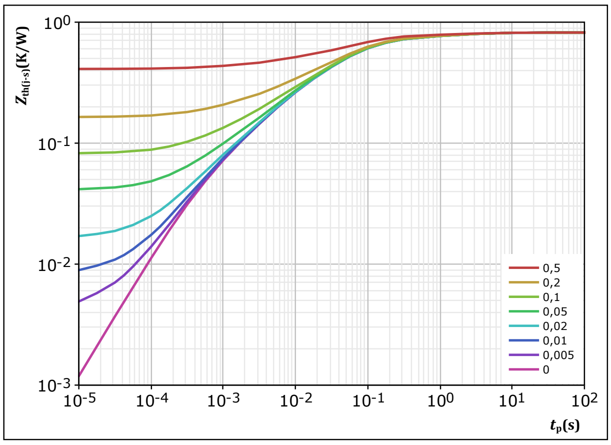

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 7.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




$D$ = $t_p$ / $T$

$R_{th(j-s)}$ = 0,821 K/W

FWD thermal model values

| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,26E-02 | 4,27E+00 |
| 7,38E-02 | 7,05E-01 |
| 3,02E-01 | 9,22E-02 |
| 2,45E-01 | 2,42E-02 |
| 1,22E-01 | 3,86E-03 |
| 3,59E-02 | 4,82E-04 |



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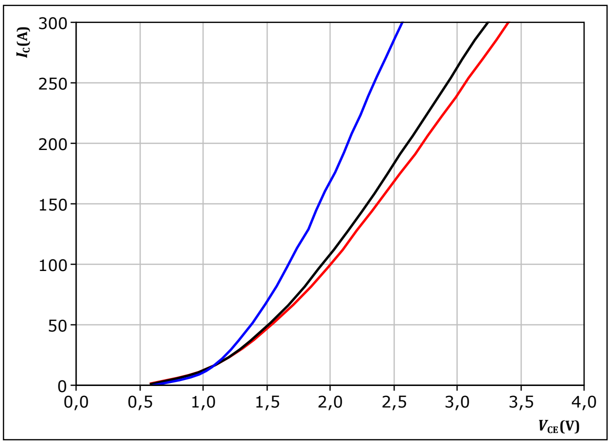
# Outer Boost Switch Characteristics

**figure 8.** IGBT

**Typical output characteristics**

$I_C = f(V_{CE})$

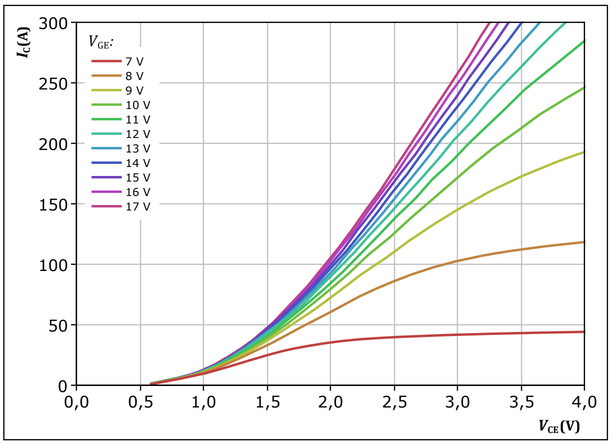



$t_p$ = 250 µs
$V_{GE}$ = 15 V
$T_j$: 25 °C, 125 °C, 150 °C

**figure 9.** IGBT

**Typical output characteristics**

$I_C = f(V_{CE})$

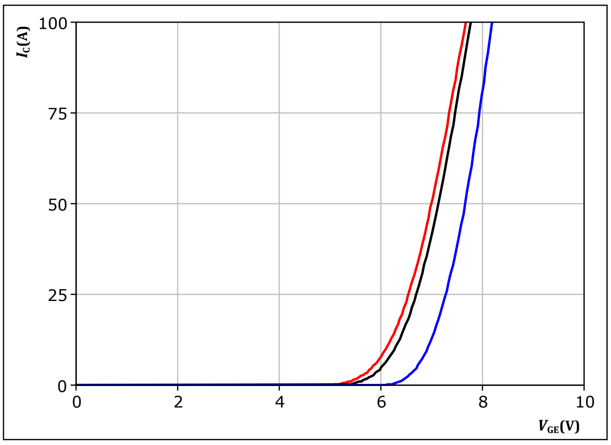



$t_p$ = 250 µs
$T_j$ = 150 °C
$V_{GE}$ from 7 V to 17 V in steps of 1 V

**figure 10.** IGBT

**Typical transfer characteristics**

$I_C = f(V_{GE})$

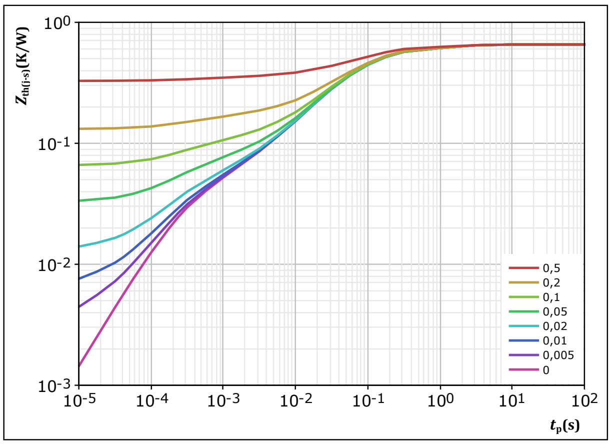



$t_p$ = 250 µs
$V_{CE}$ = 10 V
$T_j$: 25 °C, 125 °C, 150 °C

**figure 11.** IGBT

**Transient thermal impedance as a function of pulse width**

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




$D$ = $t_p / T$
$R_{th(j\text{-}s)}$ = 0,656 K/W

IGBT thermal model values

| R (K/W) | τ (s) |
|---|---|
| 8,75E-02 | 1,42E+00 |
| 3,39E-01 | 1,02E-01 |
| 1,74E-01 | 2,16E-02 |
| 2,53E-02 | 1,80E-03 |
| 3,08E-02 | 2,55E-04 |



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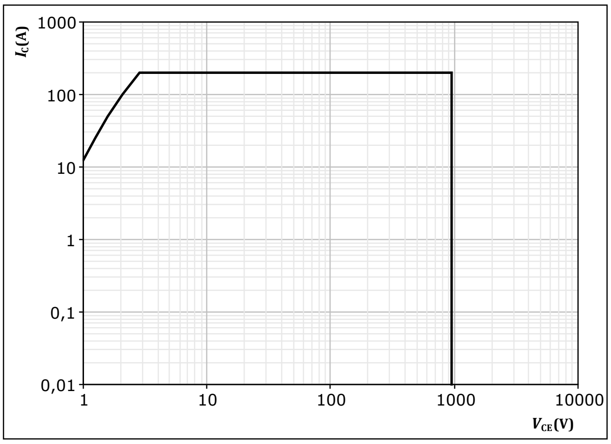
# Outer Boost Switch Characteristics

**figure 12.** **IGBT**

**Safe operating area**

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




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



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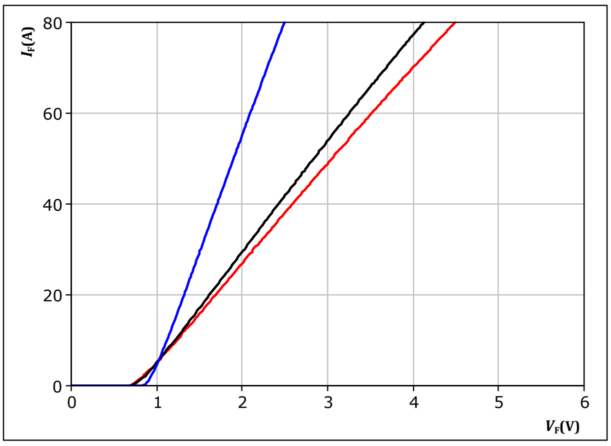
# Outer Boost Diode Characteristics

**figure 13.** **FWD**

**Typical forward characteristics**

$I_F$ = f( $V_F$)



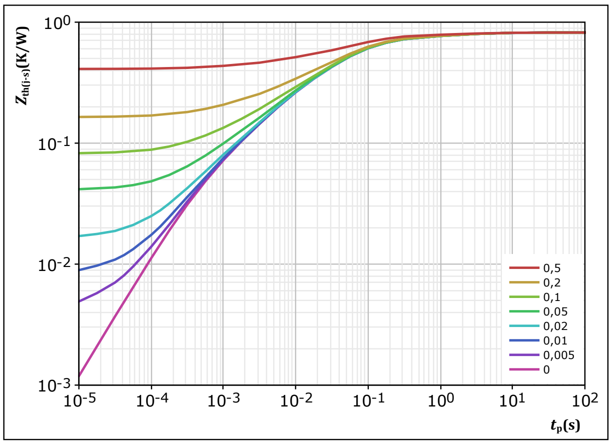

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 14.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




$D$ = $t_p$ / $T$

$R_{th(j-s)}$ = 0,821 K/W

FWD thermal model values

| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,26E-02 | 4,27E+00 |
| 7,38E-02 | 7,05E-01 |
| 3,02E-01 | 9,22E-02 |
| 2,45E-01 | 2,42E-02 |
| 1,22E-01 | 3,86E-03 |
| 3,59E-02 | 4,82E-04 |



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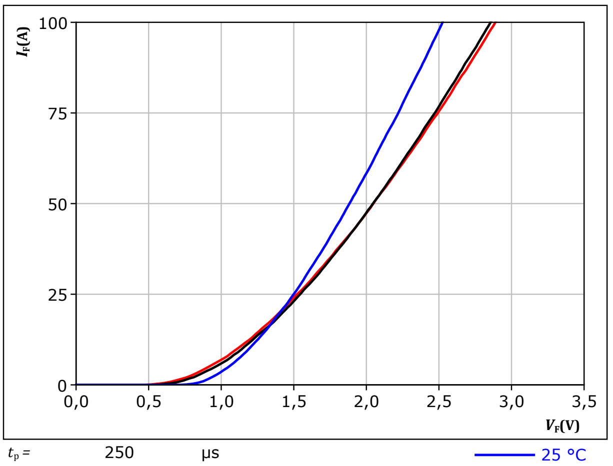
# Inner Boost Sw. Protection Diode Characteristics

**figure 15.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



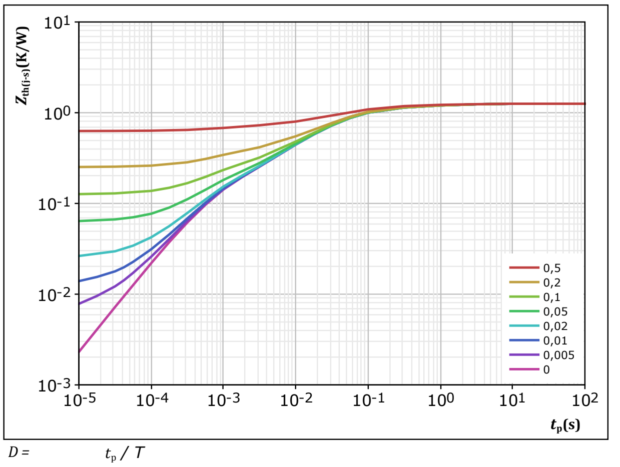

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 16.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




$D = t_p / T$

$R_{th(j-s)}$ = 1,256 K/W

FWD thermal model values

| R (K/W) | τ (s) |
|---|---|
| 8,30E-02 | 2,06E+00 |
| 1,53E-01 | 2,53E-01 |
| 5,96E-01 | 4,75E-02 |
| 2,95E-01 | 9,13E-03 |
| 1,30E-01 | 6,93E-04 |



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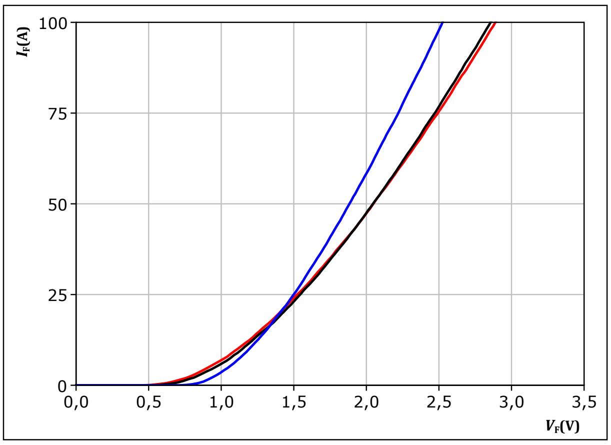
# Outer Boost Sw. Protection Diode Characteristics

**figure 17.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



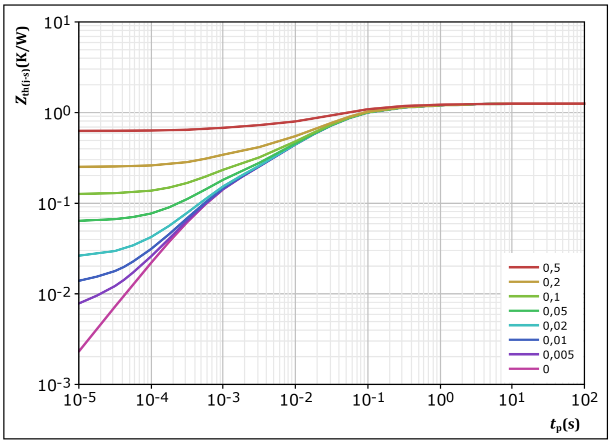

| | | |
|---|---|---|
| $t_p$ = | 250 | µs |

$T_j$: 25 °C, 125 °C, 150 °C

**figure 18.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




| | | |
|---|---|---|
| $D$ = | $t_p$ / $T$ | |
| $R_{th(j-s)}$ = | 1,256 | K/W |

FWD thermal model values

| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 8,30E-02 | 2,06E+00 |
| 1,53E-01 | 2,53E-01 |
| 5,96E-01 | 4,75E-02 |
| 2,95E-01 | 9,13E-03 |
| 1,30E-01 | 6,93E-04 |



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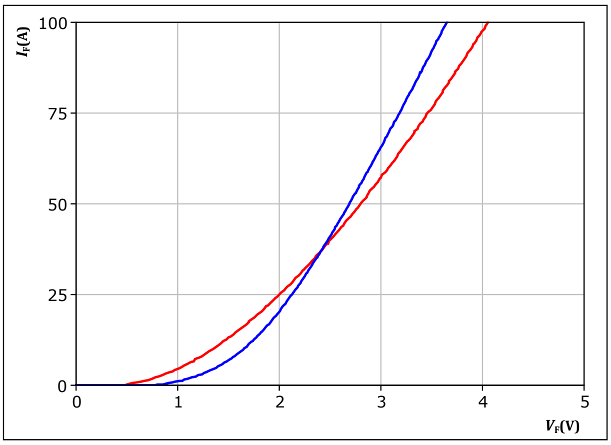
# Aux Diode L Characteristics

**figure 19.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



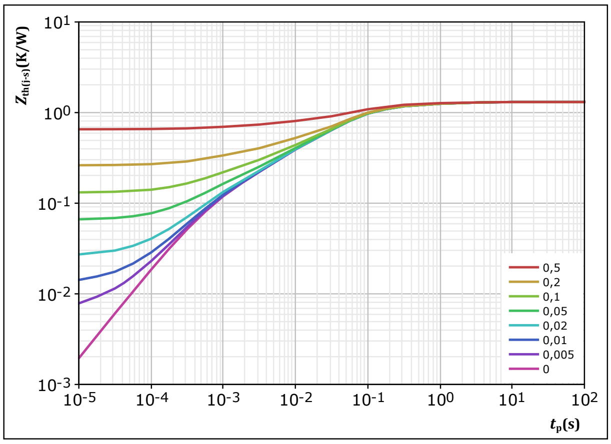

$t_p$ = 250 µs

$T_j$: 25 °C, 150 °C

**figure 20.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




$D = t_p / T$

$R_{th(j-s)}$ = 1,308 K/W

FWD thermal model values

| R (K/W) | τ (s) |
|---|---|
| 9,18E-02 | 1,91E+00 |
| 2,59E-01 | 2,04E-01 |
| 6,72E-01 | 4,91E-02 |
| 1,98E-01 | 5,31E-03 |
| 8,79E-02 | 6,11E-04 |



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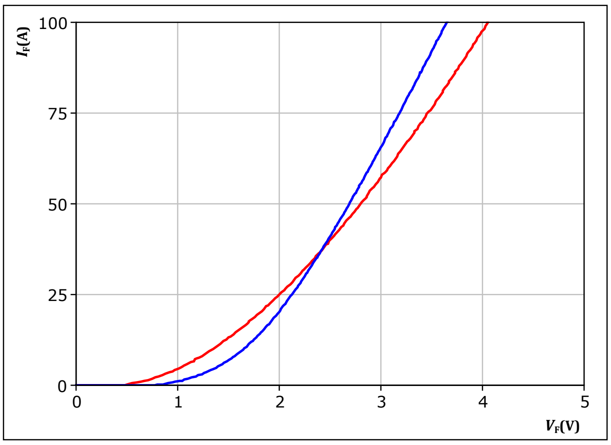
# Aux Diode H Characteristics

**figure 21.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



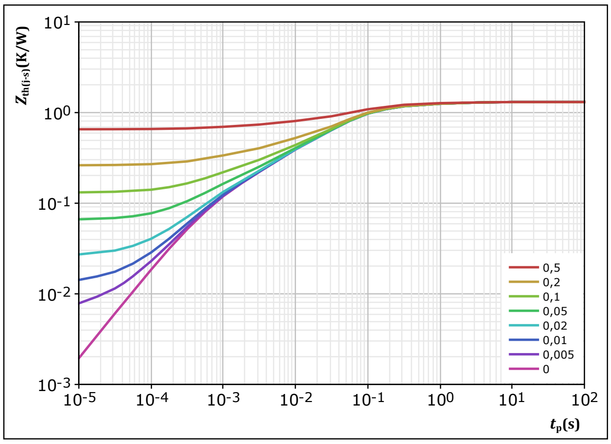

$t_p$ = 250 µs

$T_j$: 25 °C, 150 °C

**figure 22.** **FWD**

**Transient thermal impedance as a function of pulse width**

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




$D$ = $t_p / T$

$R_{th(j-s)}$ = 1,308 K/W

FWD thermal model values

| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 9,18E-02 | 1,91E+00 |
| 2,59E-01 | 2,04E-01 |
| 6,72E-01 | 4,91E-02 |
| 1,98E-01 | 5,31E-03 |
| 8,79E-02 | 6,11E-04 |



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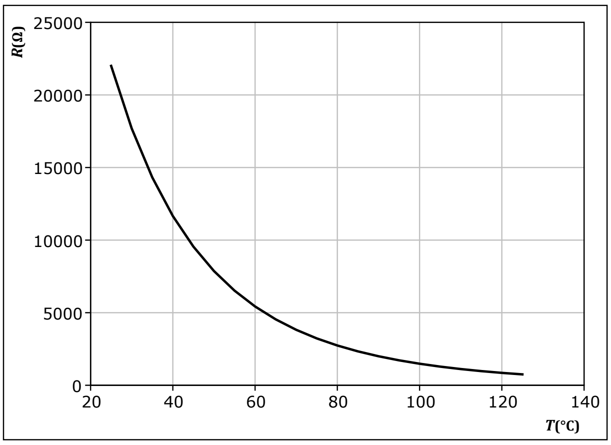
# Thermistor Characteristics

**figure 23.** **Thermistor**

**Typical NTC characteristic as function of temperature**

$R_T$ = f( $T$)



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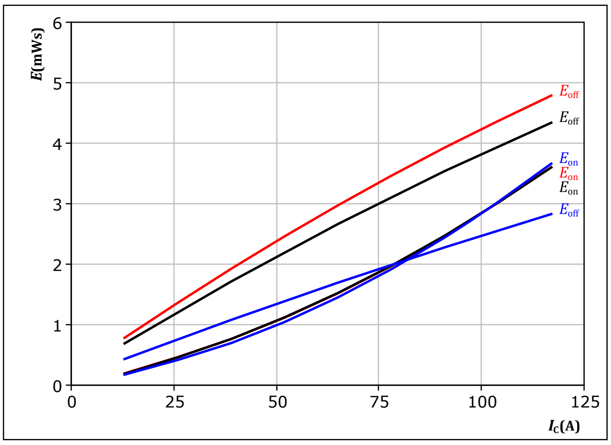
# Inner Boost Switching Characteristics

**figure 24.** **IGBT**

**Typical switching energy losses as a function of collector current**

$E = f(I_C)$



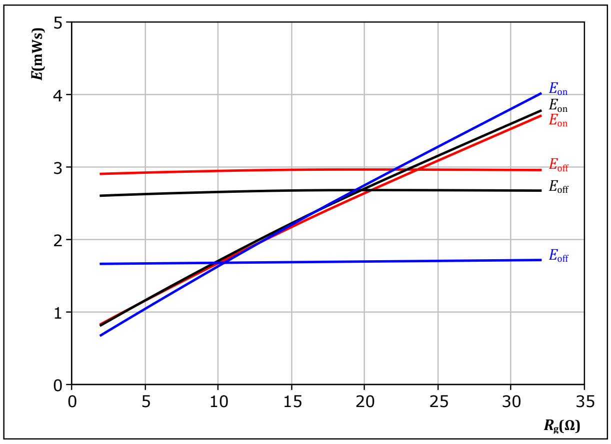

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C (blue) |
| $V_{GE}$ = | ±15 | V | | 125 °C (black) |
| $R_{gon}$ = | 8 | Ω | | 150 °C (red) |
| $R_{goff}$ = | 8 | Ω | | |

**figure 25.** **IGBT**

**Typical switching energy losses as a function of gate resistor**

$E = f(R_g)$



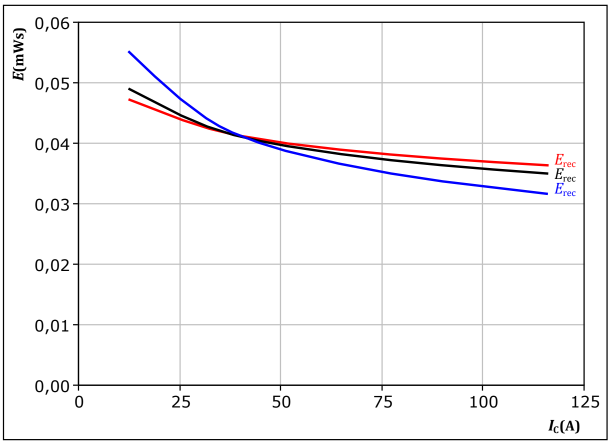

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C (blue) |
| $V_{GE}$ = | ±15 | V | | 125 °C (black) |
| $I_C$ = | 65 | A | | 150 °C (red) |

**figure 26.** **FWD**

**Typical reverse recovered energy loss as a function of collector current**

$E_{rec} = f(I_C)$



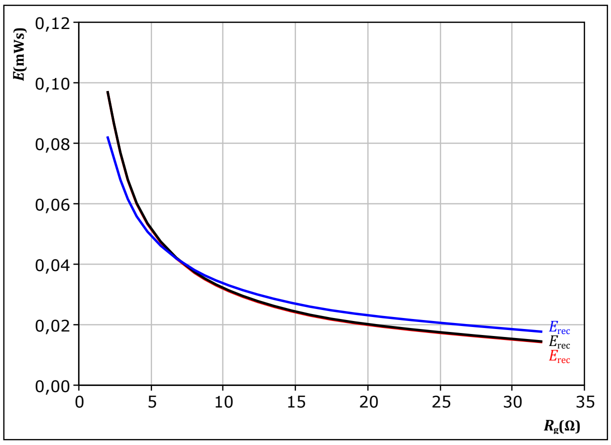

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C (blue) |
| $V_{GE}$ = | ±15 | V | | 125 °C (black) |
| $R_{gon}$ = | 8 | Ω | | 150 °C (red) |

**figure 27.** **FWD**

**Typical reverse recovered energy loss as a function of gate resistor**

$E_{rec} = f(R_g)$




With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C (blue) |
| $V_{GE}$ = | ±15 | V | | 125 °C (black) |
| $I_C$ = | 65 | A | | 150 °C (red) |



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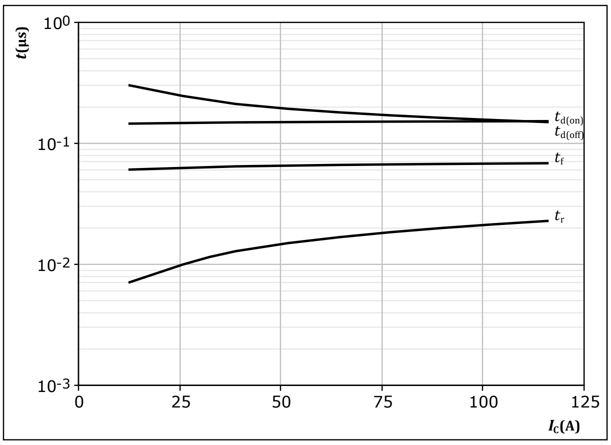
# Inner Boost Switching Characteristics

**figure 28.** **IGBT**

**Typical switching times as a function of collector current**

$t$ = f( $I_C$)



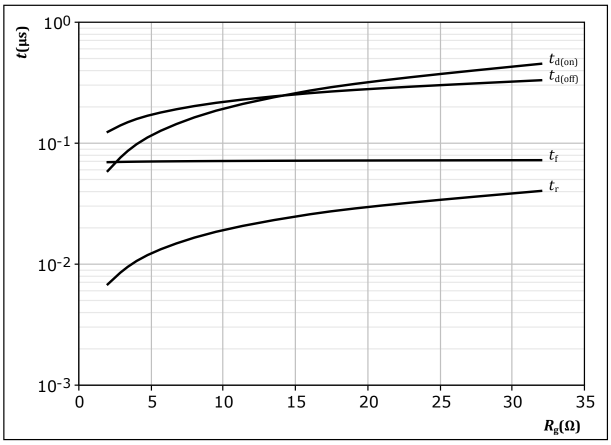

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $R_{gon}$ = | 8 | Ω |
| $R_{goff}$ = | 8 | Ω |

**figure 29.** **IGBT**

**Typical switching times as a function of gate resistor**

$t$ = f( $R_g$)



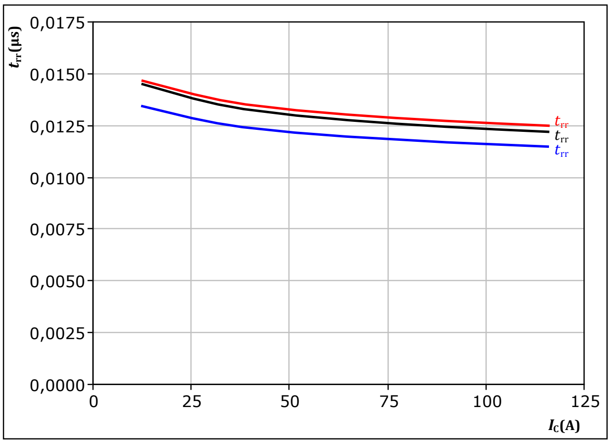

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 65 | A |

**figure 30.** **FWD**

**Typical reverse recovery time as a function of collector current**

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




With an inductive load at

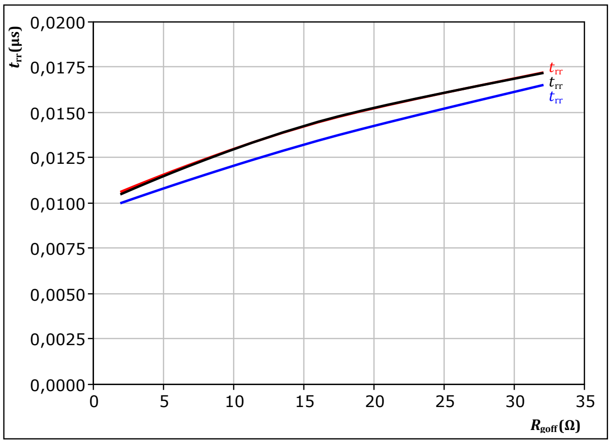
| | | |
|---|---|---|
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $R_{gon}$ = | 8 | Ω |

$T_j$: 25 °C, 125 °C, 150 °C

**figure 31.** **FWD**

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

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




With an inductive load at

| | | |
|---|---|---|
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 65 | A |

$T_j$: 25 °C, 125 °C, 150 °C



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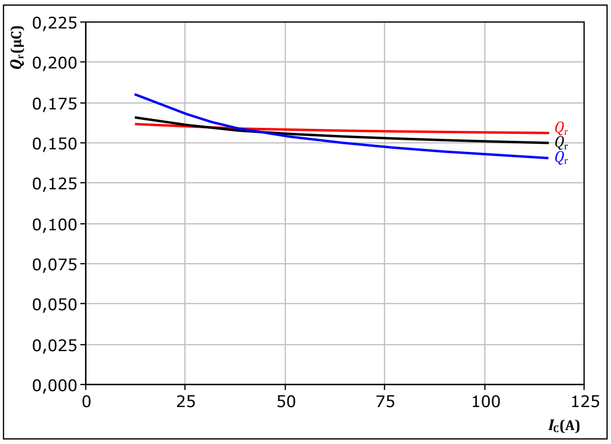
# Inner Boost Switching Characteristics

**figure 32.** **FWD**

**Typical recovered charge as a function of collector current**

$Q_r$ = f( $I_C$)



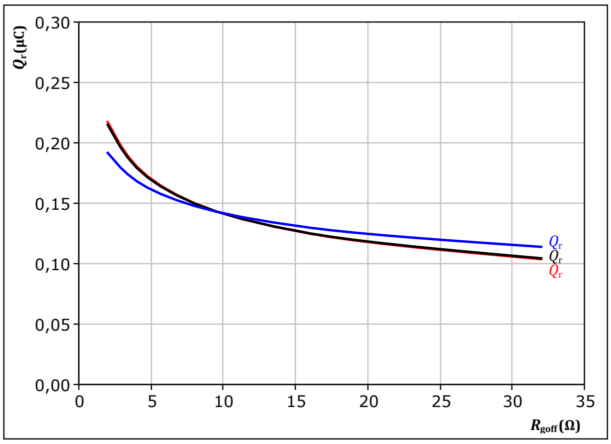

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $R_{gon}$ = | 8 | Ω | | 150 °C |

**figure 33.** **FWD**

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

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



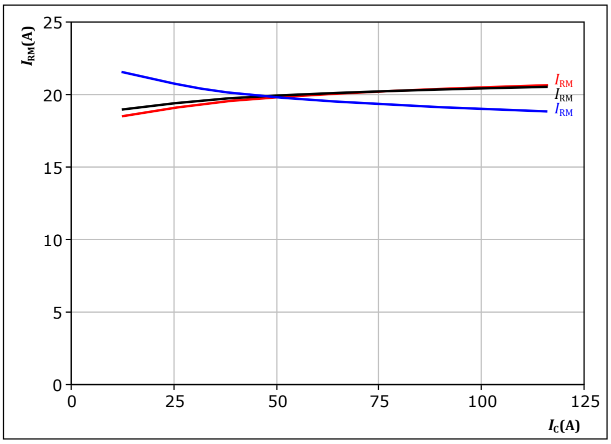

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $I_C$ = | 65 | A | | 150 °C |

**figure 34.** **FWD**

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

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



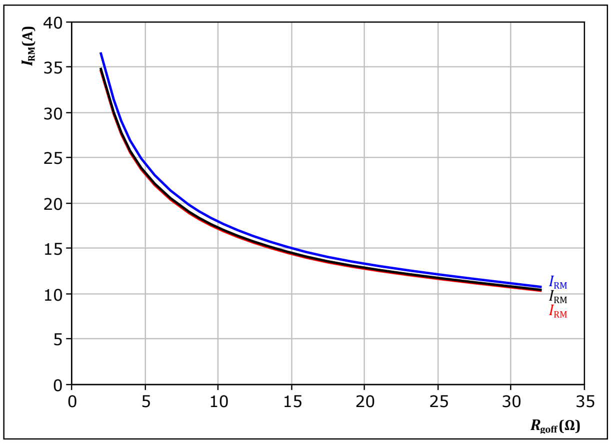

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $R_{gon}$ = | 8 | Ω | | 150 °C |

**figure 35.** **FWD**

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

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




With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $I_C$ = | 65 | A | | 150 °C |



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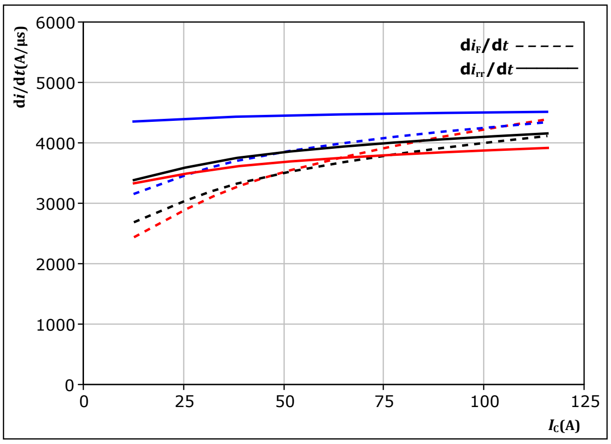
# Inner Boost Switching Characteristics

**figure 36.** **FWD**

**Typical rate of fall of forward and reverse recovery current as a function of collector current**

$di_F/dt$, $di_{rr}/dt$ = f( $I_C$)



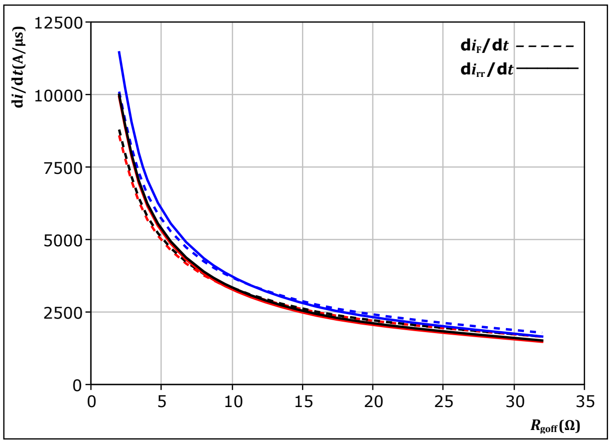

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $R_{gon}$ = | 8 | Ω | | 150 °C |

**figure 37.** **FWD**

**Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor**

$di_F/dt$, $di_{rr}/dt$ = f( $R_{gon}$)



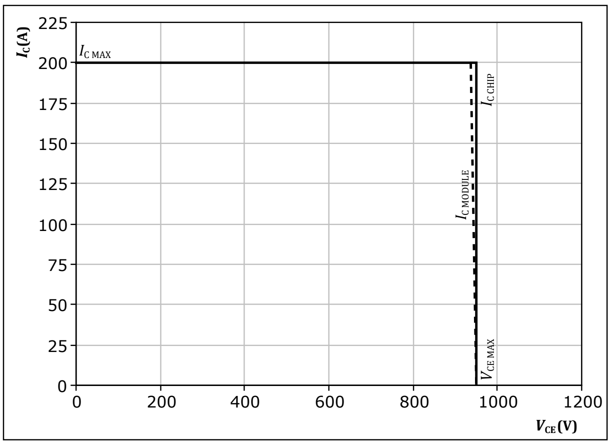

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| $V_{GE}$ = | ±15 | V | | 125 °C |
| $I_C$ = | 65 | A | | 150 °C |

**figure 38.** **IGBT**

**Reverse bias safe operating area**

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




| | | | |
|---|---|---|---|
| **At** | $T_j$ = | 150 | °C |
| | $R_{gon}$ = | 8 | Ω |
| | $R_{goff}$ = | 8 | Ω |



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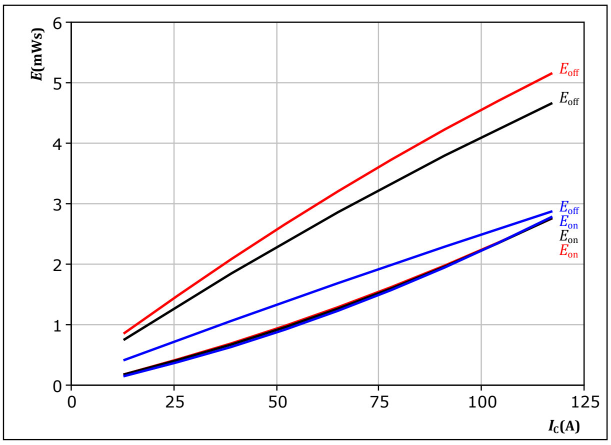
# Outer Boost Switching Characteristics

**figure 39.** **IGBT**

**Typical switching energy losses as a function of collector current**

$E = f(I_C)$



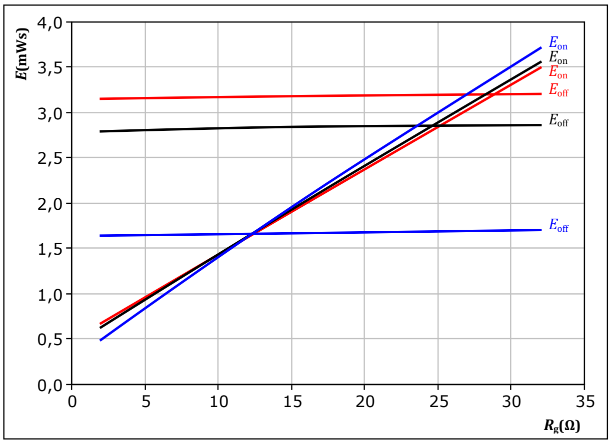

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $R_{gon}$ = | 8 | Ω | |
| $R_{goff}$ = | 8 | Ω | |

**figure 40.** **IGBT**

**Typical switching energy losses as a function of gate resistor**

$E = f(R_g)$



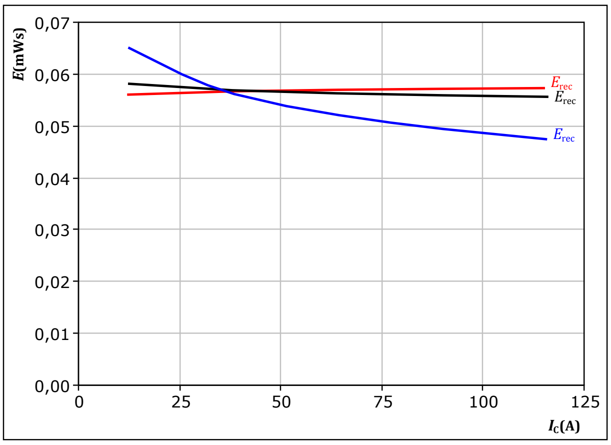

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $I_C$ = | 65 | A | |

**figure 41.** **FWD**

**Typical reverse recovered energy loss as a function of collector current**

$E_{rec} = f(I_C)$



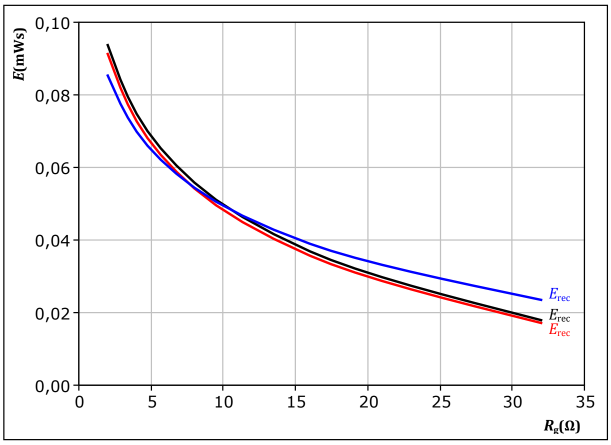

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $R_{gon}$ = | 8 | Ω | |

**figure 42.** **FWD**

**Typical reverse recovered energy loss as a function of gate resistor**

$E_{rec} = f(R_g)$




With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $I_C$ = | 65 | A | |



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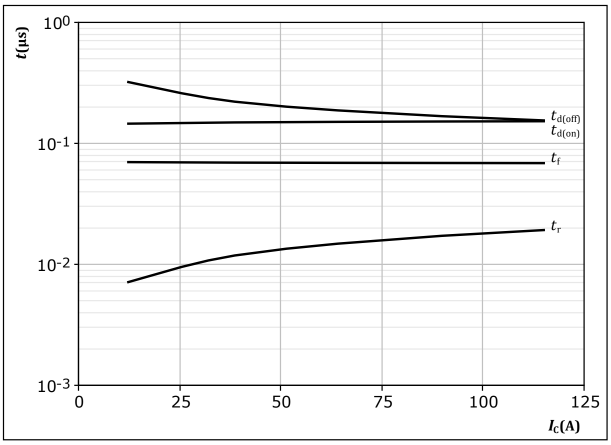
# Outer Boost Switching Characteristics

**figure 43.** **IGBT**

**Typical switching times as a function of collector current**

$t$ = f( $I_C$)



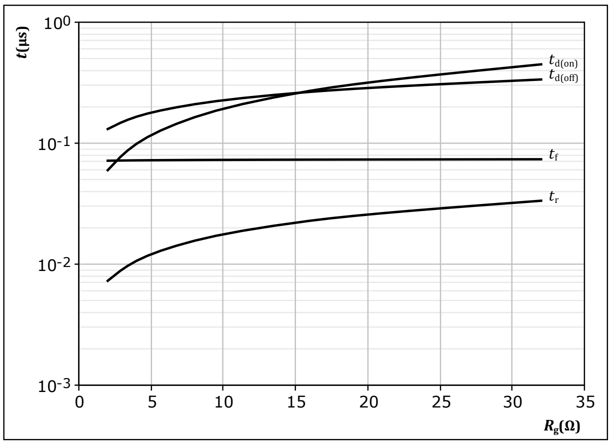

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $R_{gon}$ = | 8 | Ω |
| $R_{goff}$ = | 8 | Ω |

**figure 44.** **IGBT**

**Typical switching times as a function of gate resistor**

$t$ = f( $R_g$)



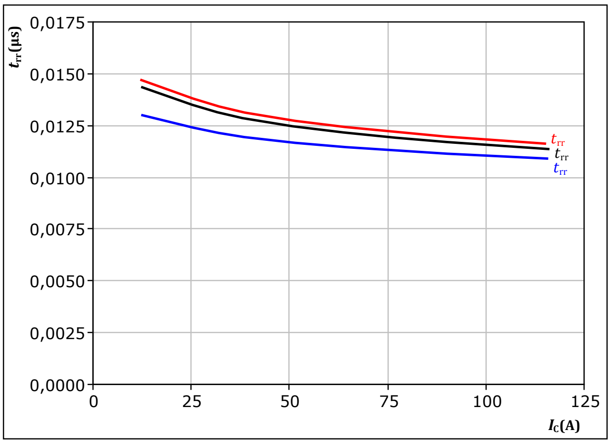

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 65 | A |

**figure 45.** **FWD**

**Typical reverse recovery time as a function of collector current**

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




With an inductive load at

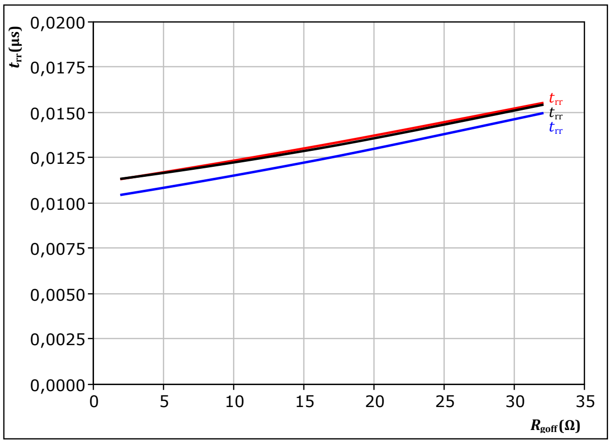
| | | |
|---|---|---|
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $R_{gon}$ = | 8 | Ω |

$T_j$: 25 °C, 125 °C, 150 °C

**figure 46.** **FWD**

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

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




With an inductive load at

| | | |
|---|---|---|
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 65 | A |

$T_j$: 25 °C, 125 °C, 150 °C



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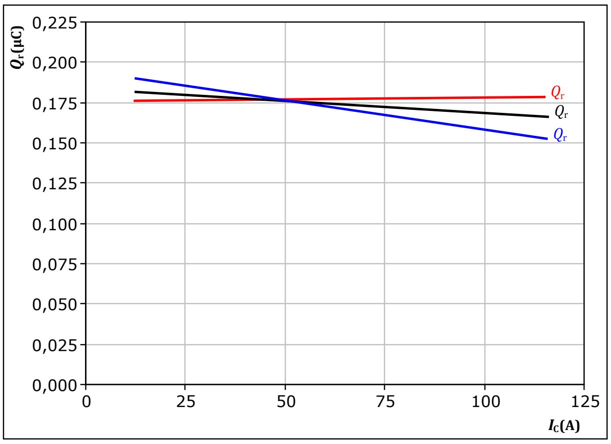
# Outer Boost Switching Characteristics

**figure 47.** FWD

Typical recovered charge as a function of collector current

$Q_r$ = f( $I_C$ )



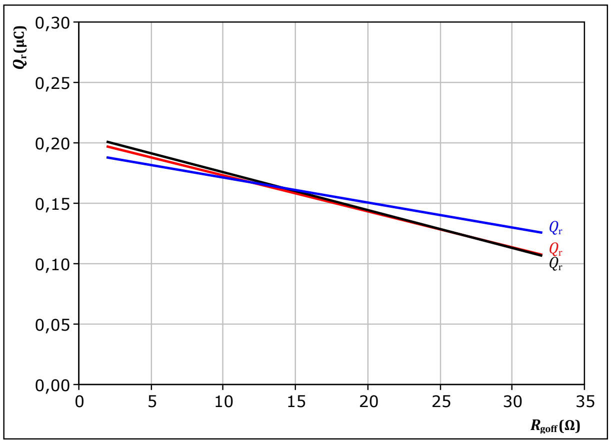

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $R_{gon}$ = | 8 | Ω | |

**figure 48.** FWD

Typical recovered charge as a function of turn on gate resistor

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



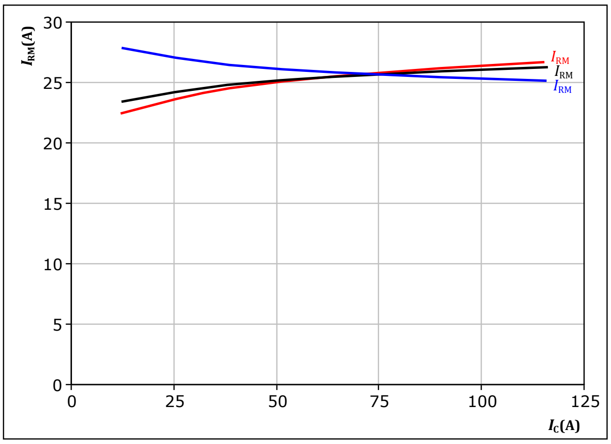

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $I_C$ = | 65 | A | |

**figure 49.** FWD

Typical peak reverse recovery current as a function of collector current

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



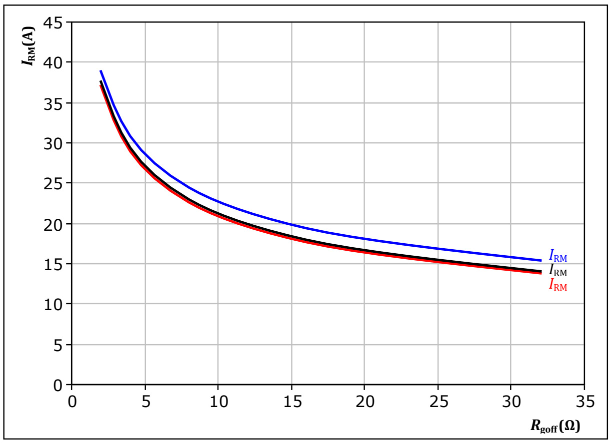

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $R_{gon}$ = | 8 | Ω | |

**figure 50.** FWD

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

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




With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C / 125 °C / 150 °C |
| $V_{GE}$ = | ±15 | V | |
| $I_C$ = | 65 | A | |



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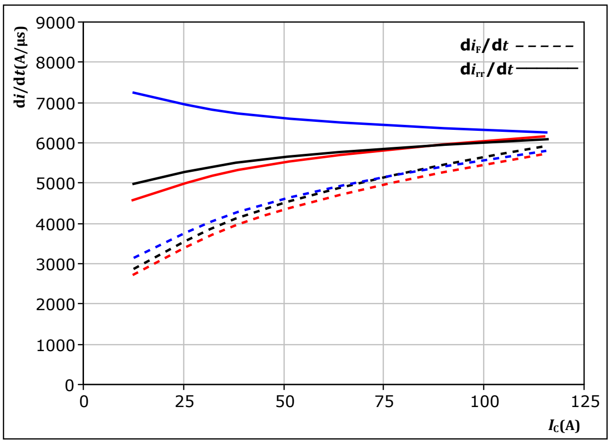
# Outer Boost Switching Characteristics

**figure 51.** **FWD**

**Typical rate of fall of forward and reverse recovery current as a function of collector current**

$di_F/dt$, $di_{rr}/dt$ = f( $I_C$)



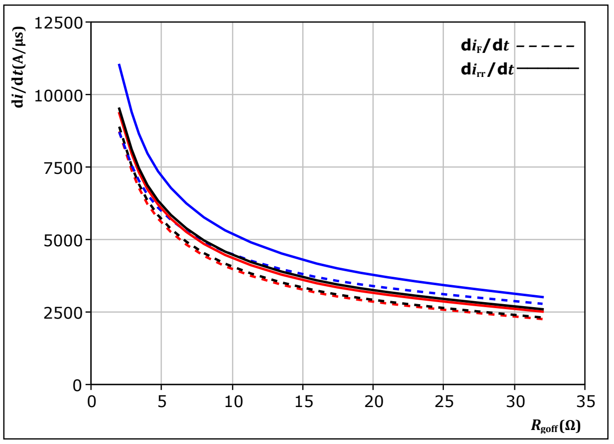

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C |
| $V_{GE}$ = | ±15 | V | 125 °C |
| $R_{gon}$ = | 8 | Ω | 150 °C |

**figure 52.** **FWD**

**Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor**

$di_F/dt$, $di_{rr}/dt$ = f( $R_{gon}$)



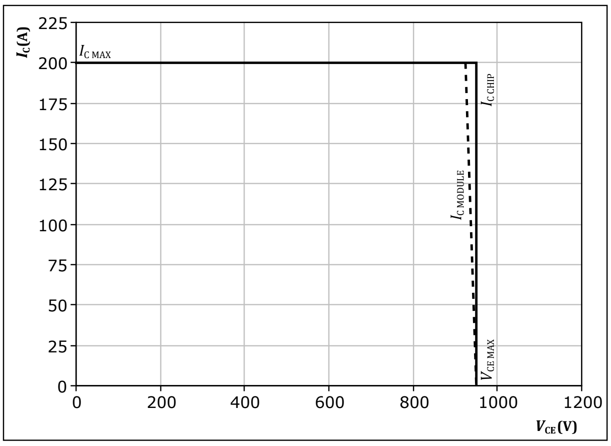

With an inductive load at

| | | | |
|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_j$: 25 °C |
| $V_{GE}$ = | ±15 | V | 125 °C |
| $I_C$ = | 65 | A | 150 °C |

**figure 53.** **IGBT**

**Reverse bias safe operating area**

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




| | | | |
|---|---|---|---|
| **At** | $T_j$ = | 150 | °C |
| | $R_{gon}$ = | 8 | Ω |
| | $R_{goff}$ = | 8 | Ω |



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# Switching Definitions

**figure 54.** **IGBT**

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

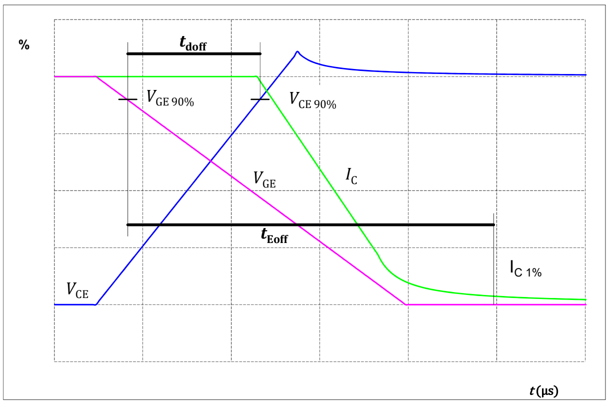



**figure 55.** **IGBT**

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

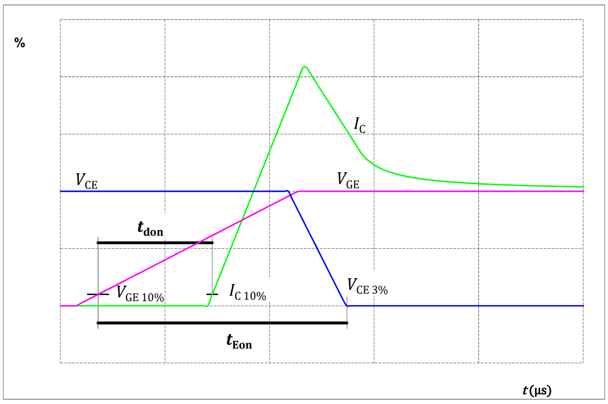



**figure 56.** **IGBT**

**Turn-off Switching Waveforms & definition of** $t_f$

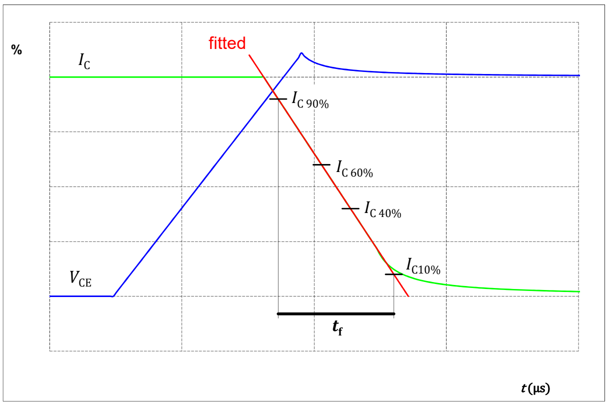
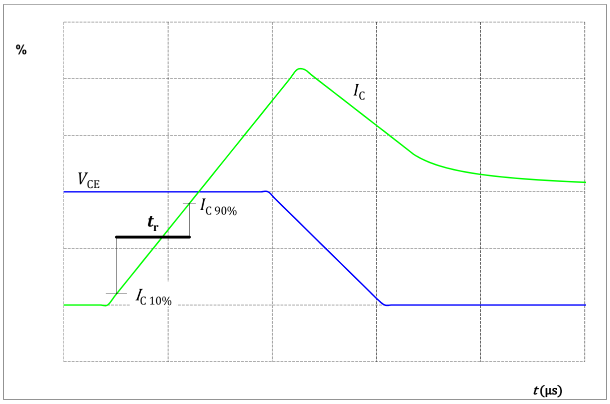



**figure 57.** **IGBT**

**Turn-on Switching Waveforms & definition of** $t_r$



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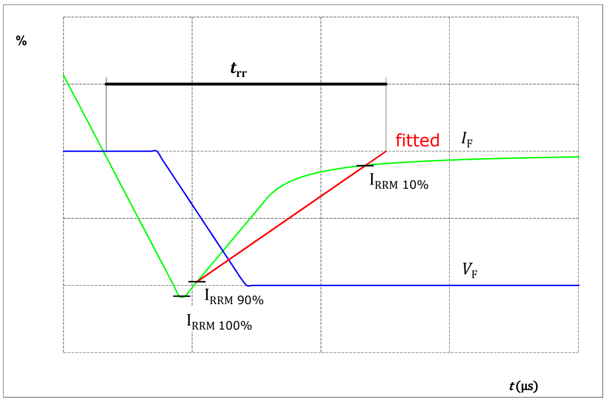
# Switching Definitions

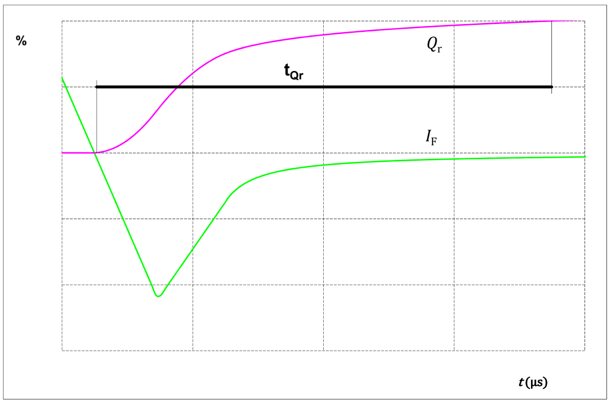
| figure 58. | FWD |
|---|---|

**Turn-off Switching Waveforms & definition of** $t_{rr}$




| figure 59. | FWD |
|---|---|

**Turn-on Switching Waveforms & definition of** $t_{Qr}$ **(**$t_{Qr}$ **= integrating time for** $Q_r$**)**



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## Ordering Code

| Version | Ordering Code |
|---|---|
| With thermal paste (5,2 W/mK, PTM6000HV) | B0-SP103BA100S704-LS69L98T-/7/ |

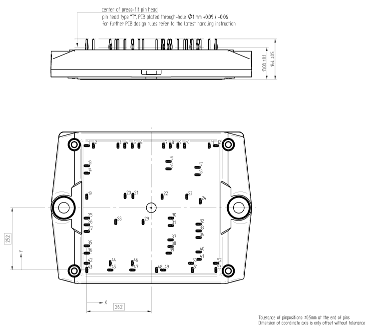
## Marking

| | | | | | | | |
|---|---|---|---|---|---|---|---|
|  | **Text** | **Name** | | **Date code** | **UL & VIN** | **Lot** | **Serial** |
| | | NN-NNNNNNNNNNNNNNN-TTTTTTVV | | WWYY | UL VIN | LLLLL | SSSS |
| | **Datamatrix** | **Type&Ver** | **Lot number** | **Serial** | **Date code** | | |
| | | TTTTTTTVV | LLLLL | SSSS | WWYY | | |

## Outline

Pin table [mm]

| Pin | X | Y | Function | Pin | X | Y | Function |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 50,4 | DC-Boost1 | 28 | 11,75 | 19,5 | C11 |
| | | | | 29 | 22,85 | 19,45 | C21 |
| 2 | 2,7 | 50,4 | DC-Boost1 | 30 | 34,1 | 21 | G25 |
| 3 | 12,7 | 50,4 | DC+Boost12 | 31 | 34,1 | 18 | S25 |
| 4 | 15,4 | 50,4 | DC+Boost12 | 32 | 45,4 | 18,55 | Boost3 |
| 5 | 18,5 | 50,4 | DC+Boost12 | 33 | 45,4 | 15,85 | Boost3 |
| 6 | 21,2 | 50,4 | DC+Boost12 | 34 | 45,4 | 13,15 | Boost3 |
| 7 | 31,2 | 50,4 | DC-Boost23 | 35 | 0 | 9,8 | G15 |
| 8 | 33,9 | 50,4 | DC-Boost23 | 36 | 0 | 6,8 | S15 |
| 9 | 37 | 50,4 | DC-Boost23 | 37 | 34 | 12,2 | Boost2 |
| 10 | 39,7 | 50,4 | DC-Boost23 | 38 | 34 | 9,5 | Boost2 |
| 11 | 49,7 | 50,4 | DC+Boost3 | 39 | 33,25 | 6,8 | Boost2 |
| 12 | 52,4 | 50,4 | DC+Boost3 | 40 | 45,4 | 7,3 | G35 |
| 13 | 0 | 42,25 | G17 | 41 | 45,4 | 4,3 | S35 |
| 14 | 0 | 39,25 | S17 | 42 | 0 | 2,7 | FC12 |
| 15 | 33,2 | 44 | G27 | 43 | 0 | 0 | FC12 |
| 16 | 33,2 | 41 | S27 | 44 | 9,55 | 2,7 | FC11 |
| 17 | 44,95 | 41,6 | G37 | 45 | 9,55 | 0 | FC11 |
| 18 | 44,95 | 38,6 | S37 | 46 | 18,55 | 2,7 | FC21 |
| 19 | 0 | 29,7 | C12 | 47 | 18,55 | 0 | FC21 |
| 20 | 15,55 | 30 | Therm1 | 48 | 28,35 | 0 | FC22 |
| 21 | 18,75 | 30 | Therm2 | 49 | 31,05 | 0 | FC22 |
| 22 | 30,6 | 29,7 | C22 | 50 | 42,4 | 2,7 | FC32 |
| 23 | 40,6 | 29,7 | C32 | 51 | 42,9 | 0 | FC32 |
| 24 | 46,1 | 27,85 | C31 | 52 | 52,4 | 2,7 | FC31 |
| 25 | 0 | 21 | Boost1 | 53 | 52,4 | 0 | FC31 |
| 26 | 0 | 18,3 | Boost1 | | | | |
| 27 | 0 | 15,6 | Boost1 | | | | |





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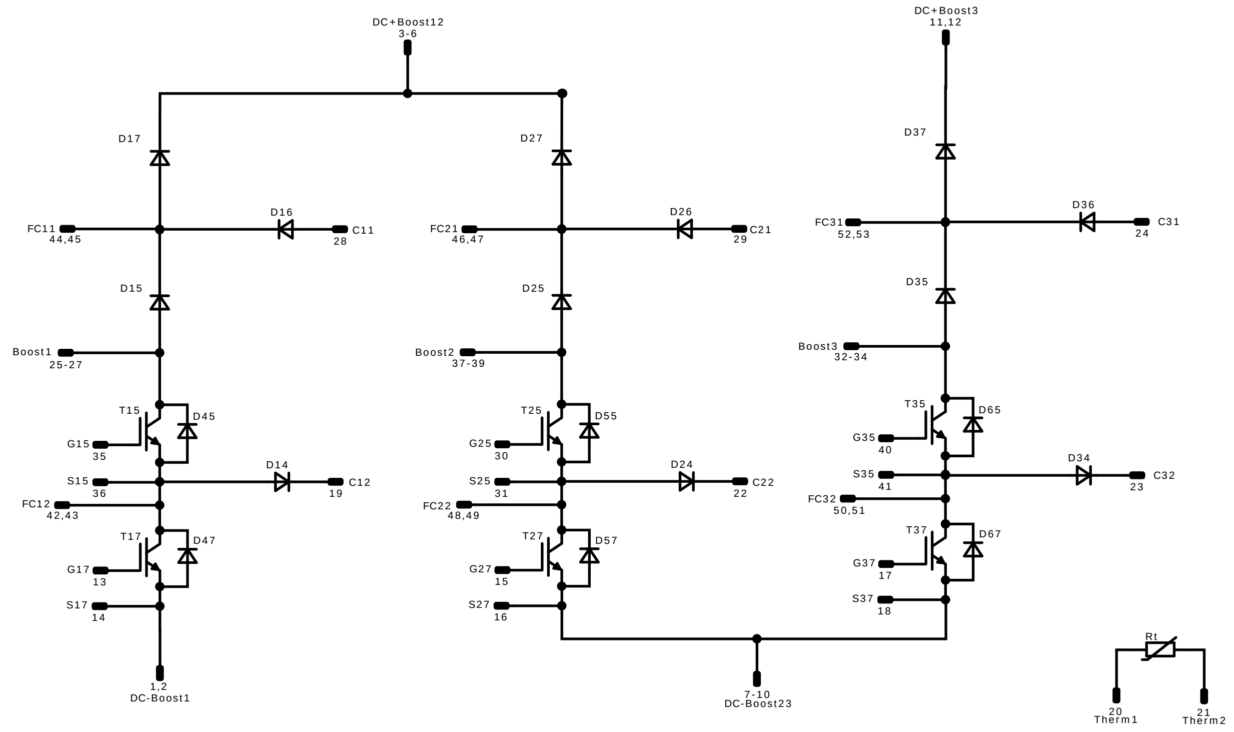
## Pinout




## Identification

| ID | Component | Voltage | Current | Function | Comment |
|---|---|---|---|---|---|
| T15, T25, T35 | IGBT | 950 V | 100 A | Inner Boost Switch | |
| D15, D25, D35 | FWD | 1200 V | 30 A | Inner Boost Diode | |
| T17, T27, T37 | IGBT | 950 V | 100 A | Outer Boost Switch | |
| D17, D27, D37 | FWD | 1200 V | 30 A | Outer Boost Diode | |
| D45, D55 , D65 | FWD | 1200 V | 35 A | Inner Boost Sw. Protection Diode | |
| D47, D57, D67 | FWD | 1200 V | 35 A | Outer Boost Sw. Protection Diode | |
| D14, D24, D34 | FWD | 1200 V | 35 A | Aux Diode L | |
| D16, D26, D36 | FWD | 1200 V | 35 A | Aux Diode H | |
| Rt | Thermistor | | | Thermistor | |



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| Packaging instruction | | | | |
|---|---|---|---|---|
| Standard packaging quantity (SPQ) 45 | >SPQ | Standard | <SPQ | Sample |

| Handling instruction |
|---|
| Handling instructions for *flow* S3 packages see vincotech.com website. |

| Package data |
|---|
| Package data for *flow* S3 packages see vincotech.com website. |

| Vincotech thermistor reference |
|---|
| See Vincotech thermistor reference table at 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 |
|---|---|---|---|
| B0-SP103BA100S704-LS69L98T-D2-14 | 17 Dec. 2021 | Module marking is updated with UL logo<br>Remove Capacitor (DC) and Flying Capacitor | |

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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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