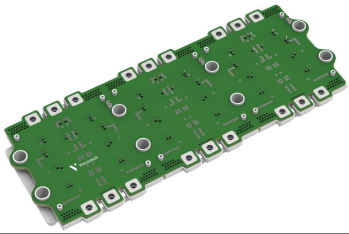
Vincotech

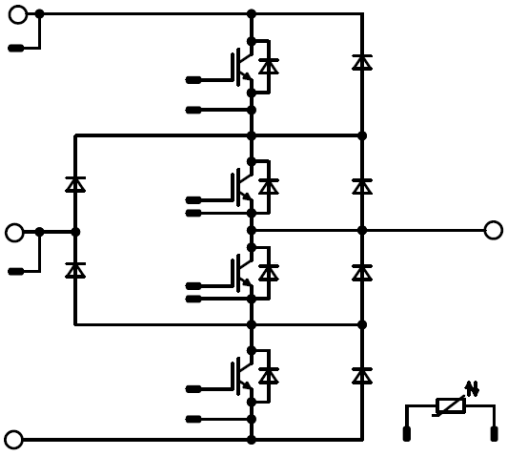
# 70-W624NIA1K2M702-L400FP70
datasheet

**VINcoNPC X12** **1500 V / 1200 A**

### Features
- Low inductive package
- Enables four-quadrant operation
- High efficiency

### VINco X12 housing


### Target applications
- Solar Inverters
- UPS

### Schematic


### Types
- 70-W624NIA1K2M702-L400FP70

## Maximum Ratings

$T_j$ = 25 °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 °C | 1270 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{jmax}$ | 2400 | A |
| Total power dissipation | $P_{tot}$ | $T_j$ = $T_{jmax}$ $T_s$ = 80 °C | 2375 | W |
| Gate-emitter voltage | $V_{GES}$ | | ±20 | V |
| Maximum junction temperature | $T_{jmax}$ | | 175 | °C |

# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Condition | Value | Unit |
|---|---|---|---|---|
| **Buck Diode** | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | 1200 | V |
| Continuous (direct) forward current | $I_F$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 826 | A |
| Repetitive peak forward current | $I_{FRM}$ | | 2400 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 1358 | W |
| Maximum junction temperature | $T_{jmax}$ | | 175 | °C |
| **Buck Sw. Protection Diode** | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | 1200 | V |
| Continuous (direct) forward current | $I_F$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 104 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 270 | 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 °C | 1270 | A |
| Repetitive peak collector current | $I_{CRM}$ | $t_p$ limited by $T_{jmax}$ | 2400 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 2375 | W |
| Gate-emitter voltage | $V_{GES}$ | | ±20 | V |
| Maximum junction temperature | $T_{jmax}$ | | 175 | °C |
| **Boost Diode** | | | | |
| Peak repetitive reverse voltage | $V_{RRM}$ | | 1200 | V |
| Continuous (direct) forward current | $I_F$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 826 | A |
| Repetitive peak forward current | $I_{FRM}$ | | 2400 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 1358 | W |
| Maximum junction temperature | $T_{jmax}$ | | 175 | °C |

# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Condition | Value | Unit |
|---|---|---|---|---|
| **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 °C | 826 | A |
| Repetitive peak forward current | $I_{FRM}$ | | 2400 | A |
| Total power dissipation | $P_{tot}$ | $T_j$ = $T_{jmax}$ $T_s$ = 80 °C | 1358 | W |
| Maximum junction temperature | $T_{jmax}$ | | 175 | °C |
| **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 °C | 104 | A |
| Total power dissipation | $P_{tot}$ | $T_j$ = $T_{jmax}$ $T_s$ = 80 °C | 270 | 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 |
| Maximum allowed PCB temperature | $T_{PCB}$ | | 125 | °C |
| **Isolation Properties** | | | | |
| Isolation voltage | $V_{isol}$ | DC Test Voltage* $t_p$ = 2 s | 4000 | V |
| | | AC Voltage $t_p$ = 1 min | 2500 | V |
| Creepage distance | | | min. 12,7 | mm |
| Clearance | | | min. 12,7 | mm |
| Comparative Tracking Index | CTI | | > 200 | |

*100 % tested in production

# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [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 | |
| **Buck Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{GE} = V_{CE}$ | | | 0,12 | 25 | 5,4 | 6 | 6,6 | V |
| Collector-emitter saturation voltage | $V_{CEsat}$ | | 15 | | 1200 | 25<br>125<br>150 | | 1,53<br>1,70<br>1,75 | 2,05 | V |
| Collector-emitter cut-off current | $I_{CES}$ | | 0 | 1200 | | 25 | | | 1320 | µA |
| Gate-emitter leakage current | $I_{GES}$ | | 20 | 0 | | 25 | | | 6 | µA |
| Internal gate resistance | $r_g$ | | | | | | | none | | Ω |
| Input capacitance | $C_{ies}$ | | 0 | 10 | | 25 | | 252 | | nF |
| Output capacitance | $C_{oes}$ | | | | | | | 8,4 | | |
| Reverse transfer capacitance | $C_{res}$ | | | | | | | 3,36 | | |
| Gate charge | $Q_g$ | | 15 | 600 | 1200 | 25 | | 7800 | | nC |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,040 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $R_{goff}$ = 0,417 Ω<br>$R_{gon}$ = 0,417 Ω | 16/-8 | 600 | 1190 | 25<br>125<br>150 | | 166<br>152<br>154 | | ns |
| Rise time | $t_r$ | | | | | 25<br>125<br>150 | | 42<br>45<br>47 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25<br>125<br>150 | | 217<br>249<br>257 | | |
| Fall time | $t_f$ | | | | | 25<br>125<br>150 | | 74<br>85<br>101 | | |
| Turn-on energy (per pulse) | $E_{on}$ | $Q_{rFWD}$ = 122 µC<br>$Q_{rFWD}$ = 194 µC<br>$Q_{rFWD}$ = 207 µC | | | | 25<br>125<br>150 | | 88<br>110<br>117 | | mWs |
| Turn-off energy (per pulse) | $E_{off}$ | | | | | 25<br>125<br>150 | | 77<br>108<br>117 | | |

# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [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 | |
| **Buck Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 1200 | 25<br>125 | | 1,82<br>1,96 | 2,1 | V |
| Reverse leakage current | $I_R$ | | | 1200 | | 25 | | | 720 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,07 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Peak recovery current | $I_{RRM}$ | $di/dt$ = 20584 A/µs<br>$di/dt$ = 24636 A/µs<br>$di/dt$ = 23099 A/µs | 16/-8 | 600 | 1190 | 25<br>125<br>150 | | 1081<br>1228<br>1262 | | A |
| Reverse recovery time | $t_{rr}$ | | | | | 25<br>125<br>150 | | 270<br>408<br>431 | | ns |
| Recovered charge | $Q_r$ | | | | | 25<br>125<br>150 | | 122<br>194<br>207 | | µC |
| Reverse recovered energy | $E_{rec}$ | | | | | 25<br>125<br>150 | | 42,0<br>73,7<br>78,2 | | mWs |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | | 25<br>125<br>150 | | 13899<br>12695<br>12576 | | A/µs |
| **Buck Sw. Protection Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 90 | 25 | | 2,38 | 2,71 | V |
| Reverse leakage current | $I_R$ | | | 1200 | | 25<br>150 | | | 0,36<br>10,8 | mA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,35 | | K/W |

# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [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 | |
| **Boost Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $V_{GE} = V_{CE}$ | | | 0,12 | 25 | 5,4 | 6 | 6,6 | V |
| Collector-emitter saturation voltage | $V_{CEsat}$ | | 15 | | 1200 | 25<br>125<br>150 | | 1,53<br>1,70<br>1,75 | 2,05 | V |
| Collector-emitter cut-off current | $I_{CES}$ | | 0 | 1200 | | 25 | | | 1320 | µA |
| Gate-emitter leakage current | $I_{GES}$ | | 20 | 0 | | 25 | | | 6 | µA |
| Internal gate resistance | $r_g$ | | | | | | | none | | Ω |
| Input capacitance | $C_{ies}$ | | 0 | 10 | | 25 | | 252 | | nF |
| Output capacitance | $C_{oes}$ | | | | | | | 8,4 | | |
| Reverse transfer capacitance | $C_{res}$ | | | | | | | 3,36 | | |
| Gate charge | $Q_g$ | | 15 | 600 | 1200 | 25 | | 7800 | | nC |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,040 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $R_{goff}$ = 0,417 Ω<br>$R_{gon}$ = 0,417 Ω | 16/-8 | 600 | 1179 | 25<br>125<br>150 | | 163<br>156<br>157 | | ns |
| Rise time | $t_r$ | | | | | 25<br>125<br>150 | | 44<br>42<br>45 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25<br>125<br>150 | | 227<br>250<br>263 | | |
| Fall time | $t_f$ | | | | | 25<br>125<br>150 | | 71<br>95<br>103 | | |
| Turn-on energy (per pulse) | $E_{on}$ | $Q_{rFWD}$ = 119 µC<br>$Q_{rFWD}$ = 192 µC<br>$Q_{rFWD}$ = 216 µC | | | | 25<br>125<br>150 | | 85<br>98<br>104 | | mWs |
| Turn-off energy (per pulse) | $E_{off}$ | | | | | 25<br>125<br>150 | | 76<br>107<br>114 | | |

# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [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 | |
| **Boost Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 1200 | 25<br>125 | | 1,82<br>1,96 | 2,1 | V |
| Reverse leakage current | $I_R$ | | | 1200 | | 25 | | | 720 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,07 | | K/W |
| **Dynamic** | | | | | | | | | | |
| Peak recovery current | $I_{RRM}$ | $di/dt$ = 21875 A/µs<br>$di/dt$ = 26999 A/µs<br>$di/dt$ = 25438 A/µs | 16/-8 | 600 | 1179 | 25<br>125<br>150 | | 951<br>1173<br>1199 | | A |
| Reverse recovery time | $t_{rr}$ | | | | | 25<br>125<br>150 | | 286<br>413<br>452 | | ns |
| Recovered charge | $Q_r$ | | | | | 25<br>125<br>150 | | 119<br>192<br>216 | | µC |
| Reverse recovered energy | $E_{rec}$ | | | | | 25<br>125<br>150 | | 41<br>72<br>82 | | mWs |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | | 25<br>125<br>150 | | 7710<br>8389<br>8083 | | A/µs |
| **Boost Sw.Inv.Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 1200 | 25<br>125 | | 1,82<br>1,96 | 2,1 | V |
| Reverse leakage current | $I_R$ | | | 1200 | | 25 | | | 720 | µA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,07 | | K/W |

# Characteristic Values

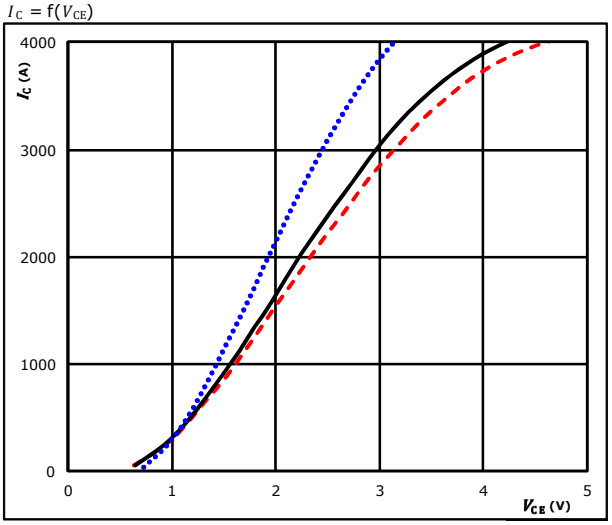
| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_{CE}$ [V]<br>$V_{DS}$ [V]<br>$V_F$ [V] | $I_C$ [A]<br>$I_D$ [A]<br>$I_F$ [A] | $T_j$ [°C] | Min | Typ | Max | |
| **Boost Sw. Protection Diode** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 90 | 25 | | 2,38 | 2,71 | V |
| Reverse leakage current | $I_R$ | | | 1200 | | 25<br>150 | | | 0,36<br>10,8 | mA |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,35 | | K/W |
| **Thermistor** | | | | | | | | | | |
| Rated resistance | $R$ | | | | | 25 | | 22 | | kΩ |
| 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**

**Typical output characteristics**

$I_C = f(V_{CE})$

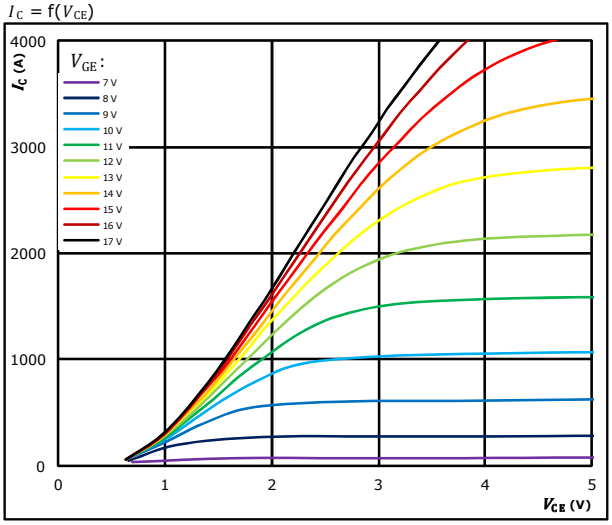



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 250 | µs | | 25 °C |
| $V_{GE}$ = | 15 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

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

**Typical output characteristics**

$I_C = f(V_{CE})$

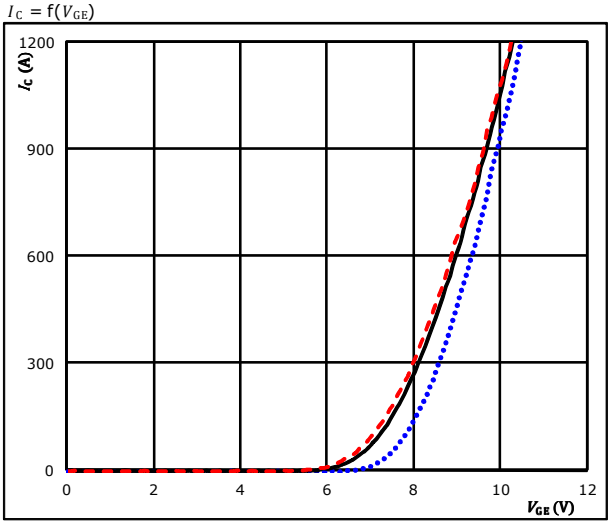



| | | |
|---|---|---|
| $t_p$ = | 250 | µs |
| $T_j$ = | 150 | °C |
| $V_{GE}$ from | 7 V to 17 V in steps of 1 V | |

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

**Typical transfer characteristics**

$I_C = f(V_{GE})$

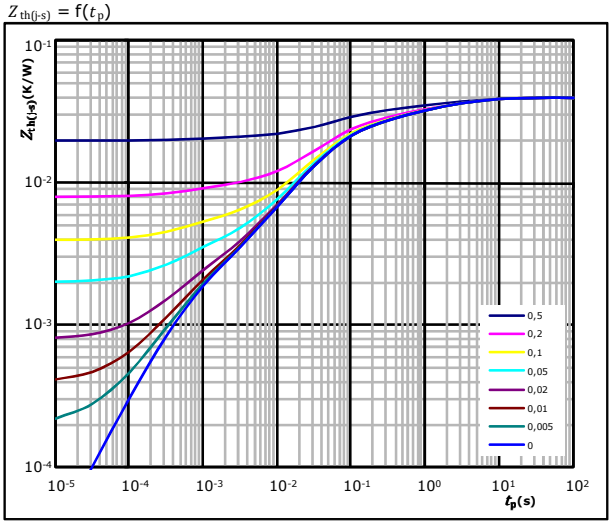



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 100 | µs | | 25 °C |
| $V_{CE}$ = | 10 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

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

**Transient thermal impedance as function of pulse duration**

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




| | | |
|---|---|---|
| $D$ = | $t_p / T$ | |
| $R_{th(j-s)}$ = | 0,040 | K/W |

IGBT thermal model values

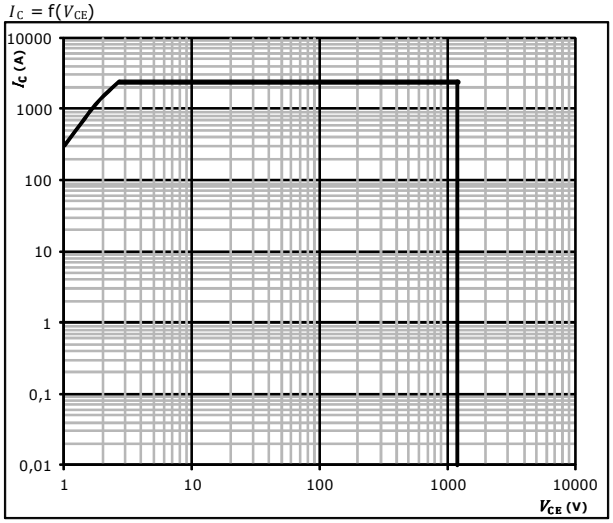
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,77E-03 | 9,47E-01 |
| 7,48E-03 | 2,04E-01 |
| 7,36E-03 | 3,92E-02 |
| 1,45E-02 | 8,36E-03 |
| 3,81E-03 | 2,61E-03 |
| 8,43E-04 | 3,68E-04 |
| 1,21E-03 | 8,72E-05 |

# Buck Switch Characteristics

**figure 5.** **IGBT**

**Safe operating area**

$I_C = f(V_{CE})$



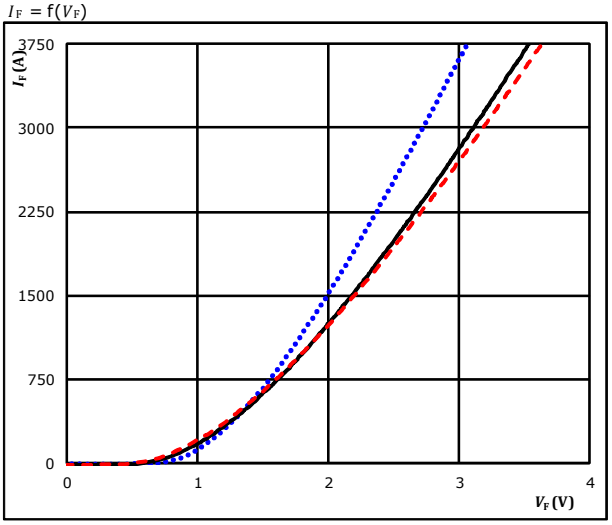

| | | |
|---|---|---|
| $D$ = | single pulse | |
| $T_s$ = | 80 | ºC |
| $V_{GE}$ = | ±15 | V |
| $T_j$ = | $T_{jmax}$ | |

# Buck Diode Characteristics

**figure 1.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



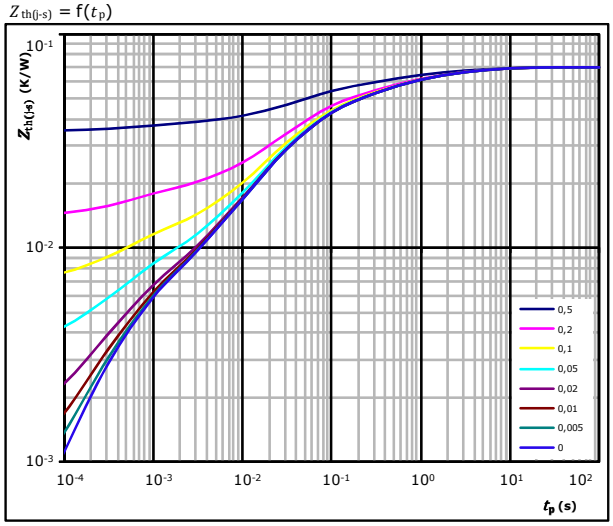

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 2.** **FWD**

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

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




$D$ = $t_p$ / $T$

$R_{th(j-s)}$ = 0,07 K/W

FWD thermal model values

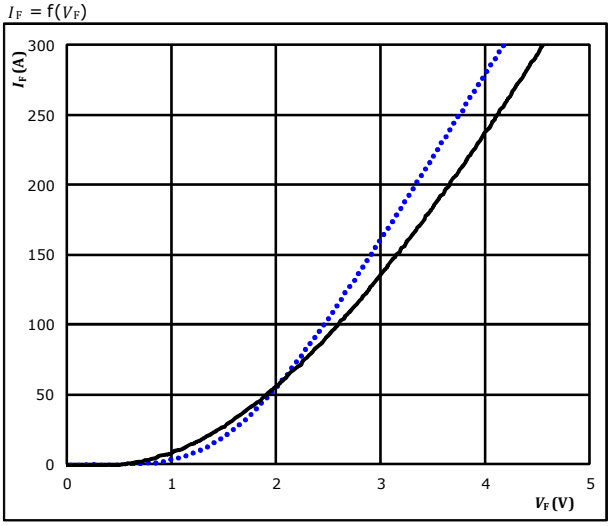
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,91E-03 | 1,04E+00 |
| 1,02E-02 | 2,14E-01 |
| 1,57E-02 | 4,54E-02 |
| 2,42E-02 | 7,86E-03 |
| 8,72E-03 | 2,17E-03 |
| 2,15E-03 | 3,47E-04 |
| 4,02E-03 | 7,64E-05 |

# Buck Sw. Protection Diode Characteristics

**figure 1.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$




$t_p$ = 250 µs

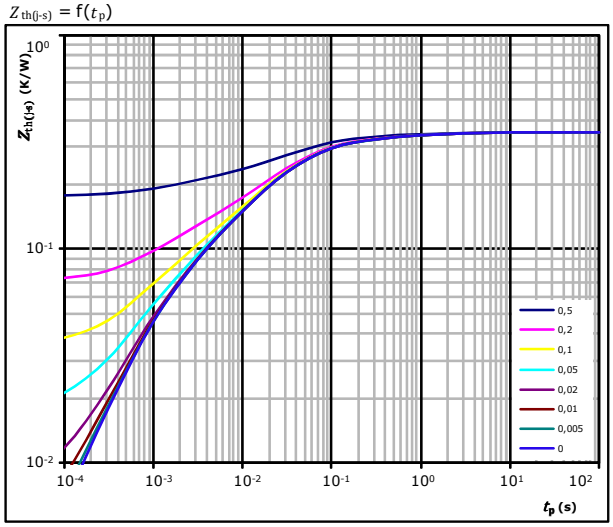
$T_j$: 25 °C

125 °C

**figure 2.** **FWD**

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

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




$D$ = $t_p / T$

$R_{th(j-s)}$ = 0,35 K/W

FWD thermal model values

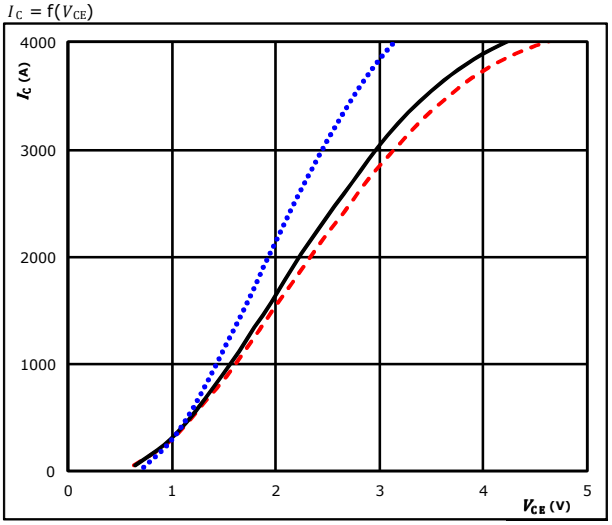
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 1,68E-02 | 5,53E-01 |
| 3,42E-02 | 7,61E-02 |
| 1,32E-01 | 1,28E-02 |
| 9,39E-02 | 3,66E-03 |
| 3,70E-02 | 9,02E-04 |
| 3,86E-02 | 2,43E-04 |

# Boost Switch Characteristics

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

**Typical output characteristics**

$I_C = f(V_{CE})$

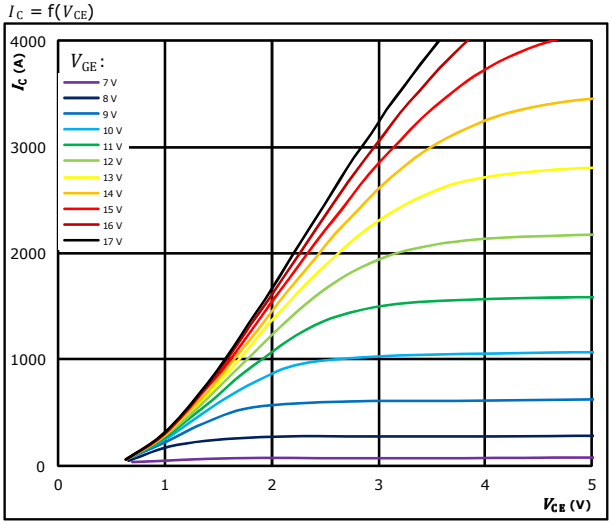



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 250 | µs | | 25 °C |
| $V_{GE}$ = | 15 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

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

**Typical output characteristics**

$I_C = f(V_{CE})$

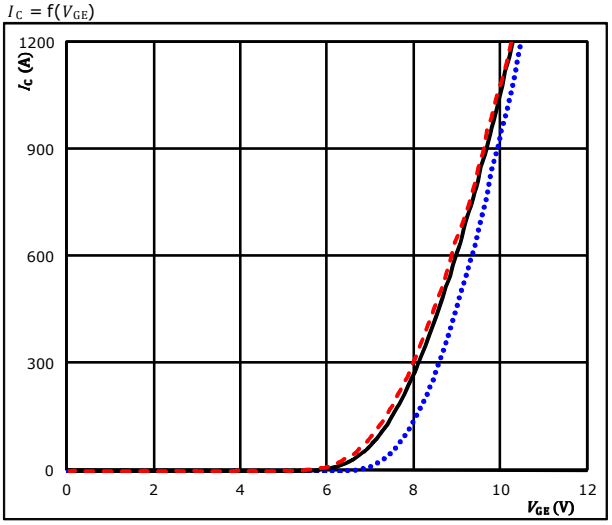



| | | |
|---|---|---|
| $t_p$ = | 250 | µs |
| $T_j$ = | 150 | °C |
| $V_{GE}$ from | 7 V to 17 V in steps of 1 V | |

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

**Typical transfer characteristics**

$I_C = f(V_{GE})$

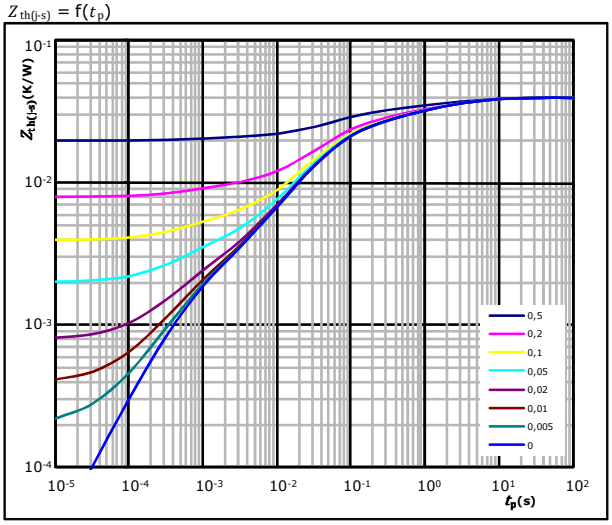



| | | | | |
|---|---|---|---|---|
| $t_p$ = | 100 | µs | | 25 °C |
| $V_{CE}$ = | 10 | V | $T_j$: | 125 °C |
| | | | | 150 °C |

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

**Transient thermal impedance as function of pulse duration**

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




| | | |
|---|---|---|
| $D$ = | $t_p / T$ | |
| $R_{th(j-s)}$ = | 0,040 | K/W |

IGBT thermal model values

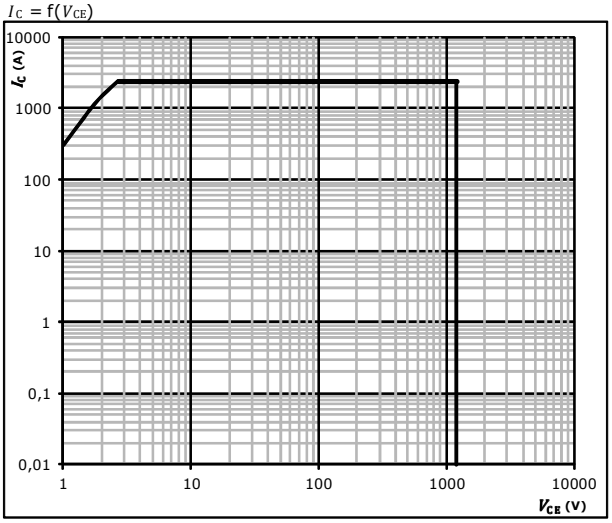
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,77E-03 | 9,47E-01 |
| 7,48E-03 | 2,04E-01 |
| 7,36E-03 | 3,92E-02 |
| 1,45E-02 | 8,36E-03 |
| 3,81E-03 | 2,61E-03 |
| 8,43E-04 | 3,68E-04 |
| 1,21E-03 | 8,72E-05 |

# Boost Switch Characteristics

**figure 5.** **IGBT**

**Safe operating area**

$I_C = f(V_{CE})$



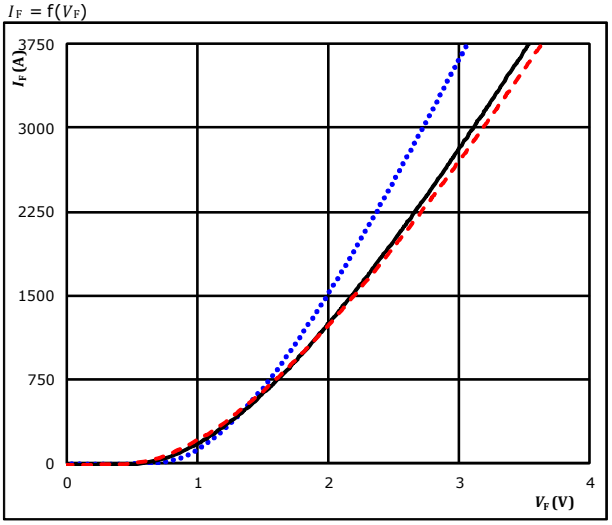

| | | |
|---|---|---|
| $D$ = | single pulse | |
| $T_s$ = | 80 | ºC |
| $V_{GE}$ = | ±15 | V |
| $T_j$ = | $T_{jmax}$ | |

# Boost Diode Characteristics

**figure 1.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



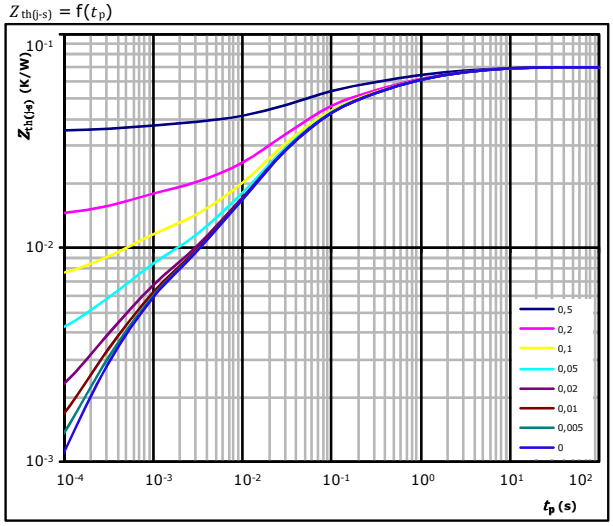

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 2.** **FWD**

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

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




$D$ = $t_p / T$

$R_{th(j-s)}$ = 0,07 K/W

FWD thermal model values

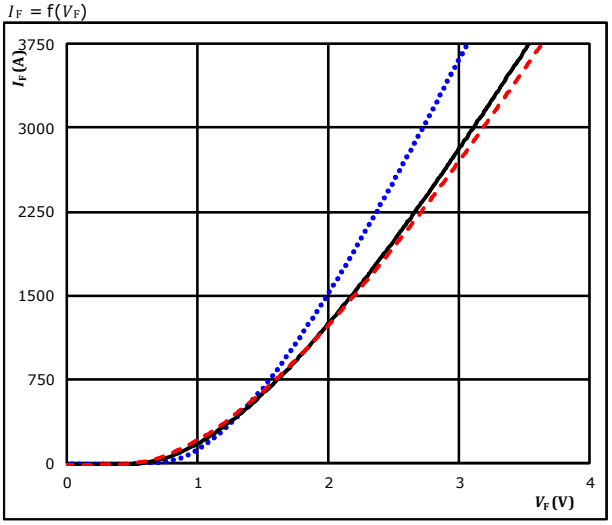
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,91E-03 | 1,04E+00 |
| 1,02E-02 | 2,14E-01 |
| 1,57E-02 | 4,54E-02 |
| 2,42E-02 | 7,86E-03 |
| 8,72E-03 | 2,17E-03 |
| 2,15E-03 | 3,47E-04 |
| 4,02E-03 | 7,64E-05 |

# Boost Sw.Inv.Diode Characteristics

**figure 1.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$



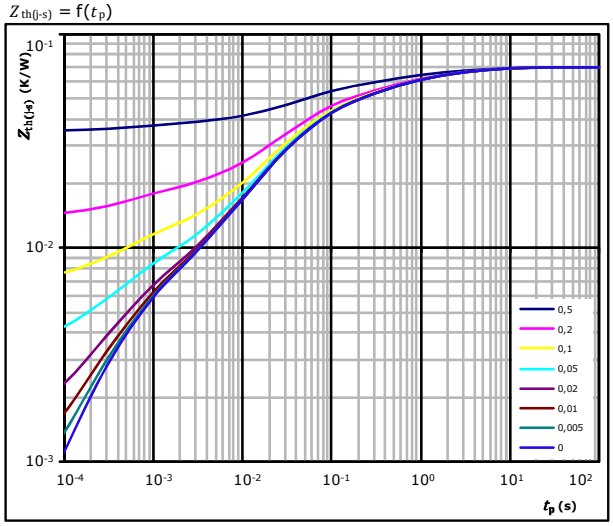

$t_p$ = 250 µs

$T_j$: 25 °C, 125 °C, 150 °C

**figure 2.** **FWD**

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

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




$D$ = $t_p / T$

$R_{th(j-s)}$ = 0,07 K/W

FWD thermal model values

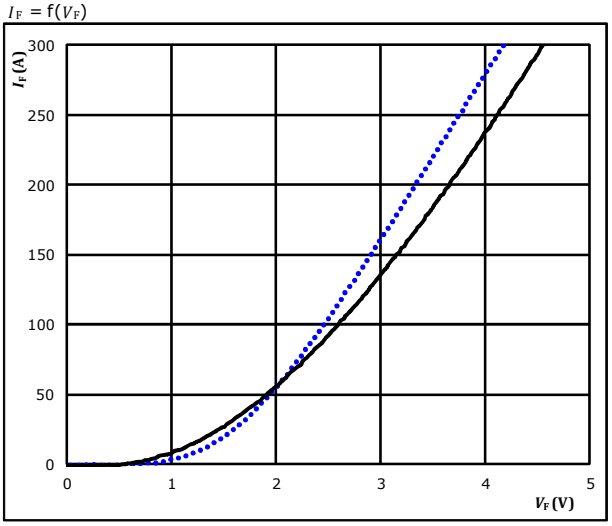
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 4,91E-03 | 1,04E+00 |
| 1,02E-02 | 2,14E-01 |
| 1,57E-02 | 4,54E-02 |
| 2,42E-02 | 7,86E-03 |
| 8,72E-03 | 2,17E-03 |
| 2,15E-03 | 3,47E-04 |
| 4,02E-03 | 7,64E-05 |

# Boost Sw. Protection Diode Characteristics

**figure 1.** **FWD**

**Typical forward characteristics**

$I_F = f(V_F)$




$t_p$ = 250 µs

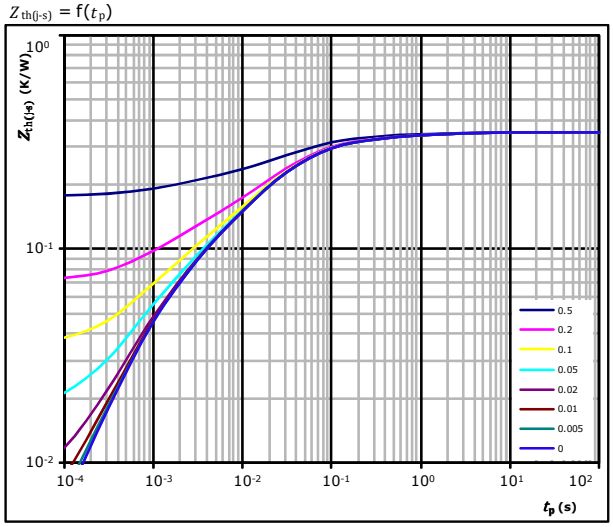
$T_j$: 25 °C

125 °C

**figure 2.** **FWD**

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

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




$D$ = $t_p / T$

$R_{th(j-s)}$ = 0,35 K/W

FWD thermal model values

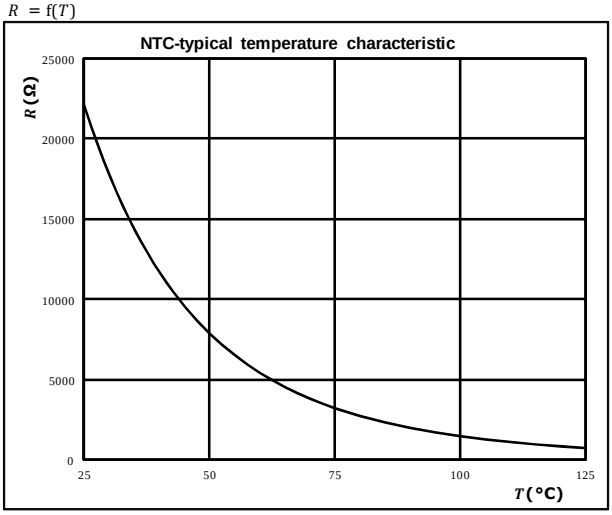
| $R$ (K/W) | $\tau$ (s) |
|---|---|
| 1,68E-02 | 5,53E-01 |
| 3,42E-02 | 7,61E-02 |
| 1,32E-01 | 1,28E-02 |
| 9,39E-02 | 3,66E-03 |
| 3,70E-02 | 9,02E-04 |
| 3,86E-02 | 2,43E-04 |

# Thermistor Characteristics

**figure 1.** **Thermistor**

**Typical NTC characteristic as a function of temperature**

$R = f(T)$

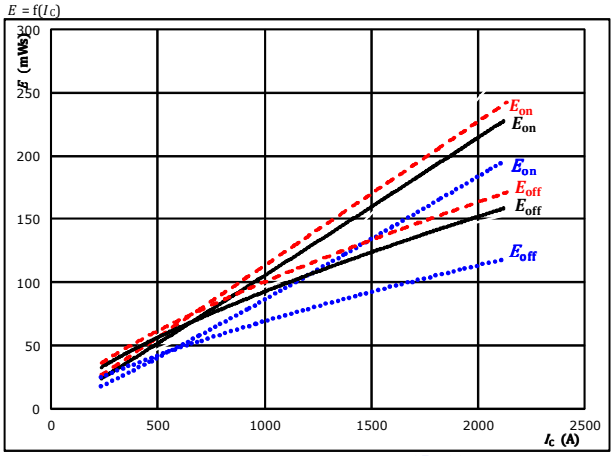


# Buck Switching Characteristics

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

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

$E = f(I_C)$



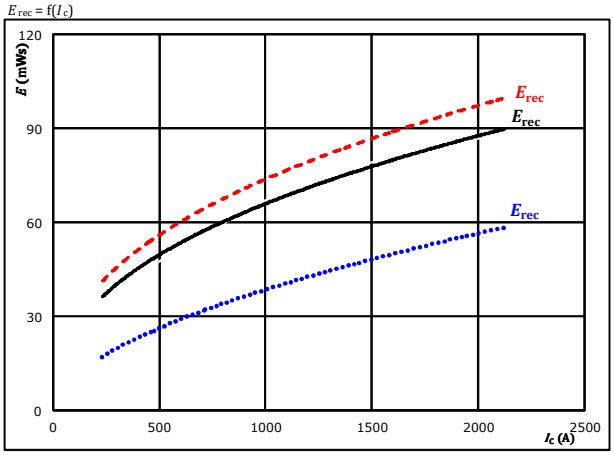

With an inductive load at

| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_J$: | 25 °C |
| $V_{GE}$ = | 16/-8 | V | | 125 °C |
| $R_{gon}$ = | 0,417 | Ω | | 150 °C |
| $R_{goff}$ = | 0,417 | Ω | | |

**figure 2.** **FWD**

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

$E_{rec} = f(I_C)$




With an inductive load at

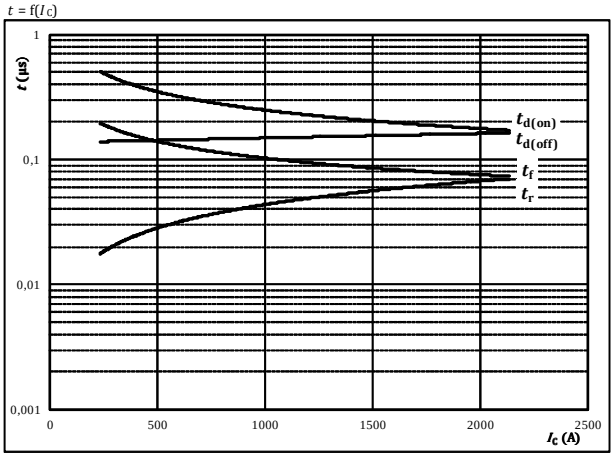
| | | | | |
|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_J$: | 25 °C |
| $V_{GE}$ = | 16/-8 | V | | 125 °C |
| $R_{gon}$ = | 0,417 | Ω | | 150 °C |

# Buck Switching Characteristics

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

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

$t = f(I_C)$



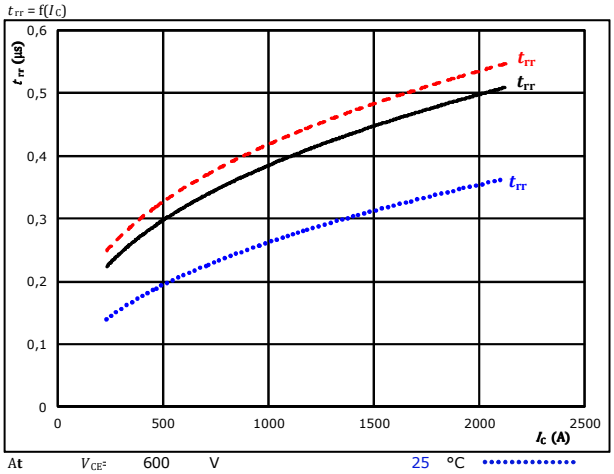

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | 16/-8 | V |
| $R_{gon}$ = | 0,417 | Ω |
| $R_{goff}$ = | 0,417 | Ω |

**figure 4.** **FWD**

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

$t_{rr} = f(I_C)$



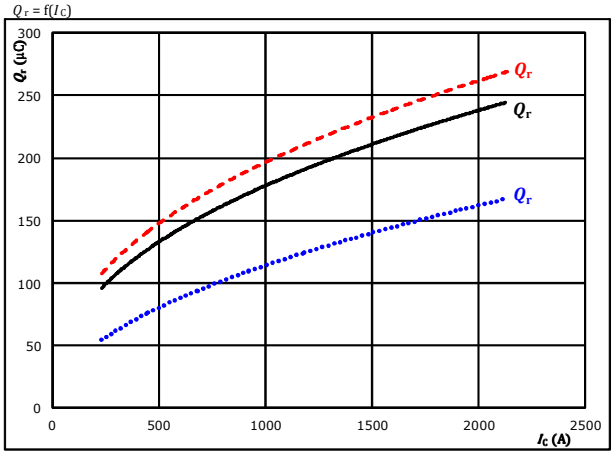

| | | | | | |
|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| | $V_{GE}$ = | 16/-8 | V | | 125 °C |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C |

# Buck Switching Characteristics

**figure 5.** **FWD**

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

$Q_r = f(I_C)$

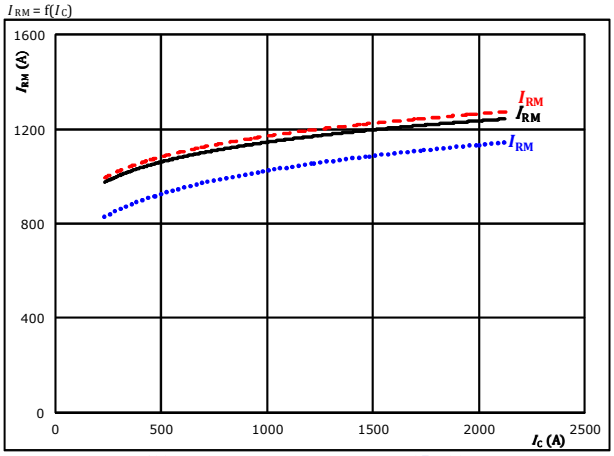



| | | | | | | |
|---|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | | 25 °C | |
| | $V_{GE}$ = | 16/-8 | V | $T_j$: | 125 °C | |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C | |

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

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

$I_{RM} = f(I_C)$



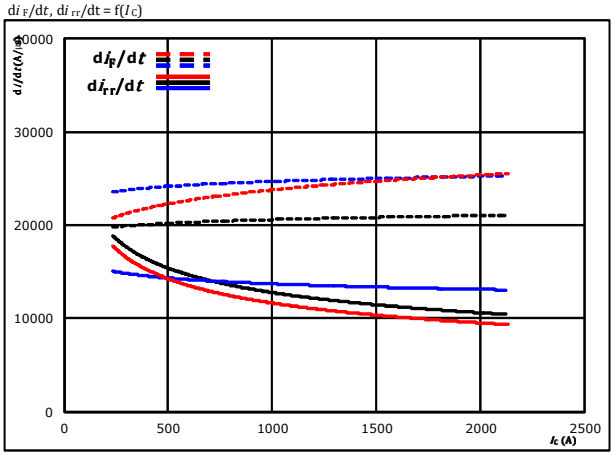

| | | | | | | |
|---|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | | 25 °C | |
| | $V_{GE}$ = | 16/-8 | V | $T_j$: | 125 °C | |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C | |

# Buck Switching Characteristics

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

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

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

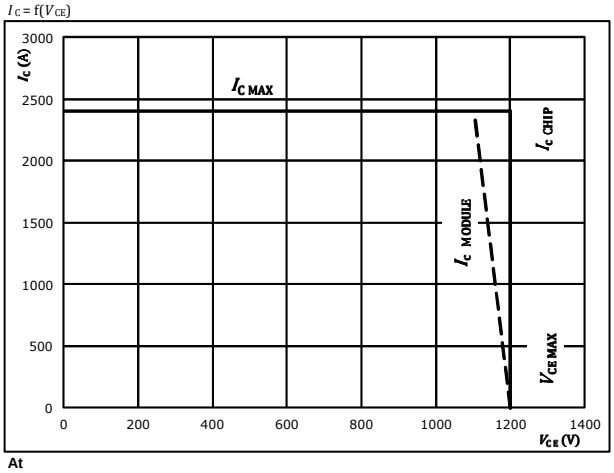



| | | | | | |
|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | | |
| | $V_{GE}$ = | 16/-8 | V | $T_j$ = | 25 °C, 125 °C, 150 °C |
| | $R_{gon}$ = | 0,417 | Ω | | |

**figure 8.** **IGBT**

**Reverse bias safe operating area**

$I_C = f(V_{CE})$




At

| | | | |
|---|---|---|---|
| $T_j$ = | 175 | °C | |
| $R_{gon}$ = | 0,417 | Ω | |
| $R_{goff}$ = | 0,417 | Ω | |

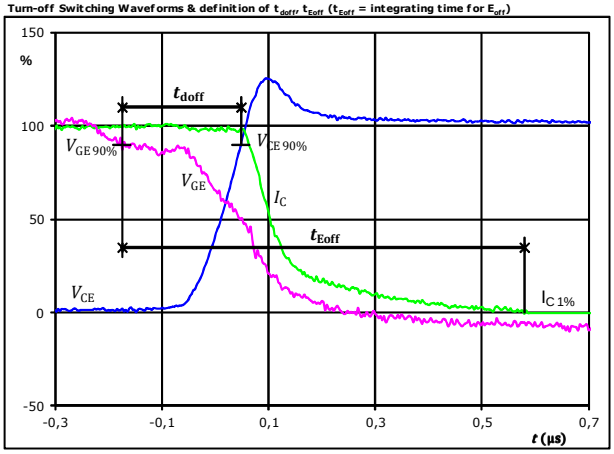
# Buck Switching Definitions

**General conditions**

| | | |
|---|---|---|
| $T_j$ | = | **125 °C** |
| $R_{gon}$ | = | **0,417 Ω** |
| $R_{goff}$ | = | **0,417 Ω** |

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

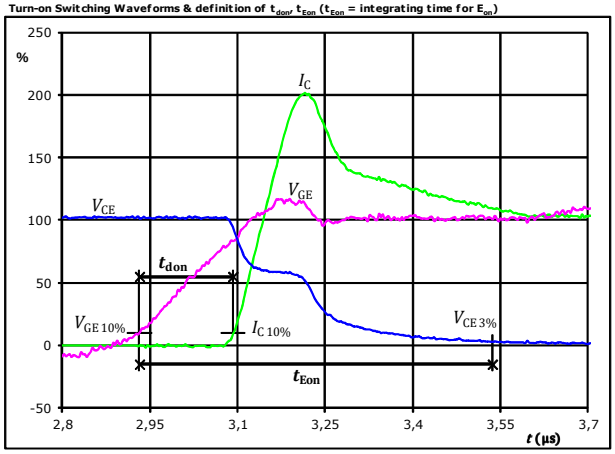
Turn-off Switching Waveforms & definition of $t_{doff}$, $t_{Eoff}$ ($t_{Eoff}$ = integrating time for $E_{off}$)




| | | |
|---|---|---|
| $V_{GE}(0\%)$ = | -8 | V |
| $V_{GE}(100\%)$ = | 16 | V |
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1209 | A |
| $t_{doff}$ = | 0,249 | µs |
| $t_{Eoff}$ = | 0,754 | µs |

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

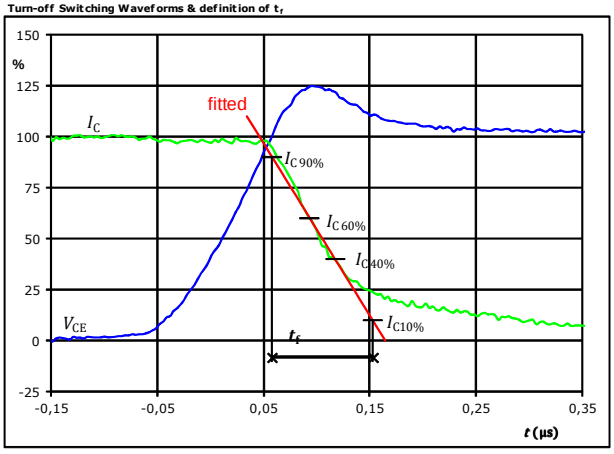
Turn-on Switching Waveforms & definition of $t_{don}$, $t_{Eon}$ ($t_{Eon}$ = integrating time for $E_{on}$)




| | | |
|---|---|---|
| $V_{GE}(0\%)$ = | -8 | V |
| $V_{GE}(100\%)$ = | 16 | V |
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1209 | A |
| $t_{don}$ = | 0,152 | µs |
| $t_{Eon}$ = | 0,604 | µs |

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

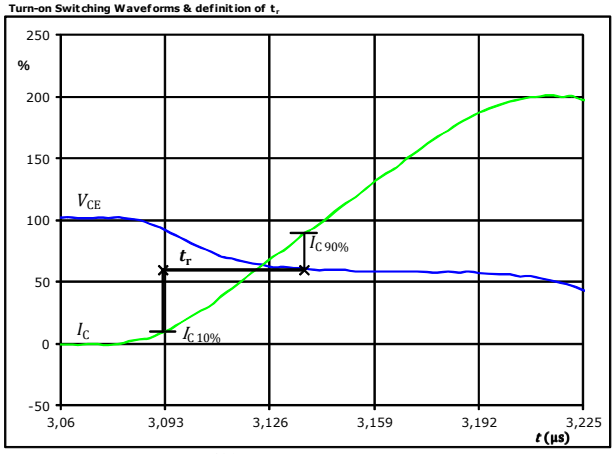
Turn-off Switching Waveforms & definition of $t_f$




| | | |
|---|---|---|
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1209 | A |
| $t_f$ = | 0,085 | µs |

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

Turn-on Switching Waveforms & definition of $t_r$

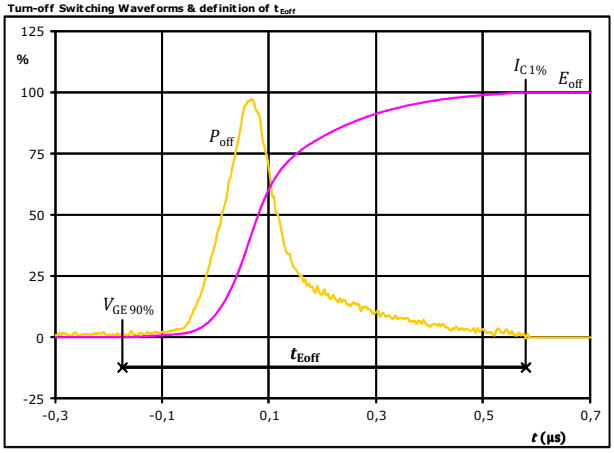



| | | |
|---|---|---|
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1209 | A |
| $t_r$ = | 0,045 | µs |

# Buck Switching Characteristics

**figure 5.** **IGBT**

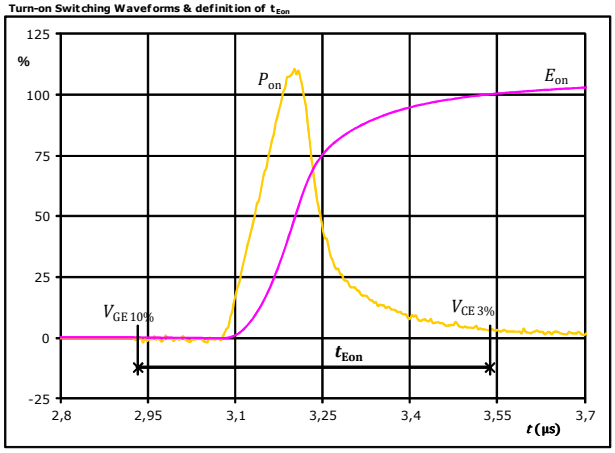
Turn-off Switching Waveforms & definition of $t_{Eoff}$




| | | |
|---|---|---|
| $P_{off}(100\%)$ = | 725,65 | kW |
| $E_{off}(100\%)$ = | 108,21 | mJ |
| $t_{Eoff}$ = | 0,75 | µs |

**figure 6.** **IGBT**

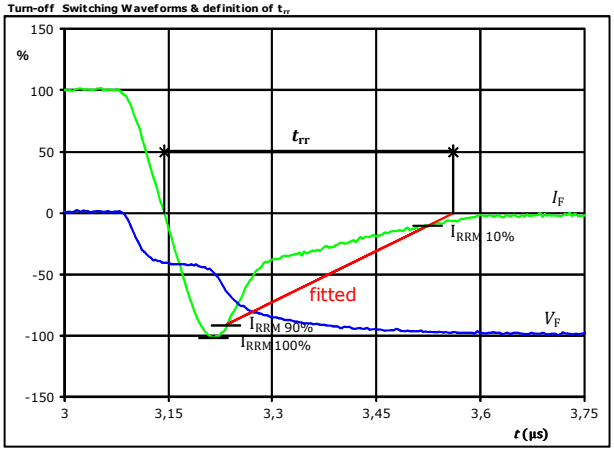
Turn-on Switching Waveforms & definition of $t_{Eon}$




| | | |
|---|---|---|
| $P_{on}(100\%)$ = | 725,65 | kW |
| $E_{on}(100\%)$ = | 109,70 | mJ |
| $t_{Eon}$ = | 0,60 | µs |

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

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

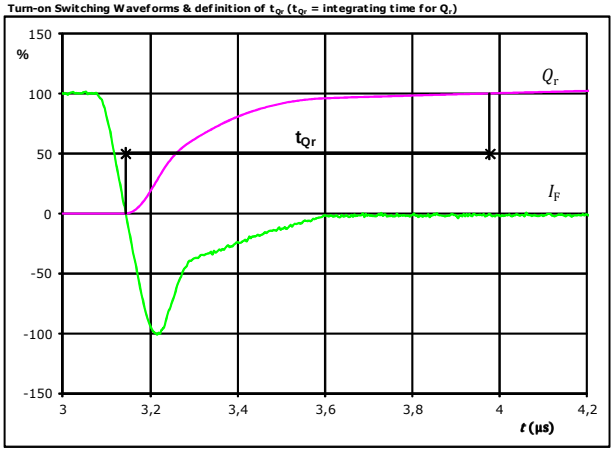



| | | |
|---|---|---|
| $V_F(100\%)$ = | 600 | V |
| $I_F(100\%)$ = | 1209 | A |
| $I_{RRM}(100\%)$ = | -1228 | A |
| $t_{rr}$ = | 0,408 | µs |

# Buck Switching Characteristics

figure 8. FWD

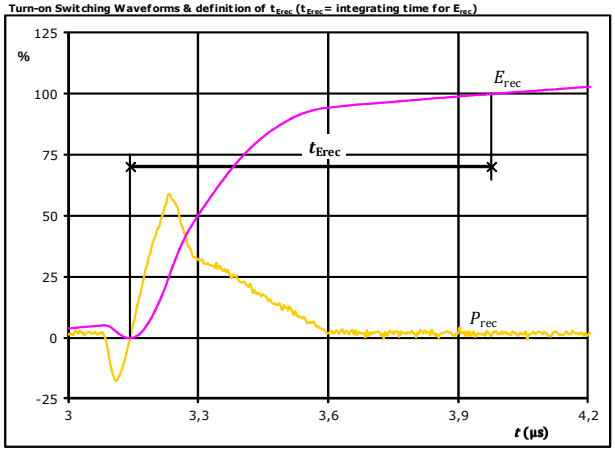
Turn-on Switching Waveforms & definition of $t_{Qr}$ ($t_{Qr}$ = integrating time for $Q_r$)




| | | |
|---|---|---|
| $I_F$ (100%) = | 1209 | A |
| $Q_r$ (100%) = | 194,17 | µC |
| $t_{Qr}$ = | 0,83 | µs |

figure 9. FWD

Turn-on Switching Waveforms & definition of $t_{Erec}$ ($t_{Erec}$ = integrating time for $E_{rec}$)

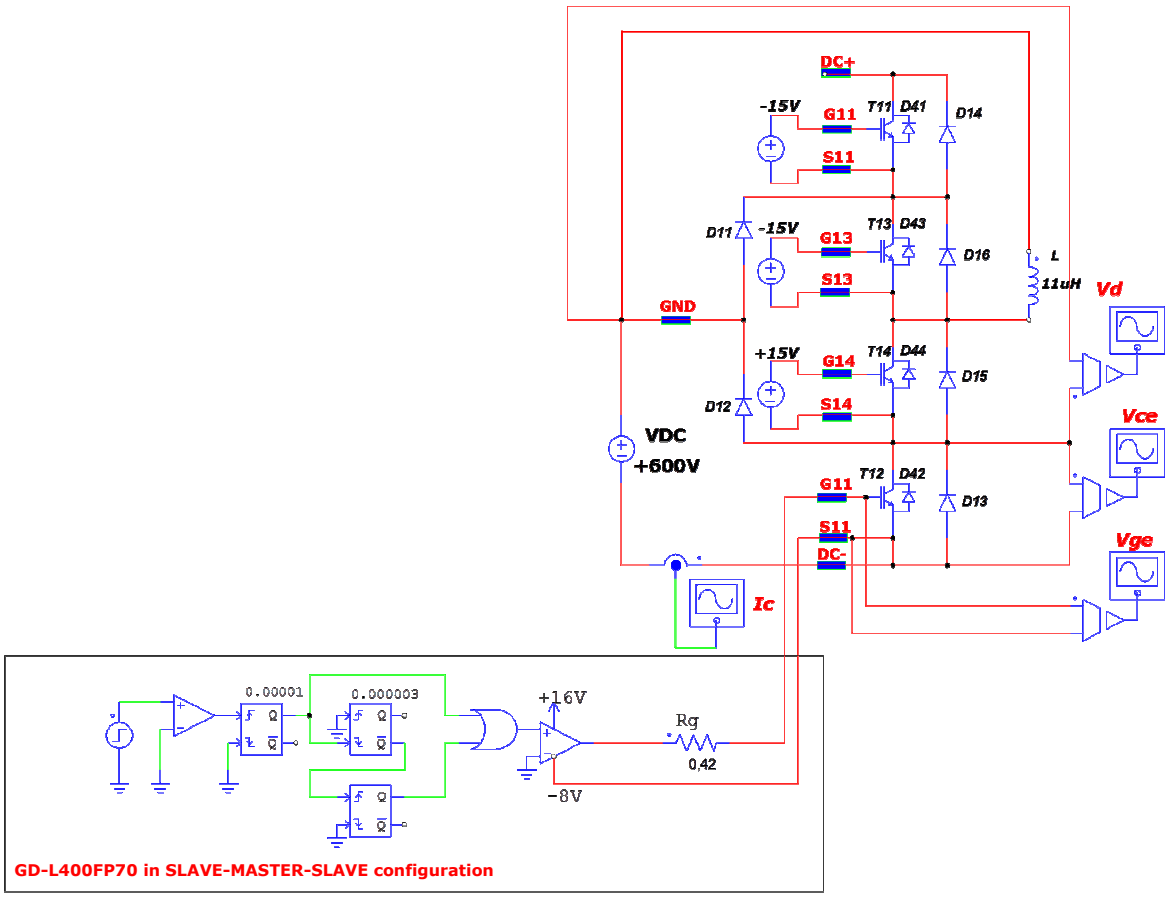



| | | |
|---|---|---|
| $P_{rec}$ (100%) = | 725,65 | kW |
| $E_{rec}$ (100%) = | 73,73 | mJ |
| $t_{Erec}$ = | 0,83 | µs |

# Gate Driver at measurement

For more information see L40x gate driver application note

**T12-D12 Switching measurement circuit**

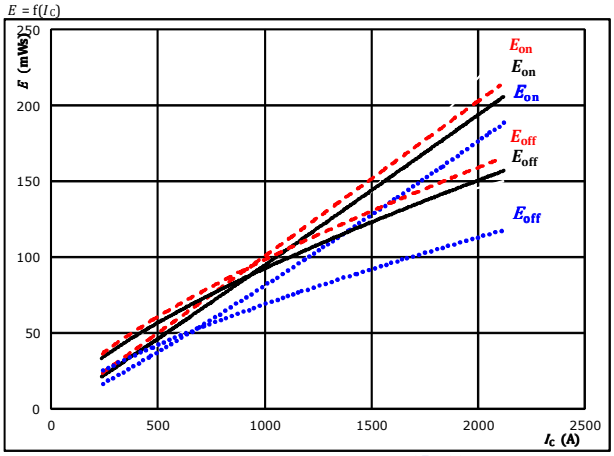


# Boost Switching Characteristics

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

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

$E = f(I_C)$



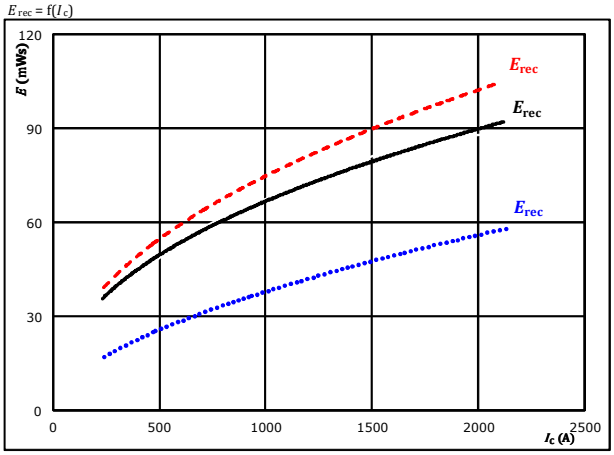

With an inductive load at

| | | | | | |
|---|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_J$: | 25 °C | ····· |
| $V_{GE}$ = | 16/-8 | V | | 125 °C | ——— |
| $R_{gon}$ = | 0,417 | Ω | | 150 °C | – – – |
| $R_{goff}$ = | 0,417 | Ω | | | |

**figure 2.** **FWD**

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

$E_{rec} = f(I_C)$




With an inductive load at

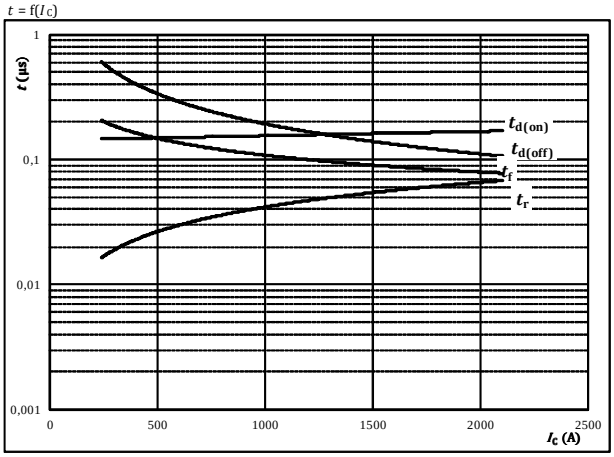
| | | | | | |
|---|---|---|---|---|---|
| $V_{CE}$ = | 600 | V | $T_J$: | 25 °C | ····· |
| $V_{GE}$ = | 16/-8 | V | | 125 °C | ——— |
| $R_{gon}$ = | 0,417 | Ω | | 150 °C | – – – |

# Boost Switching Characteristics

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

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

$t = f(I_C)$



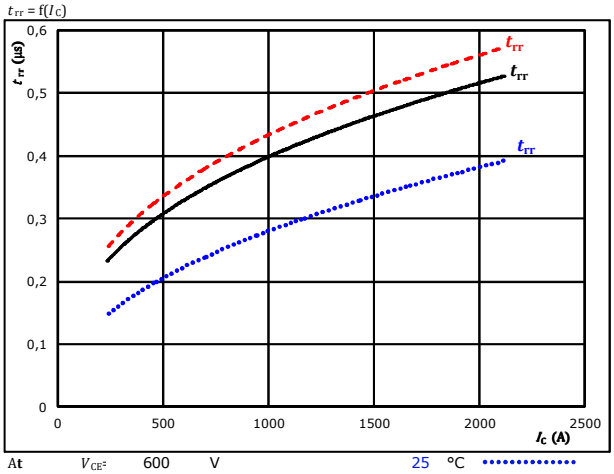

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | 16/-8 | V |
| $R_{gon}$ = | 0,417 | Ω |
| $R_{goff}$ = | 0,417 | Ω |

**figure 4.** **FWD**

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

$t_{rr} = f(I_C)$



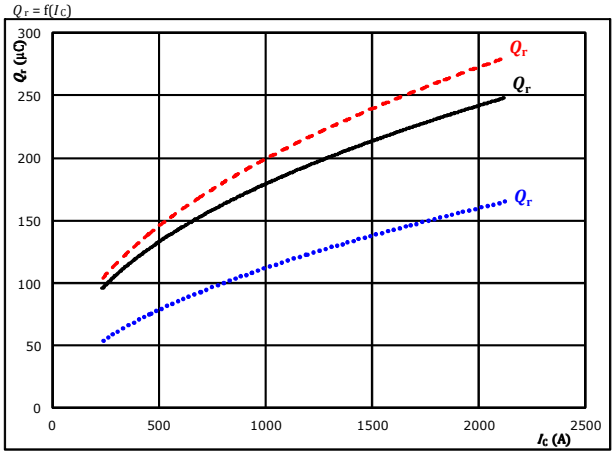

| | | | | | |
|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | $T_j$: | 25 °C |
| | $V_{GE}$ = | 16/-8 | V | | 125 °C |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C |

# Boost Switching Characteristics

**figure 5.** **FWD**

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

$Q_r = f(I_C)$

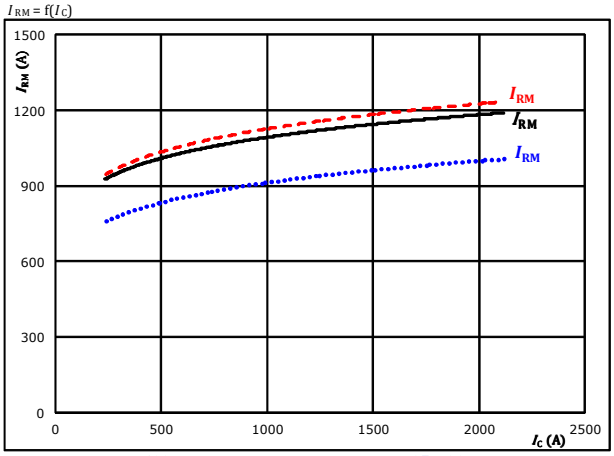



| | | | | | | |
|---|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | | 25 °C | ····· |
| | $V_{GE}$ = | 16/-8 | V | $T_j$: | 125 °C | ——— |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C | - - - |

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

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

$I_{RM} = f(I_C)$



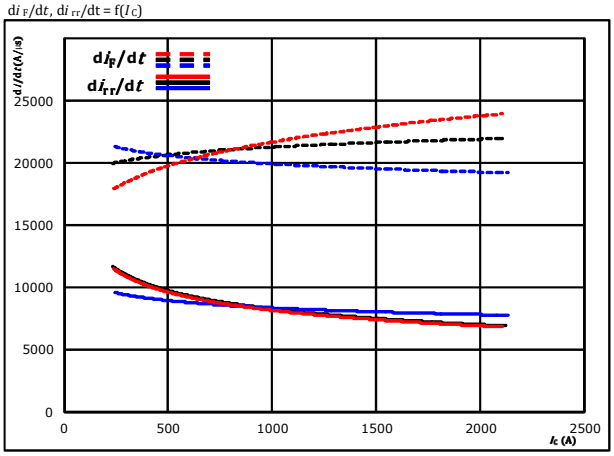

| | | | | | | |
|---|---|---|---|---|---|---|
| At | $V_{CE}$: | 600 | V | | 25 °C | ····· |
| | $V_{GE}$ = | 16/-8 | V | $T_j$: | 125 °C | ——— |
| | $R_{gon}$ = | 0,417 | Ω | | 150 °C | - - - |

# Boost Switching Characteristics

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

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

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

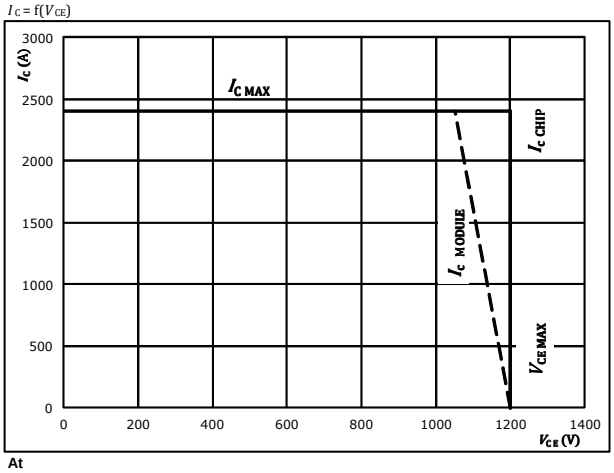



| | | | | | |
|---|---|---|---|---|---|
| At | $V_{CE}$ = | 600 | V | 25 °C | |
| | $V_{GE}$ = | 16/-8 | V | $T_j$: 125 °C | |
| | $R_{gon}$ = | 0,417 | Ω | 150 °C | |

**figure 8.** **IGBT**

**Reverse bias safe operating area**

$I_C = f(V_{CE})$




At

| | | | |
|---|---|---|---|
| $T_j$ = | 175 | °C |
| $R_{gon}$ = | 0,417 | Ω |
| $R_{goff}$ = | 0,417 | Ω |

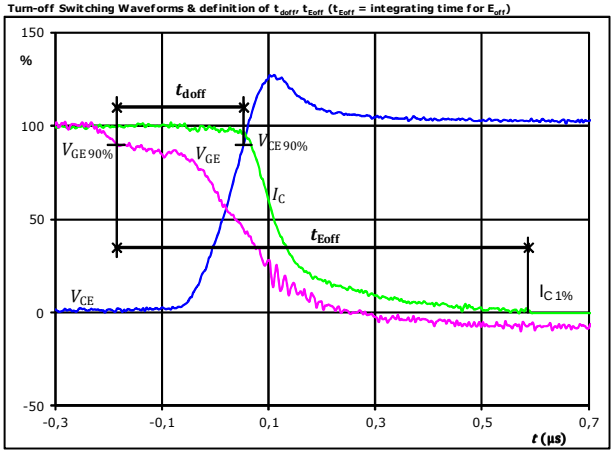
# Boost Switching Definitions

**General conditions**

| | | |
|---|---|---|
| $T_j$ | = | **125 °C** |
| $R_{gon}$ | = | **0,417 Ω** |
| $R_{goff}$ | = | **0,417 Ω** |

**figure 1.** IGBT

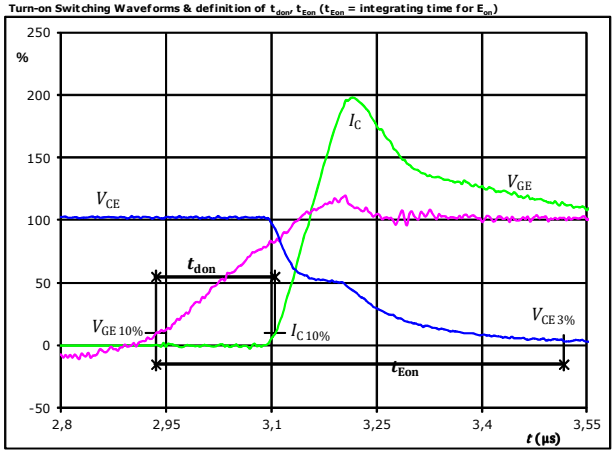
Turn-off Switching Waveforms & definition of $t_{doff}$, $t_{Eoff}$ ($t_{Eoff}$ = integrating time for $E_{off}$)




| | | |
|---|---|---|
| $V_{GE}(0\%)$ = | -8 | V |
| $V_{GE}(100\%)$ = | 16 | V |
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1180 | A |
| $t_{doff}$ = | 0,250 | µs |
| $t_{Eoff}$ = | 0,772 | µs |

**figure 2.** IGBT

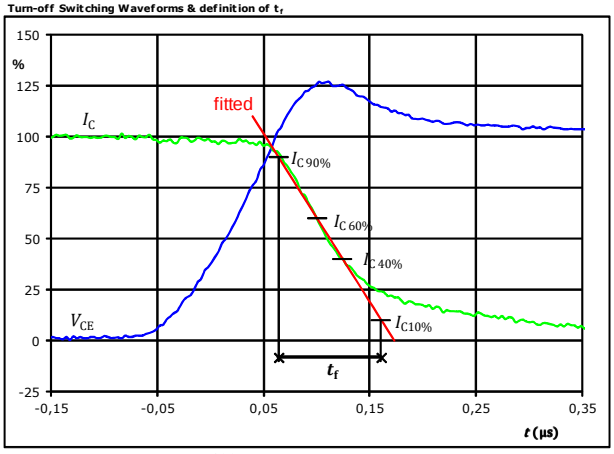
Turn-on Switching Waveforms & definition of $t_{don}$, $t_{Eon}$ ($t_{Eon}$ = integrating time for $E_{on}$)




| | | |
|---|---|---|
| $V_{GE}(0\%)$ = | -8 | V |
| $V_{GE}(100\%)$ = | 16 | V |
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1180 | A |
| $t_{don}$ = | 0,156 | µs |
| $t_{Eon}$ = | 0,582 | µs |

**figure 3.** IGBT

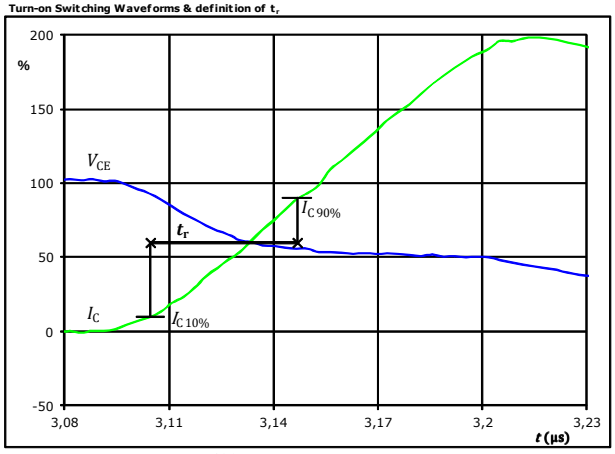
Turn-off Switching Waveforms & definition of $t_f$




| | | |
|---|---|---|
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1180 | A |
| $t_f$ = | 0,095 | µs |

**figure 4.** IGBT

Turn-on Switching Waveforms & definition of $t_r$

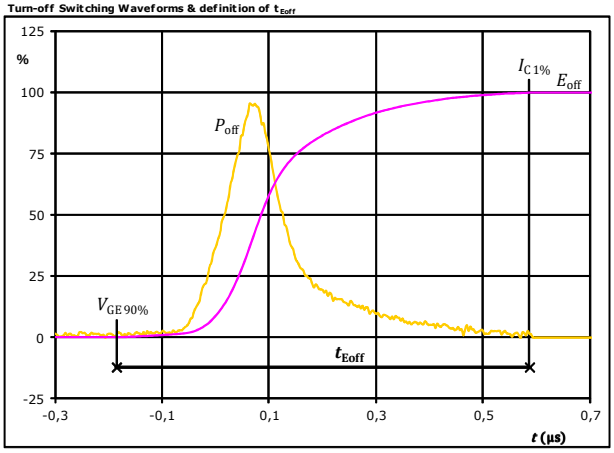



| | | |
|---|---|---|
| $V_C(100\%)$ = | 600 | V |
| $I_C(100\%)$ = | 1180 | A |
| $t_r$ = | 0,042 | µs |

# Boost Switching Characteristics

**figure 5.** **IGBT**

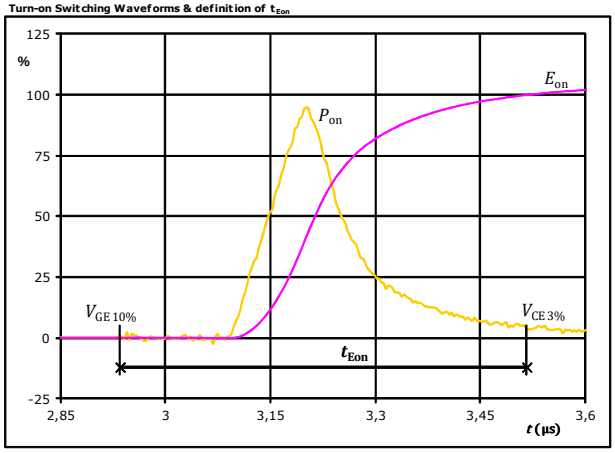
Turn-off Switching Waveforms & definition of $t_{Eoff}$




| | | |
|---|---|---|
| $P_{off}(100\%)$ = | 707,96 | kW |
| $E_{off}(100\%)$ = | 107,48 | mJ |
| $t_{Eoff}$ = | 0,77 | µs |

**figure 6.** **IGBT**

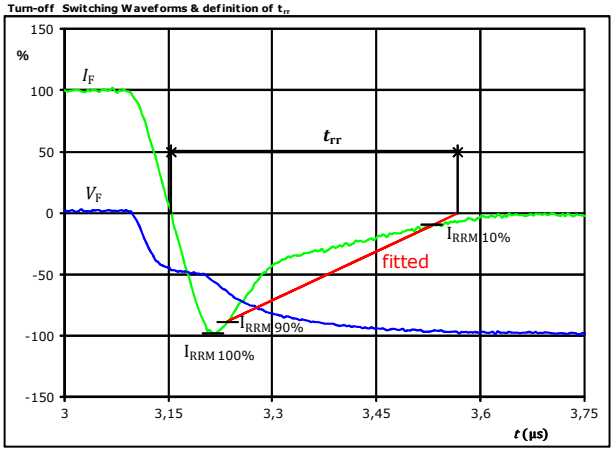
Turn-on Switching Waveforms & definition of $t_{Eon}$




| | | |
|---|---|---|
| $P_{on}(100\%)$ = | 707,96 | kW |
| $E_{on}(100\%)$ = | 97,83 | mJ |
| $t_{Eon}$ = | 0,58 | µs |

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

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

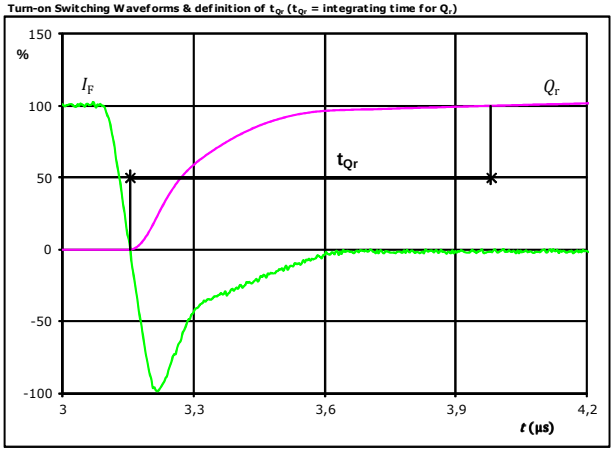



| | | |
|---|---|---|
| $V_F(100\%)$ = | 600 | V |
| $I_F(100\%)$ = | 1180 | A |
| $I_{RRM}(100\%)$ = | -1173 | A |
| $t_{rr}$ = | 0,413 | µs |

## Boost Switching Characteristics

figure 8. FWD

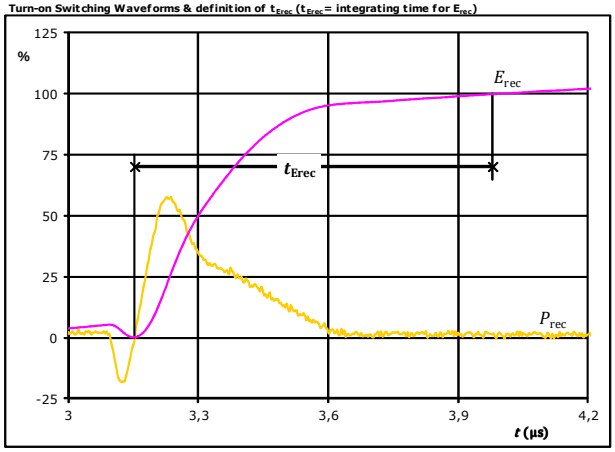
Turn-on Switching Waveforms & definition of $t_{Qr}$ ($t_{Qr}$ = integrating time for $Q_r$)




| | | |
|---|---|---|
| $I_F$ (100%) = | 1180 | A |
| $Q_r$ (100%) = | 192,45 | µC |
| $t_{Qr}$ = | 0,83 | µs |

figure 9. FWD

Turn-on Switching Waveforms & definition of $t_{Erec}$ ($t_{Erec}$ = integrating time for $E_{rec}$)

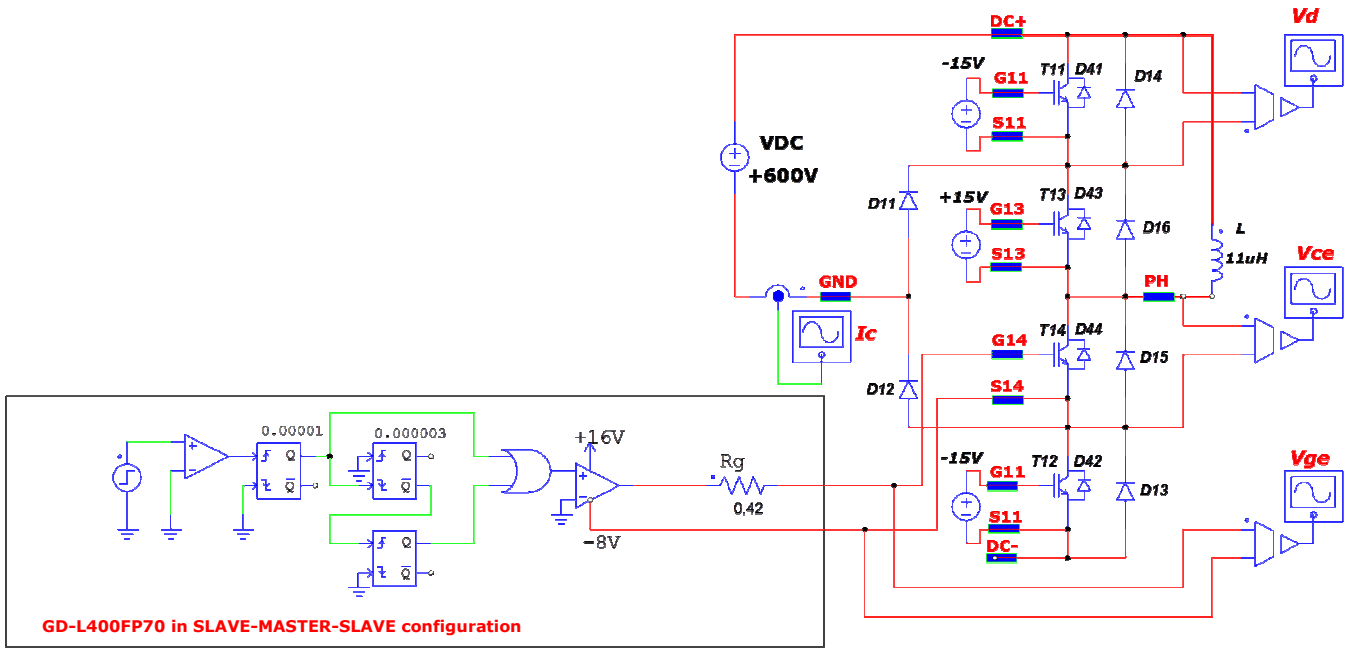



| | | |
|---|---|---|
| $P_{rec}$ (100%) = | 707,96 | kW |
| $E_{rec}$ (100%) = | 72,46 | mJ |
| $t_{Erec}$ = | 0,83 | µs |

## Gate Driver at measurement

For more information see L40x gate driver application note

**T14-D14 Switching measurement circuit**



## Ordering Code & Marking

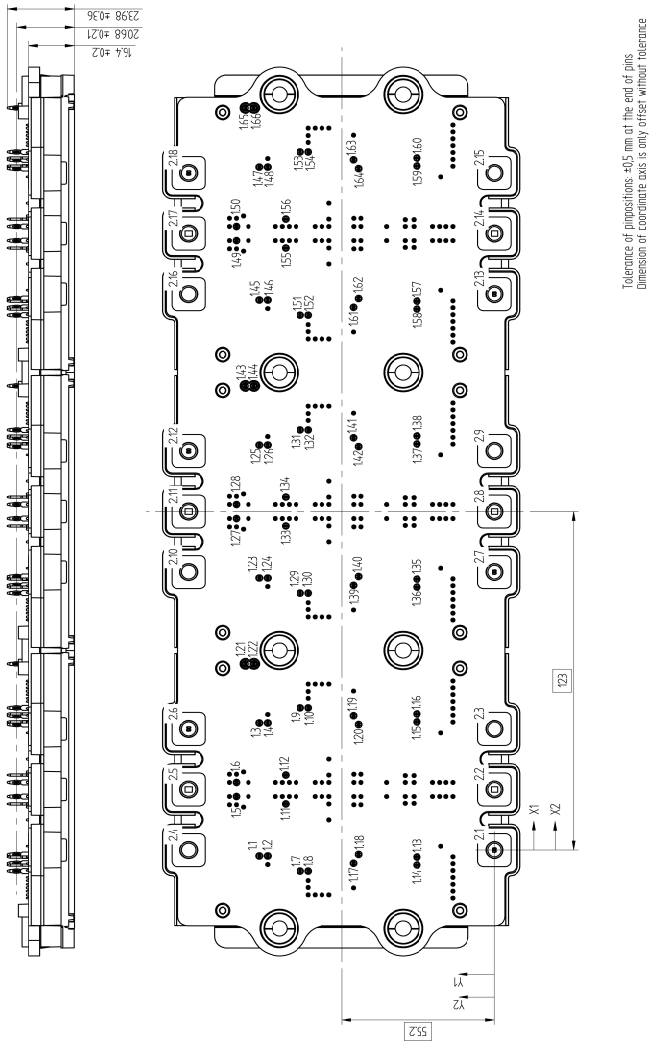
| Version | Ordering Code |
|---|---|
| without thermal paste | 70-W624NIA1K2M702-L400FP70 |
| | |
| | |
| | |

Name
YK/Date code
Lot
Serial
Vincotech UL

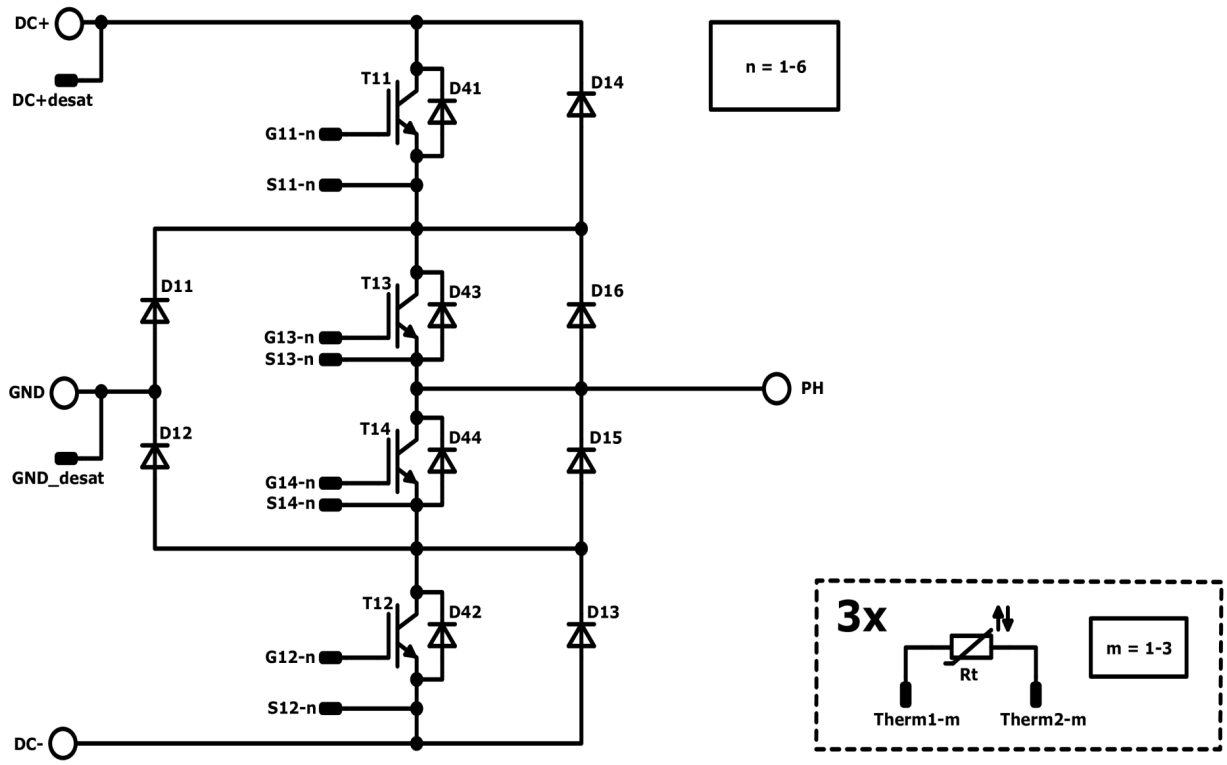
| | | Name | | Date code | UL & VIN | Lot | Serial |
|---|---|---|---|---|---|---|---|
| Text | | NN-NNNNNNNNNNNNN-TTTTTTVV | | WWYY | UL VIN | LLLLL | SSSS |
| Datamatrix | | Type&Ver | Lot number | Serial | Date code | | |
| | | TTTTTTVV | LLLLL | SSSS | WWYY | | |

## Outline

| Driver pins | | | | Power connections | | | |
|---|---|---|---|---|---|---|---|
| Pin | X1 | Y1 | Function | M6 screw | X2 | Y2 | Function |
| 1.1 | -2,15 | 84,85 | G11-1 | 2.1 | 0 | 0 | PH |
| 1.2 | -2,15 | 81,95 | S11-1 | 2.2 | 22 | 0 | PH |
| 1.3 | 46,15 | 84,85 | G11-2 | 2.3 | 44 | 0 | PH |
| 1.4 | 46,15 | 81,95 | S11-2 | 2.4 | 0 | 110,41 | DC+ |
| 1.5 | 19,45 | 93,05 | DC+desat | 2.5 | 22 | 110,41 | GND |
| 1.6 | 24,55 | 93,05 | DC+desat | 2.6 | 44 | 110,41 | DC- |
| 1.7 | -7,65 | 70,05 | G13-1 | 2.7 | 101 | 0 | PH |
| 1.8 | -7,65 | 67,15 | S13-1 | 2.8 | 123 | 0 | PH |
| 1.9 | 51,65 | 70,05 | G13-2 | 2.9 | 145 | 0 | PH |
| 1.10 | 51,65 | 67,15 | S13-2 | 2.10 | 101 | 110,41 | DC+ |
| 1.11 | 16,75 | 75,35 | GND desat | 2.11 | 123 | 110,41 | GND |
| 1.12 | 27,25 | 75,35 | GND desat | 2.12 | 145 | 110,41 | DC- |
| 1.13 | -2,55 | 28 | G14-1 | 2.13 | 202 | 0 | PH |
| 1.14 | -5,45 | 28 | S14-1 | 2.14 | 224 | 0 | PH |
| 1.15 | 46,55 | 28 | G14-2 | 2.15 | 246 | 0 | PH |
| 1.16 | 49,45 | 28 | S14-2 | 2.16 | 202 | 110,41 | DC+ |
| 1.17 | -4,8 | 50,85 | G12-1 | 2.17 | 224 | 110,41 | GND |
| 1.18 | -1,6 | 49,05 | S12-1 | 2.18 | 246 | 110,41 | DC- |
| 1.19 | 48,8 | 50,85 | G12-2 | | | | |
| 1.20 | 45,6 | 49,05 | S12-2 | | | | |
| 1.21 | 67,65 | 89,8 | Therm1-1 | | | | |
| 1.22 | 67,65 | 86,7 | Therm2-1 | | | | |
| 1.23 | 98,85 | 84,85 | G11-3 | | | | |
| 1.24 | 98,85 | 81,95 | S11-3 | | | | |
| 1.25 | 147,15 | 84,85 | G11-4 | | | | |
| 1.26 | 147,15 | 81,95 | S11-4 | | | | |
| 1.27 | 120,45 | 93,05 | DC+desat | | | | |
| 1.28 | 125,55 | 93,05 | DC+desat | | | | |
| 1.29 | 93,35 | 70,05 | G13-3 | | | | |
| 1.30 | 93,35 | 67,15 | S13-3 | | | | |
| 1.31 | 152,65 | 70,05 | G13-4 | | | | |
| 1.32 | 152,65 | 67,15 | S13-4 | | | | |
| 1.33 | 117,75 | 75,35 | GND desat | | | | |
| 1.34 | 128,25 | 75,35 | GND desat | | | | |
| 1.35 | 98,45 | 28 | G14-3 | | | | |
| 1.36 | 95,55 | 28 | S14-3 | | | | |
| 1.37 | 147,55 | 28 | G14-4 | | | | |
| 1.38 | 150,45 | 28 | S14-4 | | | | |
| 1.39 | 96,2 | 50,85 | G12-3 | | | | |
| 1.40 | 99,4 | 49,05 | S12-3 | | | | |
| 1.41 | 149,8 | 50,85 | G12-4 | | | | |
| 1.42 | 146,6 | 49,05 | S12-4 | | | | |
| 1.43 | 168,65 | 89,8 | Therm1-2 | | | | |
| 1.44 | 168,65 | 86,7 | Therm2-2 | | | | |
| 1.45 | 199,85 | 84,85 | G11-5 | | | | |
| 1.46 | 199,85 | 81,95 | S11-5 | | | | |
| 1.47 | 248,15 | 84,85 | G11-6 | | | | |
| 1.48 | 248,15 | 81,95 | S11-6 | | | | |
| 1.49 | 221,45 | 93,05 | DC+desat | | | | |
| 1.50 | 226,55 | 93,05 | DC+desat | | | | |
| 1.51 | 194,35 | 70,05 | G13-5 | | | | |
| 1.52 | 194,35 | 67,15 | S13-5 | | | | |
| 1.53 | 253,65 | 70,05 | G13-6 | | | | |
| 1.54 | 253,65 | 67,15 | S13-6 | | | | |
| 1.55 | 218,75 | 75,35 | GND desat | | | | |
| 1.56 | 229,25 | 75,35 | GND desat | | | | |
| 1.57 | 199,45 | 28 | G14-5 | | | | |
| 1.58 | 196,55 | 28 | S14-5 | | | | |
| 1.59 | 248,55 | 28 | G14-6 | | | | |
| 1.60 | 251,45 | 28 | S14-6 | | | | |
| 1.61 | 197,2 | 50,85 | G12-5 | | | | |
| 1.62 | 200,4 | 49,05 | S12-5 | | | | |
| 1.63 | 250,8 | 50,85 | G12-6 | | | | |
| 1.64 | 247,6 | 49,05 | S12-6 | | | | |
| 1.65 | 269,65 | 89,8 | Therm1-3 | | | | |
| 1.66 | 269,65 | 86,7 | Therm2-3 | | | | |



## Pinout




NOTE: Driver pins for parallel devices are not connected inside the module!

## Identification

| ID | Component | Voltage | Current | Function | Comment |
|---|---|---|---|---|---|
| T11, T12 | IGBT | 1200 V | 1200 A | Buck Switch | |
| D11, D12 | FWD | 1200 V | 1200 A | Buck Diode | |
| D41, D42 | FWD | 1200 V | 90 A | Buck Sw. Protection Diode | |
| T13, T14 | IGBT | 1200 V | 1200 A | Boost Switch | |
| D13, D14 | FWD | 1200 V | 1200 A | Boost Diode | |
| D16, D15 | FWD | 1200 V | 1200 A | Boost Sw.Inv.Diode | |
| D43, D44 | FWD | 1200 V | 90 A | Boost Sw. Protection Diode | |
| Rt | Thermistor | | | Thermistor | |

| Packaging instruction | | | | |
|---|---|---|---|---|
| Standard packaging quantity (SPQ) 4 | >SPQ | Standard | <SPQ | Sample |

| Handling instruction |
|---|
| Handling instructions for VINco X12 packages see vincotech.com website. |

| Package data |
|---|
| Package data for VINco X12 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 |
|---|---|---|---|
| 70-W624NIA1K2M702-L400FP70-D3-14 | 08 July 2021 | Pin coordinates corrected | 33 |

单击下面可查看定价，库存，交付和生命周期等信息

>>Vincotech(威科)