***flow* PACK 2 + R** **1200 V / 75 A**

### Features

- Inverter, blocking diodes
- Built-in thermistor
- IGBT4 technology for low saturation losses

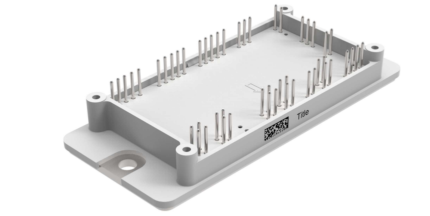
### Target Applications

- Industrial Drives

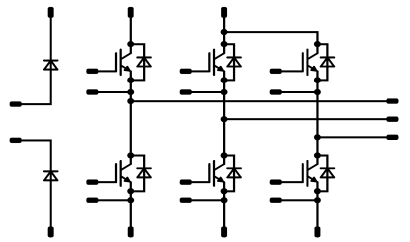
### Types

- 30-F212R6A075SC-M448E
- 30-F212R6A075SC01-M448E10

### *flow* 2 17 mm housing



### Schematic



# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Condition | Value | Unit |
|---|---|---|---|---|
| **DC Blocking Diode** | | | | |
| Repetitive peak reverse voltage | $V_{RRM}$ | | 1600 | V |
| DC forward current | $I_{FAV}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 154 | A |
| Surge forward current | $I_{FSM}$ | $t_p$ = 10 ms | 1270 | A |
| $I^2t$-value | $I^2t$ | | 2400 | $A^2s$ |
| Power dissipation per Diode | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 189 | W |
| Maximum Junction Temperature | $T_{jmax}$ | | 150 | °C |
| **Inverter Switch** | | | | |
| Collector-emitter break down voltage | $V_{CE}$ | | 1200 | V |
| DC collector current | $I_C$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 85 | A |
| Pulsed collector current | $I_{CRM}$ | $t_p$ limited by $T_{jmax}$ | 210 | A |
| Turn off safe operating area | | $V_{CE}$ ≤ 1200 V, $T_j \leq T_{op\ max}$ | 140 | A |
| Power dissipation per IGBT | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 239 | W |
| Gate-emitter peak voltage | $V_{GE}$ | | 20 | V |
| Short circuit ratings | $t_{SC}$<br>$V_{CC}$ | $T_j$ ≤ 150 °C<br>$V_{GE}$ = 15 V | 10<br>800 | μs<br>V |
| Maximum Junction Temperature | $T_{jmax}$ | | 175 | °C |

# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Condition | | Value | Unit |
|---|---|---|---|---|---|
| **Inverter Diode** | | | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | | | 1200 | V |
| DC forward current | $I_F$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 64 | A |
| Repetitive peak forward current | $I_{FRM}$ | $t_p$ limited by $T_{jmax}$ | | 100 | A |
| Power dissipation per Diode | $P_{tot}$ | $T_j = T_{jmax}$ | $T_s$ = 80 °C | 127 | W |
| Maximum Junction Temperature | $T_{jmax}$ | | | 175 | °C |

## Module Properties

### Thermal Properties

| Parameter | Symbol | Condition | | Value | Unit |
|---|---|---|---|---|---|
| Storage temperature | $T_{stg}$ | | | -40…+125 | °C |
| Operation temperature under switching condition | $T_{op}$ | | | -40…+($T_{jmax}$ - 25) | °C |

### Insulation Properties

| Parameter | Symbol | Condition | | Value | Unit |
|---|---|---|---|---|---|
| Insulation voltage | $V_{is}$ | 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

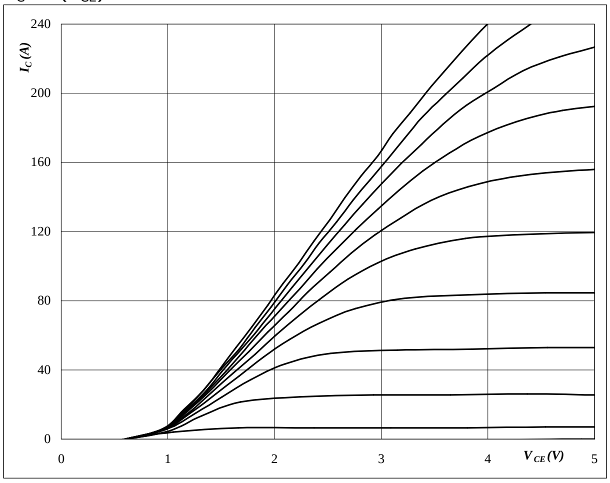
| Parameter | Symbol | Conditions | | | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_r$ [V]<br>$V_{CE}$ [V]<br>$V_{DS}$ [V] | $I_C$ [A]<br>$I_F$ [A]<br>$I_D$ [A] | $T_j$ [°C] | Min | Typ | Max | |
| **DC Blocking Diode** | | | | | | | | | | |
| Forward voltage | $V_F$ | | | | 100 | 25<br>125 | | 1,12<br>1,07 | 1,21 | V |
| Threshold voltage (for power loss calc. only) | $V_{to}$ | | | | 100 | 25<br>125 | | 0,89<br>0,76 | | V |
| Slope resistance (for power loss calc. only) | $r_t$ | | | | 100 | 25<br>125 | | 2<br>3 | | mΩ |
| Reverse current | $I_r$ | | | 1600 | | 25 | | | 0,05 | mA |
| Thermal resistance chip to heatsink per chip | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,37 | | K/W |
| **Inverter Switch** | | | | | | | | | | |
| Gate emitter threshold voltage | $V_{GE(th)}$ | $V_{CE} = V_{GE}$ | | | 0,0024 | 25 | 5 | 5,8 | 6,5 | V |
| Collector-emitter saturation voltage | $V_{CEsat}$ | | 15 | | 75 | 25<br>150 | 1,6 | 2<br>2,41 | 2,1 | V |
| Collector-emitter cut-off current incl. Diode | $I_{CES}$ | | 0 | 1200 | | 25 | | | 0,02 | µA |
| Gate-emitter leakage current | $I_{GES}$ | | 20 | 0 | | 25 | | | 240 | nA |
| Integrated Gate resistor | $R_{gint}$ | | | | | | | none | | Ω |
| Turn-on delay time | $t_{d(on)}$ | $R_{goff}$ = 8 Ω<br>$R_{gon}$ = 8 Ω | ±15 | 600 | 75 | 25<br>150 | | 92,8<br>93 | | ns |
| Rise time | $t_r$ | | | | | 25<br>150 | | 23<br>27 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | | 25<br>150 | | 202<br>275 | | ns |
| Fall time | $t_f$ | | | | | 25<br>150 | | 65<br>125 | | ns |
| Turn-on energy loss per pulse | $E_{on}$ | | | | | 25<br>150 | | 4,49<br>6,5 | | mWs |
| Turn-off energy loss per pulse | $E_{off}$ | | | | | 25<br>150 | | 3,91<br>6,91 | | mWs |
| Input capacitance | $C_{ies}$ | $f$ = 1 MHz | 0 | 25 | | 25 | | 3900 | | pF |
| Output capacitance | $C_{oss}$ | | | | | | | 310 | | pF |
| Reverse transfer capacitance | $C_{rss}$ | | | | | | | 230 | | pF |
| Gate charge | $Q_G$ | | ±15 | 960 | 75 | 25 | | 380 | | nC |
| Thermal resistance chip to heatsink per chip | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,4 | | K/W |
| **Inverter Diode** | | | | | | | | | | |
| Diode forward voltage | $V_F$ | | | | 50 | 25<br>150 | 1,1 | 1,74<br>1,77 | 2,3 | V |
| Peak reverse recovery current | $I_{RRM}$ | $R_{gon}$ = 8 Ω | ±15 | 600 | 75 | 25<br>150 | | 71,53<br>85,7 | | A |
| Reverse recovery time | $t_{rr}$ | | | | | 25<br>150 | | 271,4<br>308,2 | | ns |
| Reverse recovered charge | $Q_{rr}$ | | | | | 25<br>150 | | 6,03<br>11,73 | | µC |
| Peak rate of fall of recovery current | $(di_{rf}/dt)_{max}$ | | | | | 25<br>150 | | 2648<br>602 | | A/µs |
| Reverse recovered energy | $E_{rec}$ | | | | | 25<br>150 | | 2,28<br>4,71 | | mWs |
| Thermal resistance chip to heatsink per chip | $R_{th(j-s)}$ | phase-change material<br>$\lambda$ = 3,4 W/mK | | | | | | 0,75 | | K/W |
| **Thermistor** | | | | | | | | | | |
| Rated resistance | $R$ | | | | | 25 | | 22000 | | Ω |
| Deviation of $R_{100}$ | $\Delta_{R/R}$ | $R_{100}$ = 1486 Ω | | | | 100 | -12 | | 14 | % |
| Power dissipation | $P$ | | | | | 25 | | 200 | | mW |
| Power dissipation constant | | | | | | 25 | | 2 | | mW/K |
| B-value | $B_{(25/50)}$ | Tol. ±3% | | | | 25 | | 3950 | | K |
| B-value | $B_{(25/100)}$ | Tol. ±3% | | | | 25 | | 3998 | | K |
| Vincotech NTC Reference | | | | | | 25 | | | B | |

# Inverter Switch/Inverter Diode

**Figure 1** Inverter IGBT

**Typical output characteristics**

$I_C = f(V_{CE})$



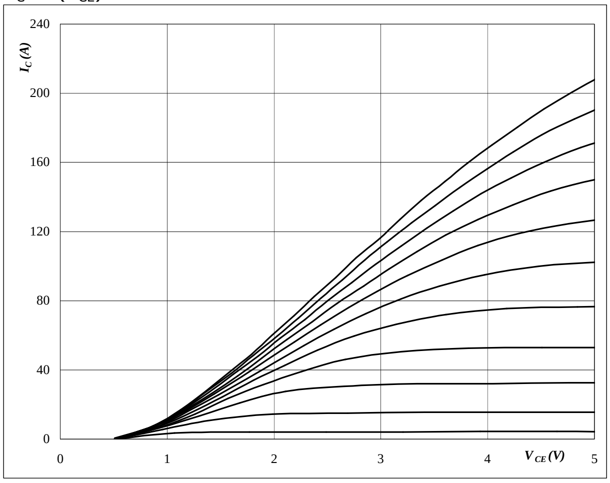

**At**

| | | |
|---|---|---|
| $t_p$ = | 250 | µs |
| $T_j$ = | 25 | °C |
| $V_{GE}$ from | 7 V to 17 V in steps of 1 V | |

**Figure 2** Inverter IGBT

**Typical output characteristics**

$I_C = f(V_{CE})$



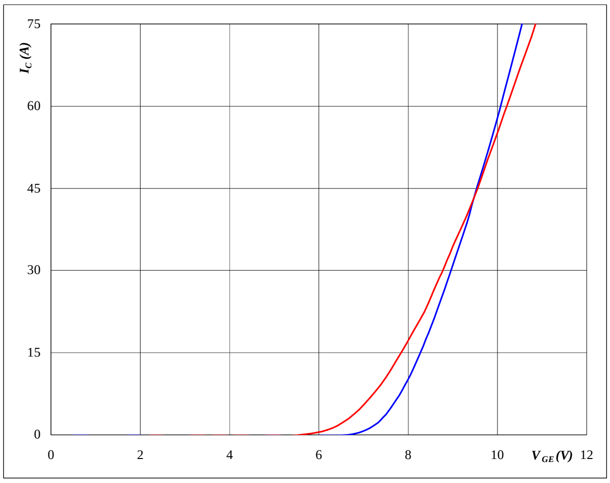

**At**

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

**Figure 3** Inverter IGBT

**Typical transfer characteristics**

$I_C = f(V_{GE})$



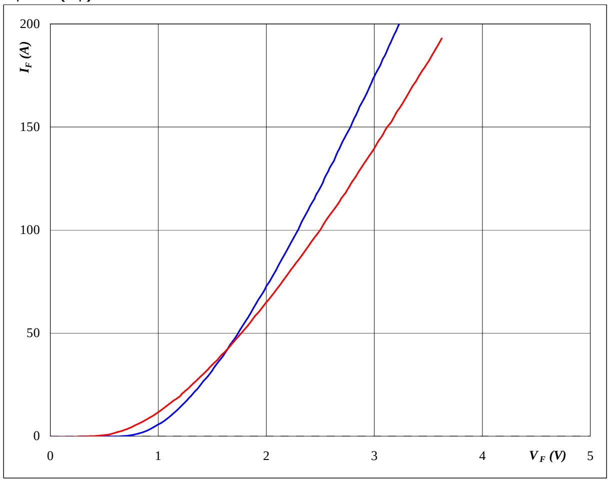

**At**

| | | |
|---|---|---|
| Tj = | 25/150 | °C |
| $t_p$ = | 250 | µs |
| $V_{CE}$ = | 10 | V |

**Figure 4** Inverter FWD

**Typical diode forward current as a function of forward voltage**

$I_F = f(V_F)$




**At**

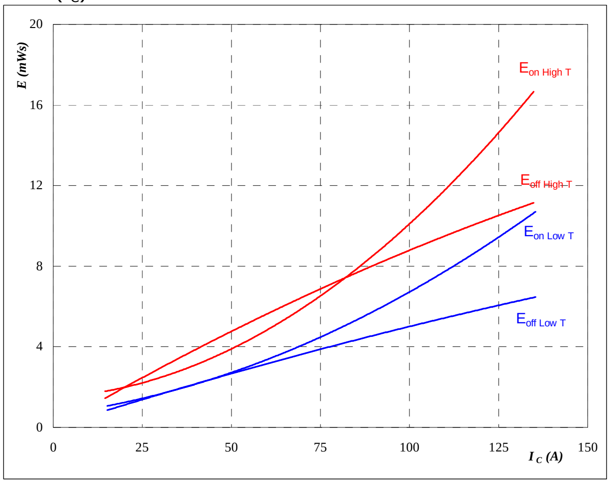
| | | |
|---|---|---|
| Tj = | 25/150 | °C |
| $t_p$ = | 250 | µs |

# Inverter Switch/Inverter Diode

**Figure 5** Inverter IGBT

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

E = f($I_C$)



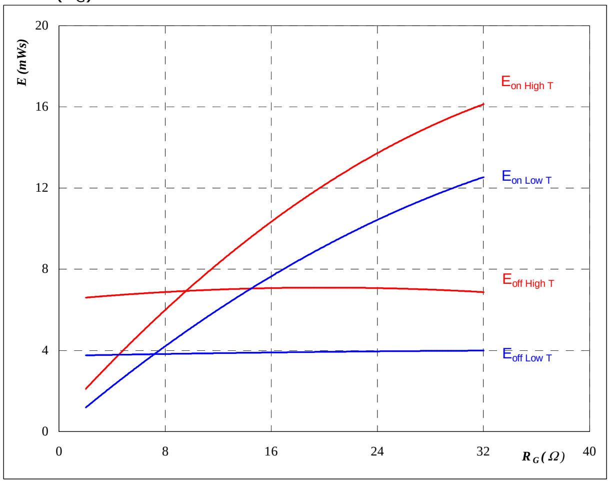

With an inductive load at

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

**Figure 6** Inverter IGBT

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

E = f($R_G$)



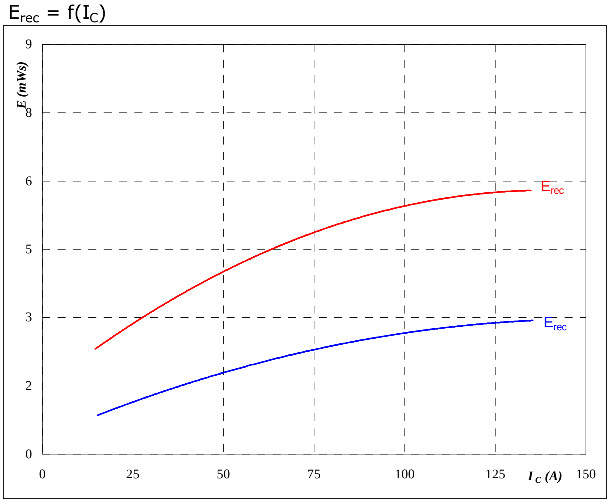

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 75 | A |

**Figure 7** Inverter FWD

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

$E_{rec}$ = f($I_C$)



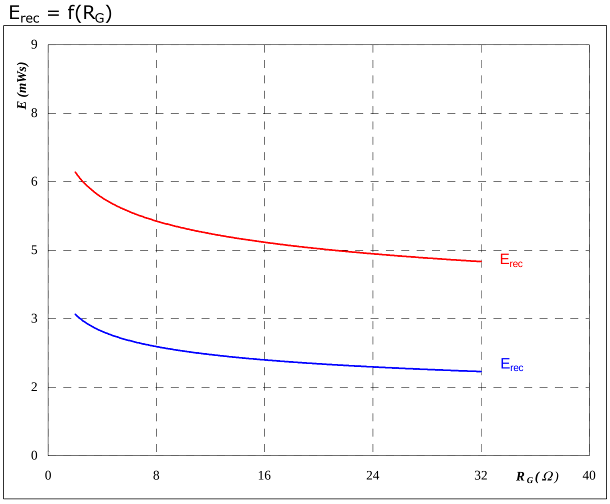

With an inductive load at

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

**Figure 8** Inverter FWD

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

$E_{rec}$ = f($R_G$)




With an inductive load at

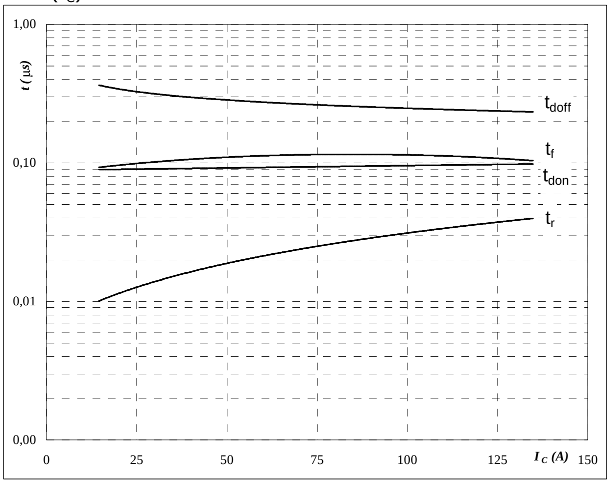
| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 75 | A |

# Inverter Switch/Inverter Diode

**Figure 9** Inverter IGBT

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

$t = f(I_C)$



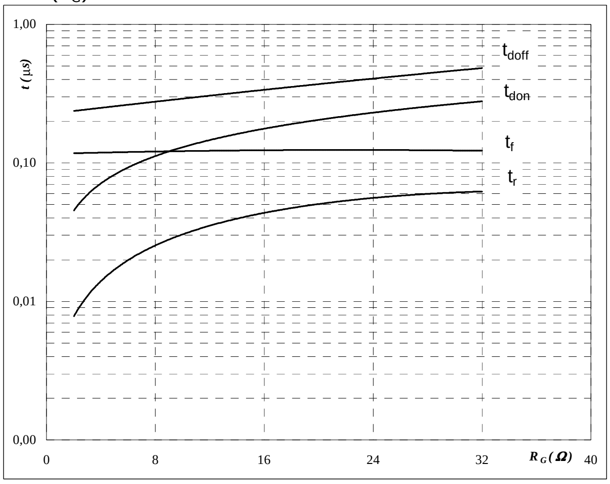

With an inductive load at

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

**Figure 10** Inverter IGBT

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

$t = f(R_G)$



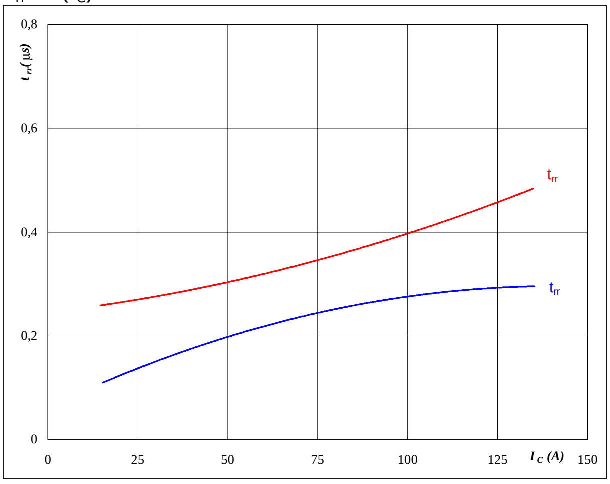

With an inductive load at

| | | |
|---|---|---|
| $T_j$ = | 150 | °C |
| $V_{CE}$ = | 600 | V |
| $V_{GE}$ = | ±15 | V |
| $I_C$ = | 75 | A |

**Figure 11** Inverter FWD

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

$t_{rr} = f(I_C)$



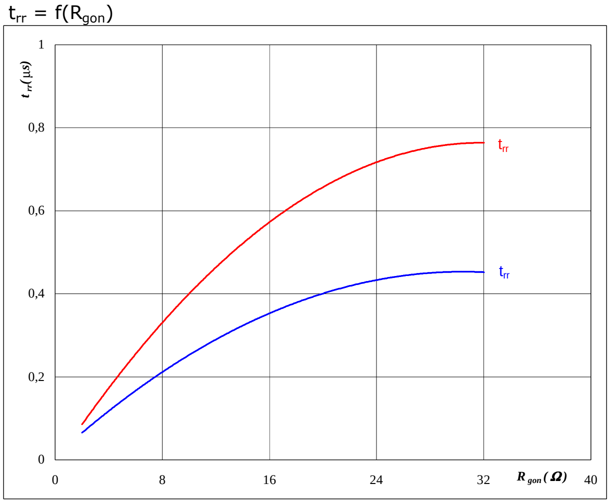

**At**

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

**Figure 12** Inverter FWD

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

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




**At**

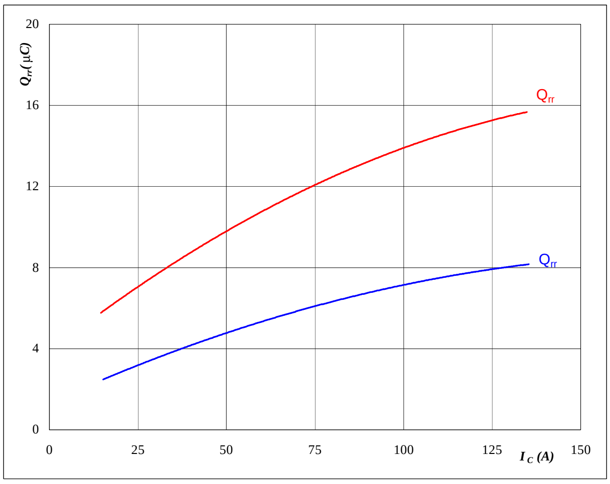
| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_R$ = | 600 | V |
| $I_F$ = | 75 | A |
| $V_{GE}$ = | ±15 | V |

# Inverter Switch/Inverter Diode

**Figure 13** Inverter FWD

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

$Q_{rr} = f(I_C)$



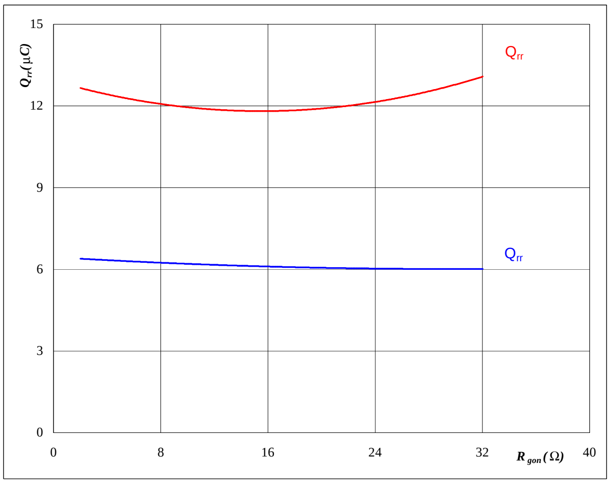

**At**

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

**Figure 14** Inverter FWD

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

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



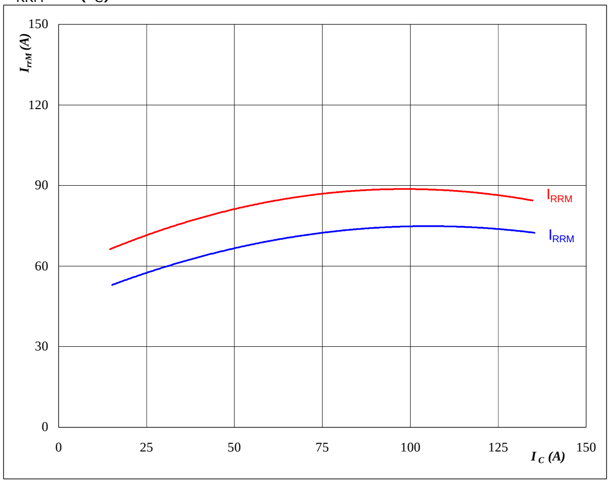

**At**

| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_R$ = | 600 | V |
| $I_F$ = | 75 | A |
| $V_{GE}$ = | ±15 | V |

**Figure 15** Inverter FWD

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

$I_{RRM} = f(I_C)$



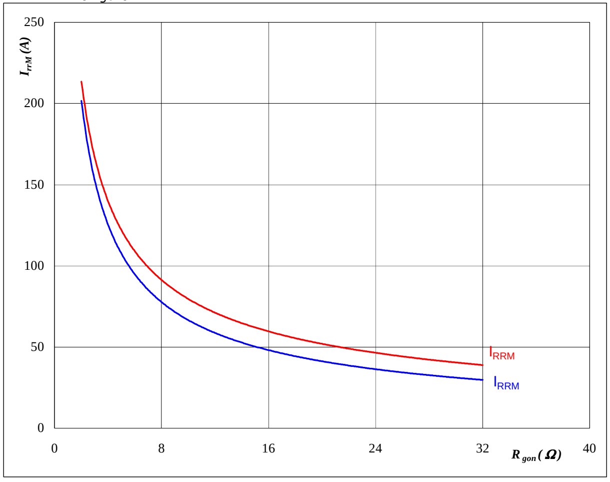

**At**

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

**Figure 16** Inverter FWD

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

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




**At**

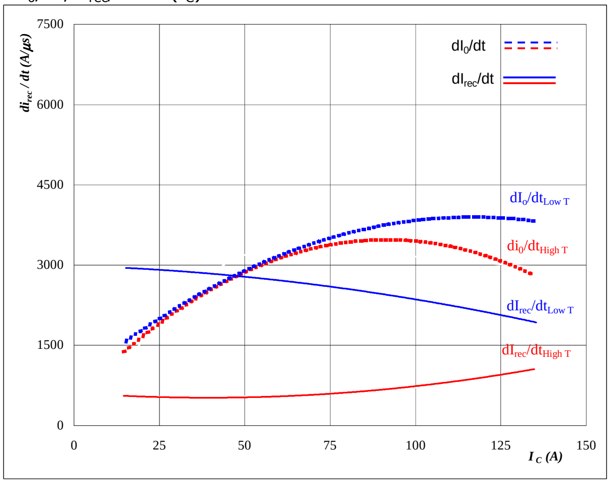
| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_R$ = | 600 | V |
| $I_F$ = | 75 | A |
| $V_{GE}$ = | ±15 | V |

# Inverter Switch/Inverter Diode

**Figure 17** Inverter FWD

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

$dI_0/dt, dI_{rec}/dt = f(I_C)$



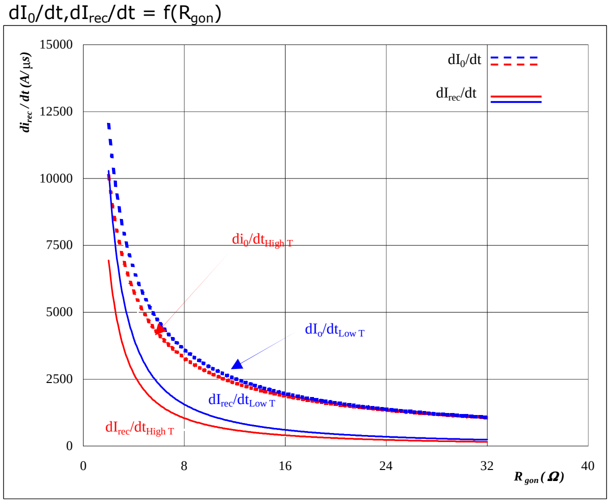

At

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

**Figure 18** Inverter FWD

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

$dI_0/dt, dI_{rec}/dt = f(R_{gon})$



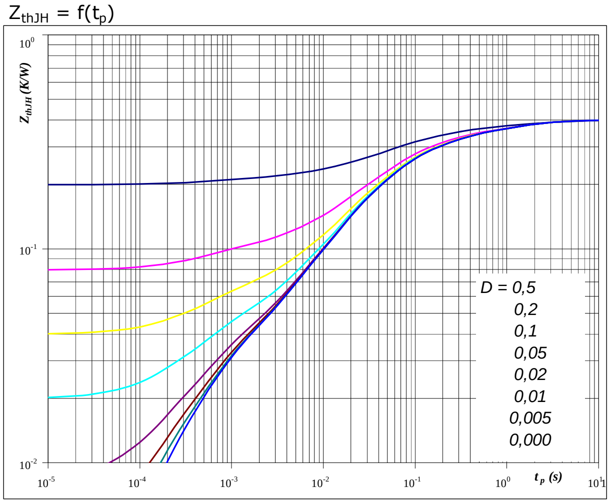

At

| | | |
|---|---|---|
| $T_j$ = | 25/150 | °C |
| $V_R$ = | 600 | V |
| $I_F$ = | 75 | A |
| $V_{GE}$ = | ±15 | V |

**Figure 19** Inverter IGBT

**IGBT transient thermal impedance as a function of pulse width**

$Z_{thJH} = f(t_p)$




At

| | | |
|---|---|---|
| D = | $t_p$ / T | |
| $R_{thJH}$ = | 0,40 | K/W |

IGBT thermal model values

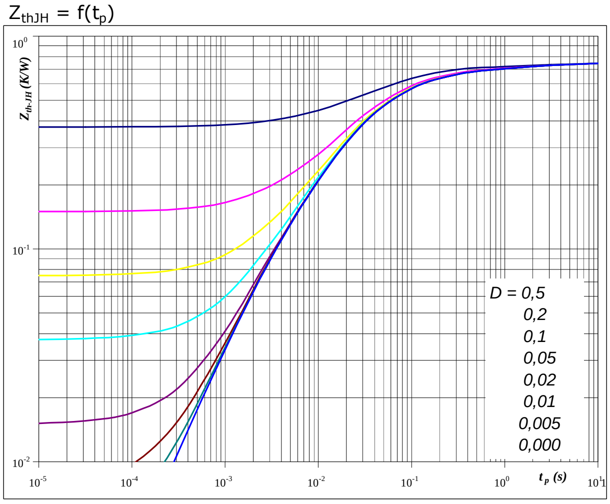
Phase-Change Material

| R (C/W) | Tau (s) |
|---|---|
| 0,06 | 1,6E+00 |
| 0,09 | 2,1E-01 |
| 0,14 | 5,1E-02 |
| 0,07 | 1,6E-02 |
| 0,02 | 3,1E-03 |
| 0,02 | 4,6E-04 |

**Figure 20** Inverter FWD

**FWD transient thermal impedance as a function of pulse width**

$Z_{thJH} = f(t_p)$




At

| | | |
|---|---|---|
| D = | $t_p$ / T | |
| $R_{thJH}$ = | 0,75 | K/W |

FWD thermal model values

Phase-Change Material

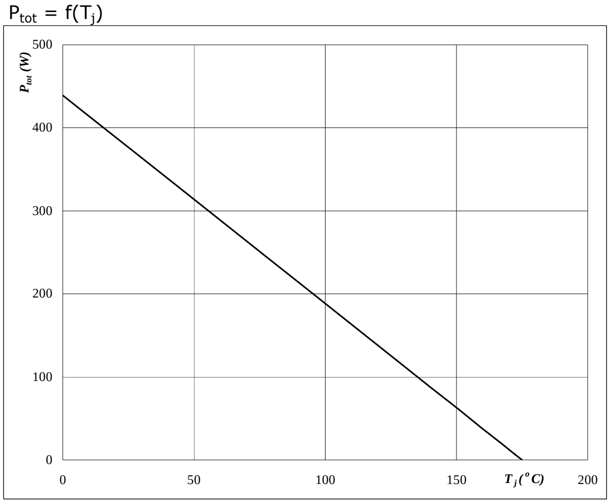
| R (C/W) | Tau (s) |
|---|---|
| 0,04 | 3,6E+00 |
| 0,07 | 6,2E-01 |
| 0,25 | 8,6E-02 |
| 0,32 | 2,1E-02 |
| 0,06 | 3,5E-03 |

# Inverter Switch/Inverter Diode

**Figure 21** Inverter IGBT

**Power dissipation as a function of heatsink temperature**

$P_{tot} = f(T_j)$



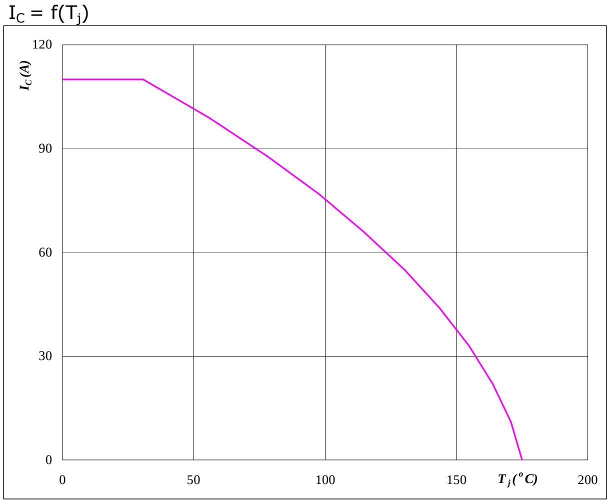

**At**

$T_j$ = 175 °C

**Figure 22** Inverter IGBT

**Collector current as a function of heatsink temperature**

$I_C = f(T_j)$




**At**

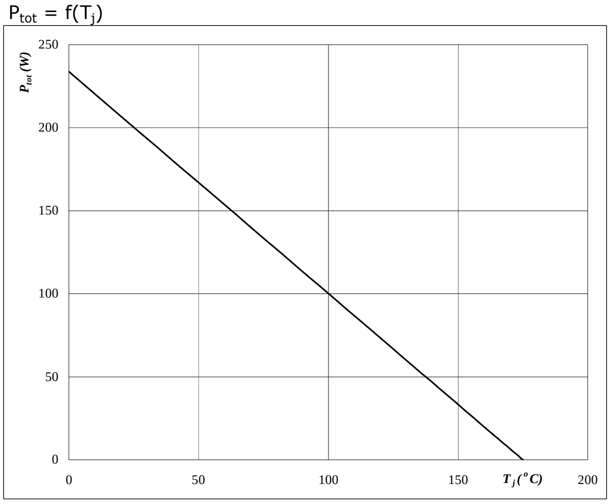
$T_j$ = 175 °C

$V_{GE}$ = 15 V

**Figure 23** Inverter FWD

**Power dissipation as a function of heatsink temperature**

$P_{tot} = f(T_j)$



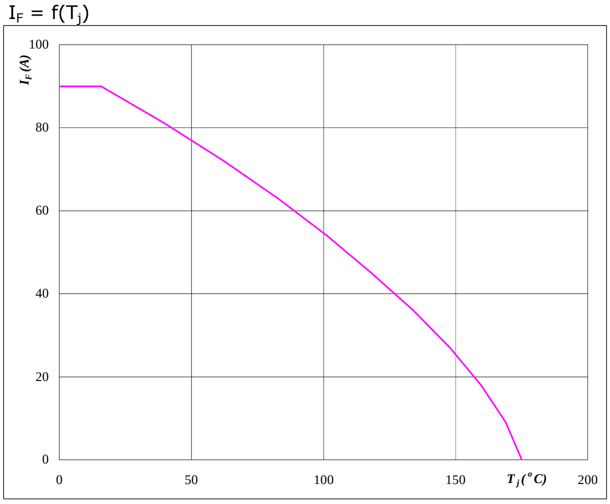

**At**

$T_j$ = 175 °C

**Figure 24** Inverter FWD

**Forward current as a function of heatsink temperature**

$I_F = f(T_j)$




**At**

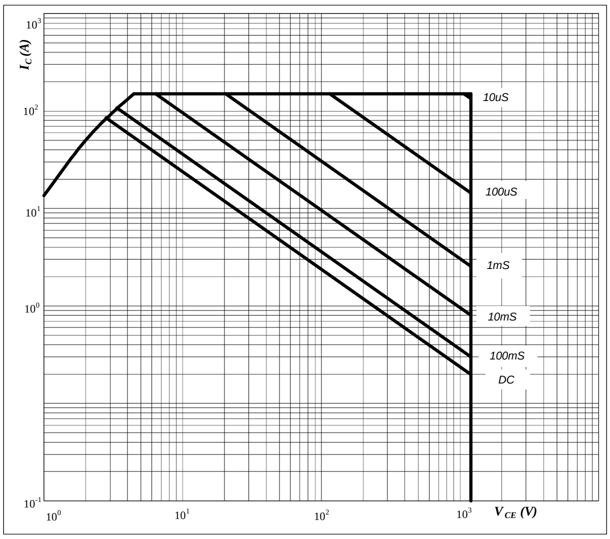
$T_j$ = 175 °C

# Inverter Switch/Inverter Diode

**Figure 25** Inverter IGBT

**Safe operating area as a function of collector-emitter voltage**

$I_C = f(V_{CE})$




**At**

D = single pulse

$T_h$ = 80 ºC

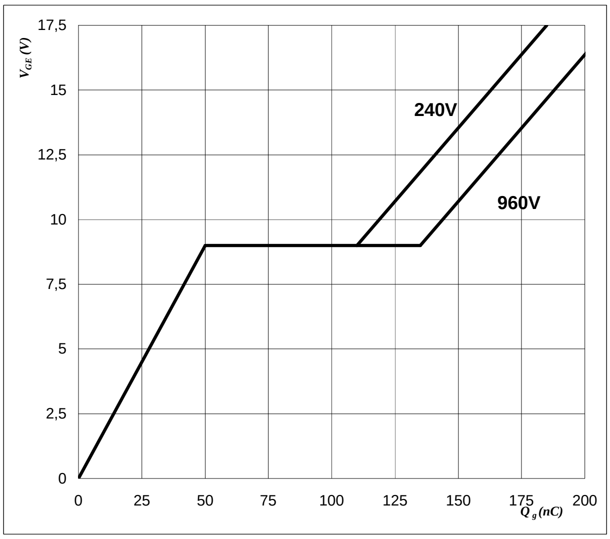
$V_{GE}$ = ±15 V

$T_j$ = $T_{jmax}$

**Figure 26** Inverter IGBT

**Gate voltage vs Gate charge**

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



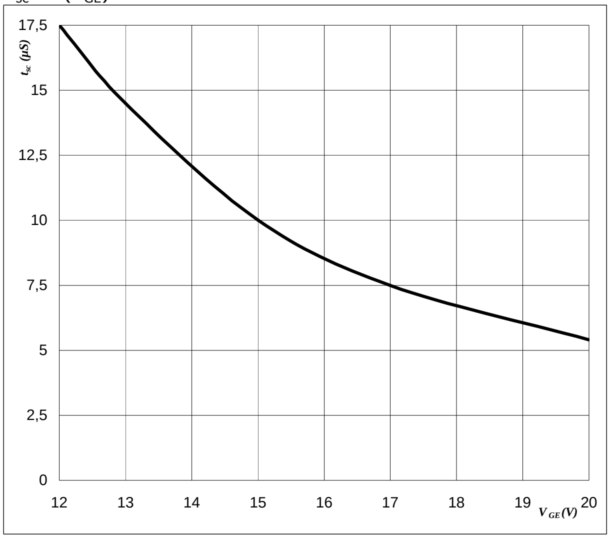

**At**

$I_C$ = 75 A

**Figure 27** Inverter IGBT

**Short circuit withstand time as a function of gate-emitter voltage**

$t_{sc} = f(V_{GE})$




**At**

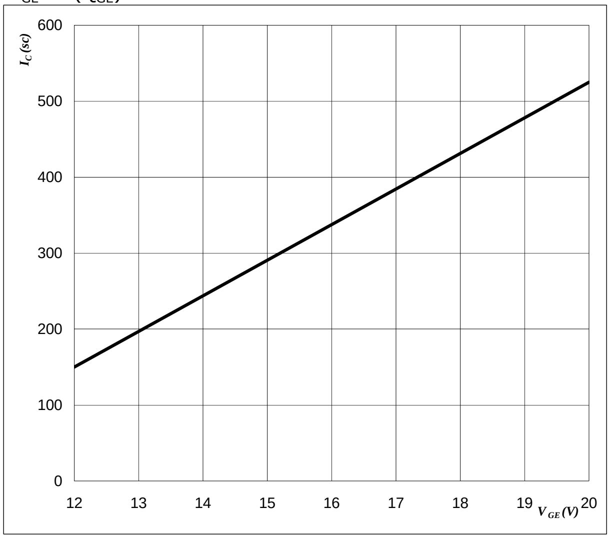
$V_{CE}$ = 1200 V

$T_j$ ≤ 175 ºC

**Figure 28** Inverter IGBT

**Typical short circuit collector current as a function of gate-emitter voltage**

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




**At**

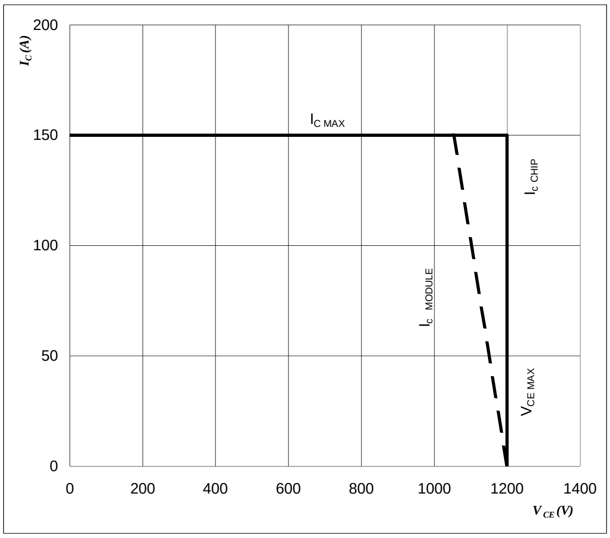
$V_{CE}$ ≤ 1200 V

$T_j$ = 175 ºC

**Figure 29** Inverter IGBT

**Reverse bias safe operating area**

$I_C = f(V_{CE})$




**At**

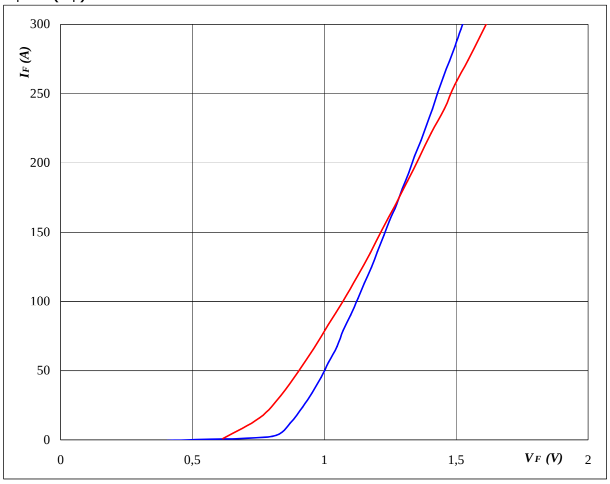
| | |
|---|---|
| $T_j$ = | 150 °C |
| Rgon = | 8 Ω |
| Rgoff = | 8 Ω |

# DC Blocking Diode

**Figure 1** DC Blocking diode

**Typical diode forward current as a function of forward voltage**

$I_F = f(V_F)$




**At**

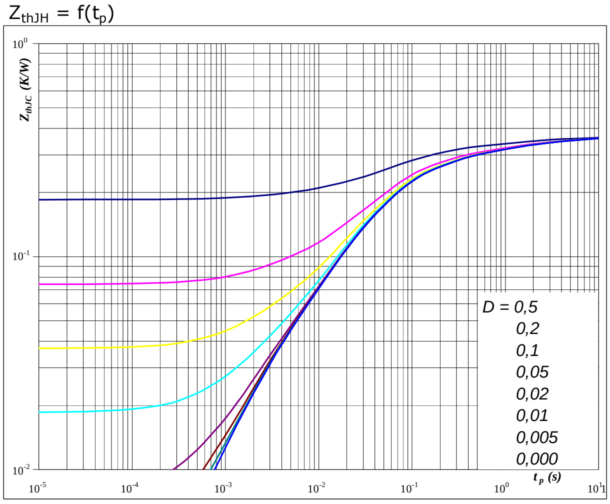
Tj = 25/125 °C

$t_p$ = 250 µs

**Figure 2** DC Blocking diode

**Diode transient thermal impedance as a function of pulse width**

$Z_{thJH} = f(t_p)$




**At**

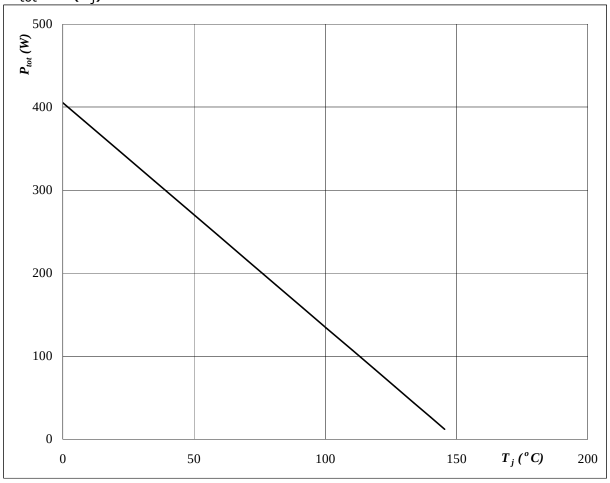
D = $t_p$ / T

$R_{thJH}$ = 0,37 K/W

**Figure 3** DC Blocking diode

**Power dissipation as a function of heatsink temperature**

$P_{tot} = f(T_j)$



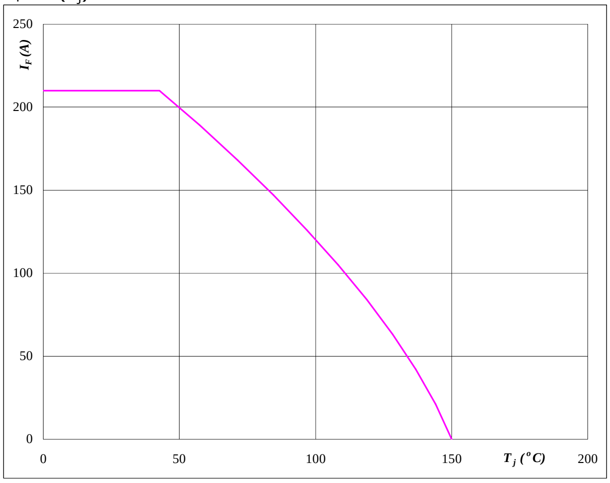

**At**

$T_j$ = 150 ºC

**Figure 4** DC Blocking diode

**Forward current as a function of heatsink temperature**

$I_F = f(T_j)$




**At**

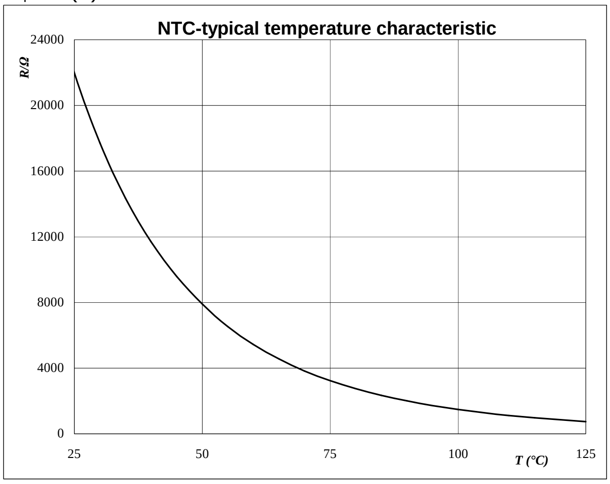
$T_j$ = 150 ºC

# Thermistor

| **Figure 1** | Thermistor |
|---|---|

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

$R_T$ = f(T)



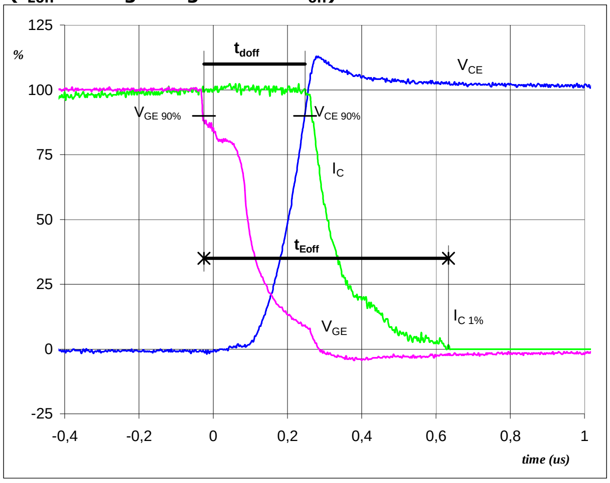
# Switching Definitions Inverter

**General conditions**

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

**Figure 1** Inverter IGBT

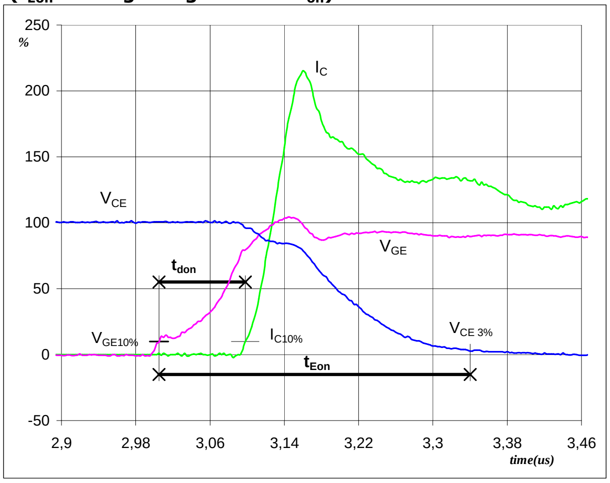
**Turn-off Switching Waveforms & definition of $t_{doff}$, $t_{Eoff}$ ($t_{Eoff}$ = integrating time for $E_{off}$)**




| | | |
|---|---|---|
| $V_{GE}$ (0%) = | -15 | V |
| $V_{GE}$ (100%) = | 15 | V |
| $V_C$ (100%) = | 600 | V |
| $I_C$ (100%) = | 75 | A |
| $t_{doff}$ = | 0,28 | µs |
| $t_{Eoff}$ = | 0,66 | µs |

**Figure 2** Inverter IGBT

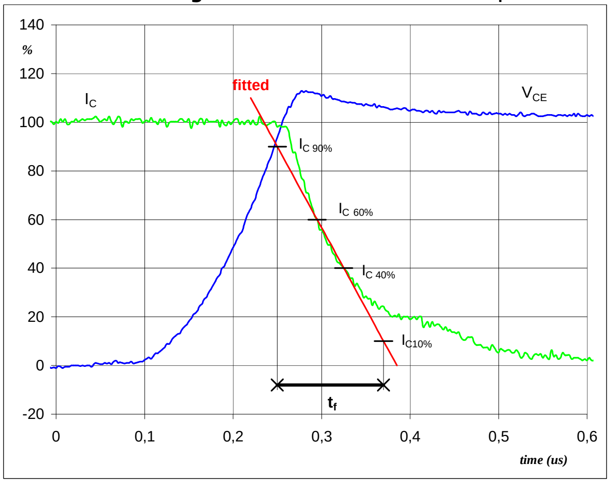
**Turn-on Switching Waveforms & definition of tdon, $t_{Eon}$ ($t_{Eon}$ = integrating time for $E_{on}$)**




| | | |
|---|---|---|
| $V_{GE}$ (0%) = | -15 | V |
| $V_{GE}$ (100%) = | 15 | V |
| $V_C$ (100%) = | 600 | V |
| $I_C$ (100%) = | 75 | A |
| $t_{don}$ = | 0,09 | µs |
| $t_{Eon}$ = | 0,33 | µs |

**Figure 3** Inverter IGBT

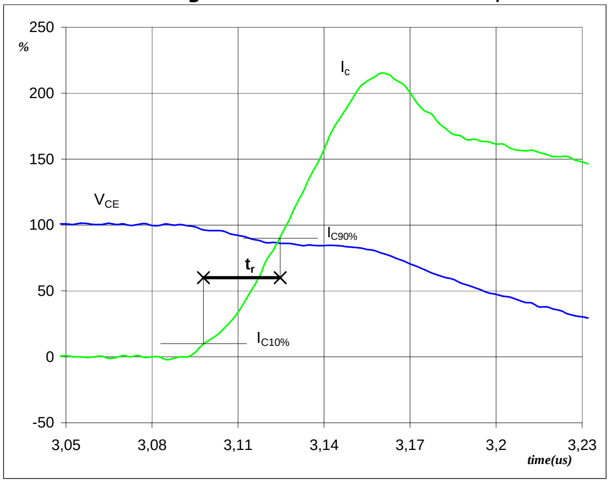
**Turn-off Switching Waveforms & definition of $t_f$**




| | | |
|---|---|---|
| $V_C$ (100%) = | 600 | V |
| $I_C$ (100%) = | 75 | A |
| $t_f$ = | 0,12 | µs |

**Figure 4** Inverter IGBT

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

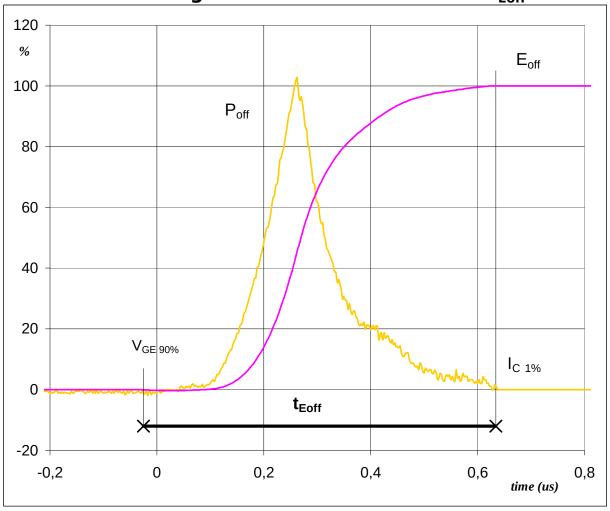



| | | |
|---|---|---|
| $V_C$ (100%) = | 600 | V |
| $I_C$ (100%) = | 75 | A |
| $t_r$ = | 0,03 | µs |

# Switching Definitions Output Inverter

**Figure 5** Inverter IGBT

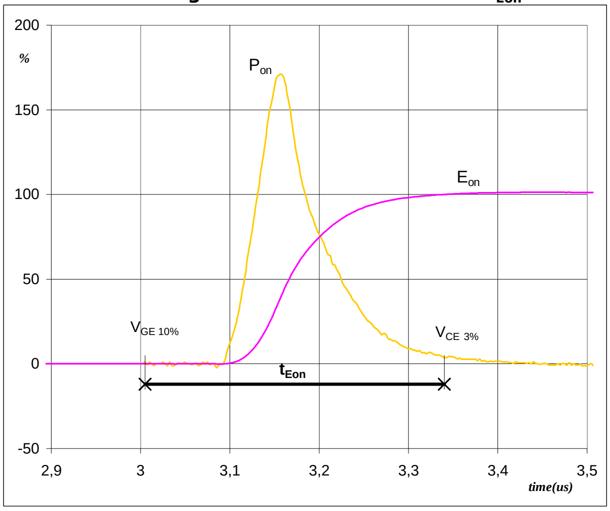
**Turn-off Switching Waveforms & definition of $t_{Eoff}$**




$P_{off}$ (100%) = 44,82 kW
$E_{off}$ (100%) = 6,91 mJ
$t_{Eoff}$ = 0,66 μs

**Figure 6** Inverter IGBT

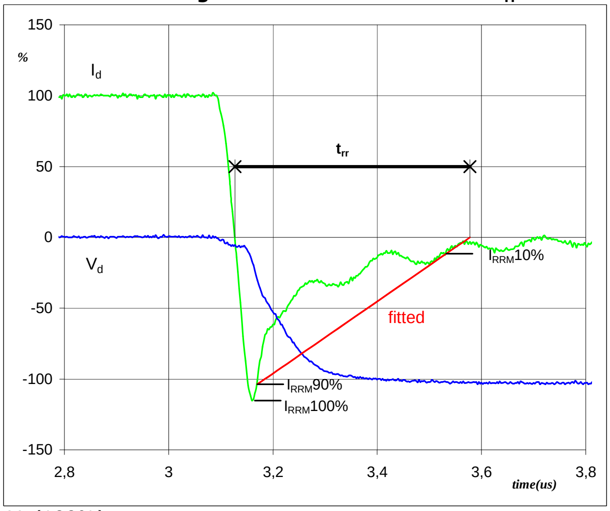
**Turn-on Switching Waveforms & definition of $t_{Eon}$**




$P_{on}$ (100%) = 44,82 kW
$E_{on}$ (100%) = 6,50 mJ
$t_{Eon}$ = 0,33 μs

**Figure 7** Inverter FWD

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

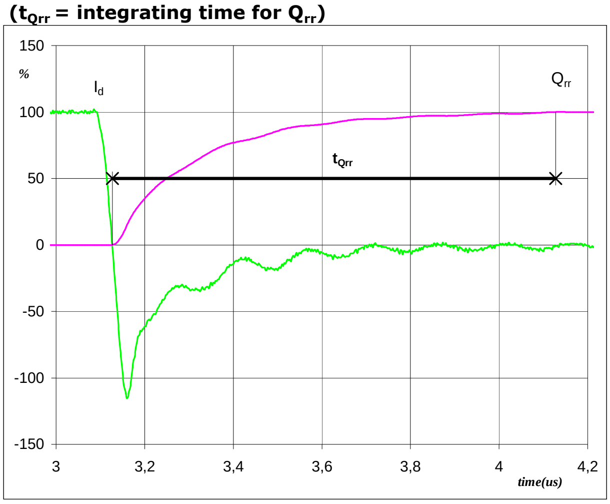



$V_d$ (100%) = 600 V
$I_d$ (100%) = 75 A
$I_{RRM}$ (100%) = -86 A
$t_{rr}$ = 0,31 μs

# Switching Definitions Output Inverter

| **Figure 8** | Inverter FWD |
|---|---|

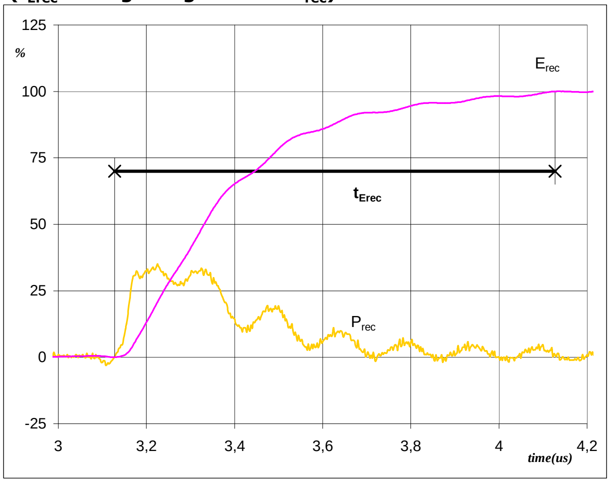
**Turn-on Switching Waveforms & definition of $t_{Qrr}$**
**($t_{Qrr}$ = integrating time for $Q_{rr}$)**




| | | |
|---|---|---|
| $I_d$ (100%) = | 75 | A |
| $Q_{rr}$ (100%) = | 11,73 | μC |
| $t_{Qrr}$ = | 1,00 | μs |

| **Figure 9** | Inverter FWD |
|---|---|

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




| | | |
|---|---|---|
| $P_{rec}$ (100%) = | 44,82 | kW |
| $E_{rec}$ (100%) = | 4,71 | mJ |
| $t_{Erec}$ = | 1,00 | μs |

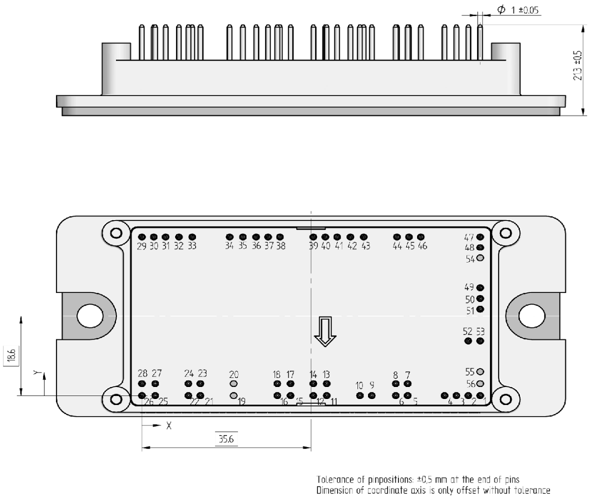
## Ordering Code & Marking

| Version | Ordering Code |
|---|---|
| without thermal paste 17 mm housing with solder pins | 30-F212R6A075SC-M448E |
| without thermal paste 17 mm housing with solder pins | 30-F212R6A075SC01-M448E10 |
| | |
| | |

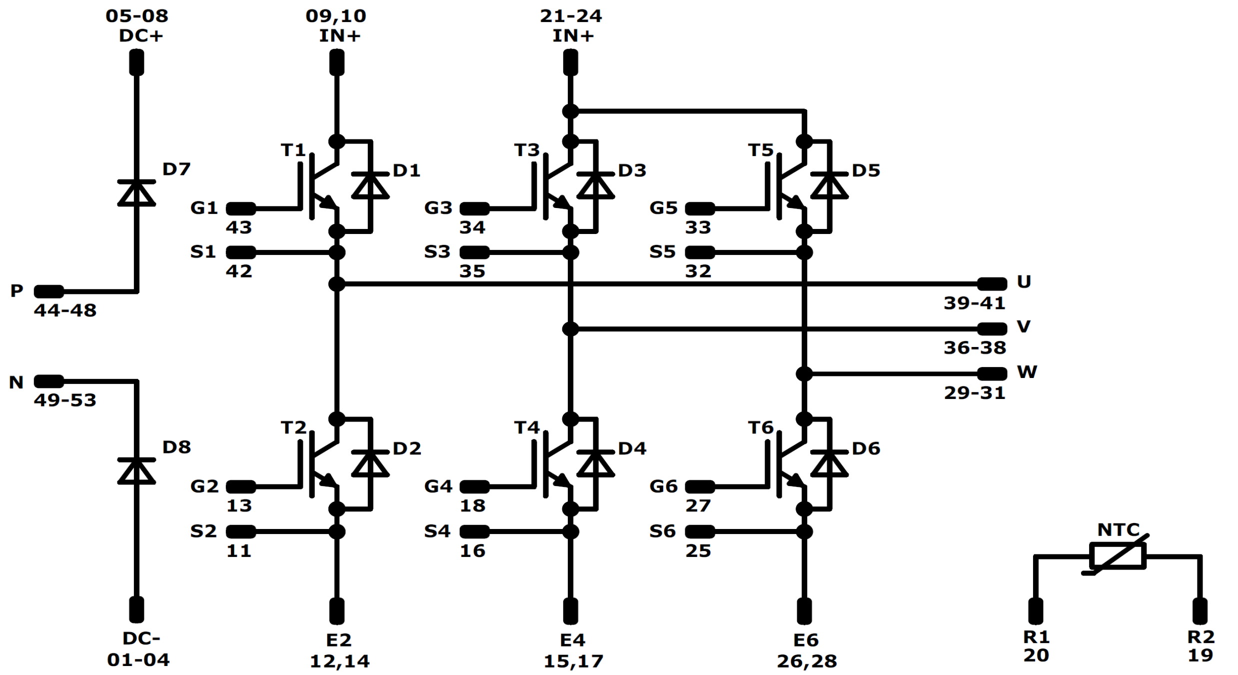

| | Name | Date code | UL & VIN | Lot | Serial |
|---|---|---|---|---|---|
| **Text** | NN-NNNNNNNNNNNNNN-TTTTTTVV | WWYY | UL VIN | LLLLL | SSSS |
| **Datamatrix** | **Type&Ver** | **Lot number** | **Serial** | **Date code** | |
| | TTTTTTTVV | LLLLL | SSSS | WWYY | |

## Outline

| Pin table [mm] | | | | Pin table [mm] | | | |
|---|---|---|---|---|---|---|---|
| Pin | X | Y | Function | Pin | X | Y | Function |
| 1 | 71,2 | 0 | DC- | 32 | 7,8 | 37,2 | S5 |
| 2 | 68,7 | 0 | DC- | 33 | 10,6 | 37,2 | G5 |
| 3 | 66,2 | 0 | DC- | 34 | 18,45 | 37,2 | G3 |
| 4 | 63,7 | 0 | DC- | 35 | 21,25 | 37,2 | G3 |
| 5 | 55,95 | 0 | DC+ | 36 | 24,05 | 37,2 | V |
| 6 | 53,45 | 0 | DC+ | 37 | 26,55 | 37,2 | V |
| 7 | 55,95 | 2,8 | DC+ | 38 | 29,05 | 37,2 | V |
| 8 | 53,45 | 2,8 | DC+ | 39 | 36,1 | 37,2 | U |
| 9 | 48,4 | 0 | IN+ | 40 | 38,6 | 37,2 | U |
| 10 | 45,9 | 0 | IN+ | 41 | 41,1 | 37,2 | U |
| 11 | 38,9 | 0 | S2 | 42 | 43,9 | 37,2 | S1 |
| 12 | 36,1 | 0 | E2 | 43 | 46,7 | 37,2 | G1 |
| 13 | 38,9 | 2,8 | G2 | 44 | 53,7 | 37,2 | P |
| 14 | 36,1 | 2,8 | E2 | 45 | 56,2 | 37,2 | P |
| 15 | 31,3 | 0 | E4 | 46 | 58,7 | 37,2 | P |
| 16 | 28,5 | 0 | S4 | 47 | 71,2 | 37,2 | P |
| 17 | 31,3 | 2,8 | E4 | 48 | 71,2 | 34,7 | P |
| 18 | 28,5 | 2,8 | G4 | 49 | 71,2 | 25,2 | N |
| 19 | Not assembled | | | 50 | 71,2 | 22,7 | N |
| 20 | | | | 51 | 71,2 | 20,2 | N |
| 21 | 12,3 | 0 | IN+ | 52 | 68,7 | 12,8 | N |
| 22 | 9,8 | 0 | IN+ | 53 | 71,2 | 12,8 | N |
| 23 | 12,3 | 2,8 | IN+ | 54 | Not assembled | | |
| 24 | 9,8 | 2,8 | IN+ | 55 | | | |
| 25 | 2,8 | 0 | S6 | 56 | | | |
| 26 | 0 | 0 | E6 | | | | |
| 27 | 2,8 | 2,8 | G6 | | | | |
| 28 | 0 | 2,8 | E6 | | | | |
| 29 | 0 | 37,2 | W | | | | |
| 30 | 2,5 | 37,2 | W | | | | |
| 31 | 5 | 37,2 | W | | | | |



## Pinout




## Identification

| ID | Component | Voltage | Current | Function | Comment |
|---|---|---|---|---|---|
| D7 , D8 | FWD | 1600 V | 100 A | DC Blocking Diode | |
| T1 - T6 | IGBT | 1200 V | 70 A | Inverter Switch | |
| D1 - D6 | FWD | 1200 V | 50 A | Inverter Diode | |
| NTC | Thermistor | | | Thermistor | |

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

| Handling instruction |
|---|
| Handling instructions for *flow* 2 packages see vincotech.com website. |

| Package data |
|---|
| Package data for *flow* 2 packages see vincotech.com website. |

| UL recognition and file number |
|---|
| This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website. |

| Document No.: | Date: | Modification: | Pages |
|---|---|---|---|
| 30-F212R6A075SC-M448E-D3-14 | 27 Jun. 2017 | logo, SPQ corrected | All |

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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.