



# JT075N120F2MA1E

## 主要参数 MAIN CHARACTERISTICS

|                                      |        |
|--------------------------------------|--------|
| $I_c$                                | 75 A   |
| $V_{CES}$                            | 1200 V |
| $V_{cesat\_typ}$<br>( $V_{ge}=15V$ ) | 1.9V   |

### 用途

- 大功率变流器
- 电机传动
- UPS 电源

### 产品特性

- FS 技术
- 低通态压降,  $V_{CE(sat)}$ ,  
typ = 1.9V,  $I_c = 75A$  and  
 $T_c = 25^\circ C$
- $V_{CEsat}$  正温度系数
- 低开关损耗

### APPLICATIONS

- High Power Converters
- Motor Drives
- UPS System

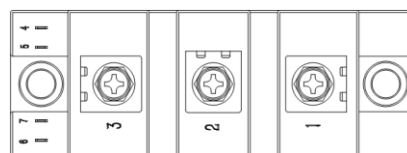
### FEATURES

- FS Technology
- Low saturation voltage:  
 $V_{CE(sat)}$ , typ = 1.9V,  $I_c =$   
75A and  $T_c = 25^\circ C$
- $V_{CEsat}$  with positive  
Temperature Coefficient
- Low Switching Losses

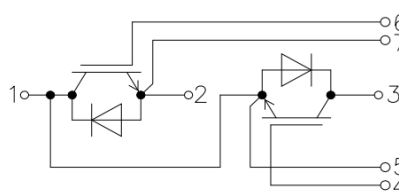
## 封装 Package



外形示意图



引脚示意图



电路示意图

## 订货信息 ORDER MESSAGE

| 订货型号<br>Order codes | 印记<br>Marking   | 封装<br>Package | 包装<br>Packaging | 器件重量<br>Device Weight |
|---------------------|-----------------|---------------|-----------------|-----------------------|
| JT075N120F2MA1E     | JT075N120F2MA1E | 两单元模块         | 盒装              | 163g(typ)             |



绝对最大额定值 ABSOLUTE RATINGS ( $T_C=25^\circ\text{C}$ )

| 项 目<br>Parameter   | 符 号<br>Symbol                 | 数 值 Value | 单 位<br>Unit      |
|--|-------------------------------|-----------|------------------|
| 最高集电极-发射极直流电压<br>Collector-Emmitter Voltage              | $V_{CES}$                     | 1200      | V                |
| 连续集电极极电流<br>Collector Current-continuous                 | $I_C$ $T_C=100^\circ\text{C}$ | 75        | A                |
| 最大脉冲集电极极电流 (注1)<br>Collector Current – pulse<br>(note 1) | $I_{CM}$                      | 150       | A                |
| 最高栅极发射极电压<br>Gate-Emmitter Voltage                       | $V_{GES}$                     | $\pm 20$  | V                |
| 短路时间<br>short circuit time                               | $t_{sc}$                      | 10        | $\mu\text{s}$    |
| 耗散功率<br>Power Dissipation                                | $P_D$ $T_C=25^\circ\text{C}$  | 375       | W                |
| 结温范围<br>Junction Temperature                             | $T_{vjmax}$                   | 175       | $^\circ\text{C}$ |
|  | $T_{vj op}$                   | -40~+150  |                  |





## 电特性 ELECTRICAL CHARACTERISTICS

| 项 目<br>Parameter                                  | 符 号<br>Symbol | 测试条件<br>Tests conditions   | 最小<br>Min   | 典型<br>Typ           | 最大<br>Max     | 单位<br>Unit |
|---|---------------|--|-------------|---------------------|---------------|------------|
| <b>关态特性 Off –Characteristics</b>                  |               |  |             |                     |               |            |
| 集电极—发射极击穿电压<br>Collector-Emmitter Voltage         | $BV_{CES}$    | $I_C=1mA, V_{GE}=0V$   | 1200        | -                   | -             | V          |
| 零栅压下集电极漏电流<br>Zero Gate Voltage Collector Current | $I_{CES}$     | $V_{CE}=1200V, V_{GE}=0V,$<br>$T_C=25^{\circ}C$  | -           | -                   | 1             | mA         |
| 正向栅极体漏电流<br>Gate-body leakage current,<br>forward | $I_{GESF}$    | $V_{CE}=0V, V_{GE}=20V$  | -           | -                   | 200           | nA         |
| 反向栅极体漏电流<br>Gate-body leakage current,<br>reverse | $I_{GESR}$    | $V_{CE}=0V, V_{GE}=-20V$   | -           | -                   | -200          | nA         |
| <b>通态特性 On-Characteristics</b>                    |               |  |             |                     |               |            |
| 阈值电压<br>Gate-Emmitter Threshold Voltage           | $V_{GE(th)}$  | $V_{CE} = V_{GE}, I_C=0.25mA$  | 5.2         | -                   | 6.5           | V          |
| 饱和压降<br>Collector-Emmitter saturation<br>Voltage  | $V_{CESAT}$   | $V_{GE}=15V, I_C=75A$<br>$T_C=25^{\circ}C$<br>$T_C=125^{\circ}C$<br>$T_C=150^{\circ}C$ | -<br>-<br>- | 1.9<br>2.25<br>2.35 | 2.5<br>-<br>- | V          |
| 短路电流（注2）<br>Short Collector current（Note 2）       | $I_{C(SC)}$   | $V_{GE}=15V, V_{CE}=600V, t_{SC}$<br>$< 10\mu s, T_C=25^{\circ}C$                      |             | 375                 |               | A          |
| <b>动态特性 Dynamic Characteristics</b>               |               |  |             |                     |               |            |
| 输入电容<br>Input capacitance                         | $C_{ies}$     | $V_{CE}=25V,$<br>$V_{GE}=0V,$<br>$f=1.0MHz$  | -           | 8                   |               | nF         |
| 输出电容<br>Output capacitance                        | $C_{oes}$     |  | -           | 0.5                 |               | nF         |
| 反向传输电容<br>Reverse transfer capacitance            | $C_{res}$     |  | -           | 0.12                |               | nF         |





## 电特性 ELECTRICAL CHARACTERISTICS

| 项 目<br>Parameter  | 符 号<br>Symbol | 测试条件<br>Tests conditions  | 最小<br>Min        | 典型<br>Typ | 最大<br>Max | 单位<br>Unit |    |
|---|---------------|---|------------------|-----------|-----------|------------|----|
| <b>开关特性 Switching Characteristics</b>   |               |   |                  |           |           |            |    |
| 开启延迟时间 Turn-On delay time   | $t_{d(on)}$   | $V_{CE}=600V,$<br>$I_C=75A,$<br>$R_G=15\Omega$<br>Inductive Load                  | $T_C=25^\circ C$ | -         | 90        | -          | ns |
| 上升时间 Turn-On rise time  | $t_r$         |   | $T_C=25^\circ C$ | -         | 85        | -          | ns |
| 关断延迟时间 Turn-Off delay time  | $t_{d(off)}$  |   | $T_C=25^\circ C$ | -         | 150       | -          | ns |
| 下降时间 Turn-Off Fall time   | $t_f$         |   | $T_C=25^\circ C$ | -         | 160       | -          | ns |
| 开启损耗 Turn-on energy   | $E_{on}$      |   | $T_C=25^\circ C$ | -         | 8.5       | -          | mJ |
| 关断损耗 Turn-off energy  | $E_{off}$     |   | $T_C=25^\circ C$ | -         | 4.25      | -          | mJ |
| 总的开关损耗 Total switching energy   | $E_{total}$   |   | $T_C=25^\circ C$ | -         | 12.75     | -          | mJ |
| 栅极电荷总量 Total Gate Charge  | $Q_g$         | $V_{GE}=-15 V +15 V$  | -                | 0.35      | -         | $\mu C$    |    |
| 内部栅极电阻<br>Internal gate resistance  | $R_{Gint}$    |   |                  | 5         |           | $\Omega$   |    |
| <b>反并联二极管特性及最大额定值 Anti-Parallel Diode Characteristics and Maximum Ratings</b> |               |   |                  |           |           |            |    |
| 正向压降（芯片）<br>Diode Forward Voltage   | $V_F$         | $V_{GE}=0V, I_F=75A$  | -                | 1.6       | 2.1       | V          |    |
| 峰值反向恢复电流<br>Peak Reverse recovery current                                     | $I_{RM}$      | $V_{GE}=-15V, V_R=600V$<br>$I_F=75A$<br>$di_F/dt=1500A/\mu s$<br>$T_C=25^\circ C$ |                  | 45        |           | A          |    |
| 反向恢复时间<br>Diode Reverse recovery time   | $t_{rr}$      |   | -                | 400       | -         | ns         |    |
| 反向恢复电荷<br>Reverse recovery charge   | $Q_{rr}$      |   | -                | 8         | -         | $\mu C$    |    |
| 反向恢复能量<br>Reverse recovery energy   | $E_{rec}$     |   |                  | 3         |           | mJ         |    |



## 热特性 THERMAL CHARACTERISTIC

| 项 目<br>Parameter                                   | 符 号<br>Symbol | 最小<br>Min     | 典型<br>Typ | 最大<br>Max | 单位<br>Unit |
|--|---------------|---------------|-----------|-----------|------------|
| 结到管壳的热阻<br>Thermal Resistance, Junction to Case    | Per/IGBT      | $R_{th(j-c)}$ | -         | -         | 0.4 °C/W   |
| 管壳到散热底座的热阻<br>Thermal Resistance, Case to heatsink | Per/IGBT      | $R_{th(c-h)}$ | -         | 0.08      | - °C/W     |
| 结到管壳的热阻<br>Thermal Resistance, Junction to Case    | Per/FRED      | $R_{th(j-c)}$ | -         | -         | 0.6 °C/W   |
| 管壳到散热底座的热阻<br>Thermal Resistance, Case to heatsink | Per/FRED      | $R_{th(c-h)}$ | -         | 0.15      | - °C/W     |

## 模块特性/Module Characteristics

| 项 目<br>Parameter                                      | 符 号<br>Symbol   | 测试条件<br>Tests conditions  | 最小<br>Min | 典型<br>Typ | 最大<br>Max | 单位<br>Unit |
|---|---|---|-----------|-----------|-----------|------------|
| 绝缘测试电压<br>Isolation test voltage                      | $V_{ISOL}$  | RMS, f = 50 Hz, t = 3S  |           | 4         |           | KV         |
| 模块基板材料<br>Material of module baseplate                | Cu  |   |           |           |           |            |
| 内部绝缘<br>Internal isolation                            | 基本绝缘<br>(class 1, IEC 61140)<br>Basic insulation<br>(class1, IEC 61140) |   | Al2O3     |           |           |            |
| 安装扭矩<br>Mounting torque                               | M   | 螺丝M6 ScrewM6  | 3         | -         | 6         | Nm         |
| 端子联接扭距<br>Terminal Connection torque                  | M   | 螺丝M5 ScrewM5  | 3         | -         | 6         | Nm         |
| 爬电距离<br>Creepage distance                             | 端子-散热片<br>terminal to heatsink  |   | -         | 17        | -         | mm         |
|   | 端子-端子<br>Terminal to terminal   |   | -         | 20        | -         |            |
| 电气间隙<br>Clearance                                     | 端子-散热片<br>terminal to heatsink  |   | -         | 17        | -         | mm         |
|   | 端子-端子<br>Terminal to terminal   |   | -         | 10        | -         |            |
| 相对电痕指数<br>Comperative tracking index                  | CT1   |   | 200       |           |           |            |
| 外壳—散热器热阻<br>Thermal resistance case to heatsink       | $R_{thCH}$  | 每个模块<br>per module<br>$\lambda_{Paste}=1W/(m \cdot K)$ /<br>$\lambda_{grease}=1W/(m \cdot K)$ |           | 0.05      |           | K/W        |
| 杂散电感,模块<br>Stray inductance module                    | $L_{SCE}$   |   |           | 30        |           | nH         |
| 模块引线电阻,端子-芯片<br>Module lead resistance terminals chip | $R_{CC'+EE'}$   |   |           | 0.65      |           | mΩ         |
| 储存温度<br>Storage temperature                           | $T_{stg}$   |   | -40       |           | 125       | °C         |
| 重量<br>Weight  |   |   | -         | 163       | -         | g          |

注释:

- 1: 脉冲宽度由最高结温限制
- 2: 两次短路之间的间隔大于 1 秒时, 允许短路测试的次数最大为 1000 次

Notes:

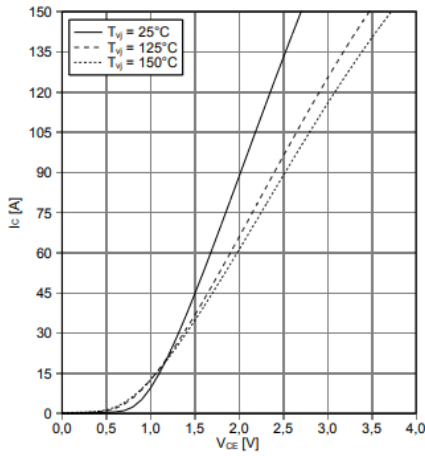
- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.



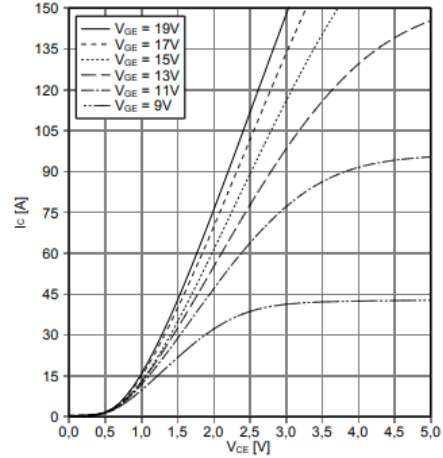


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

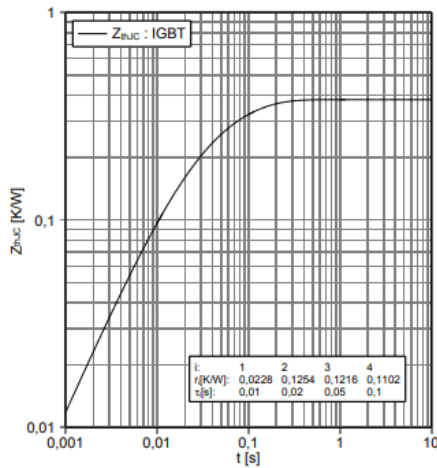
Typical Output Characteristics( $V_{ge}=15V$ )



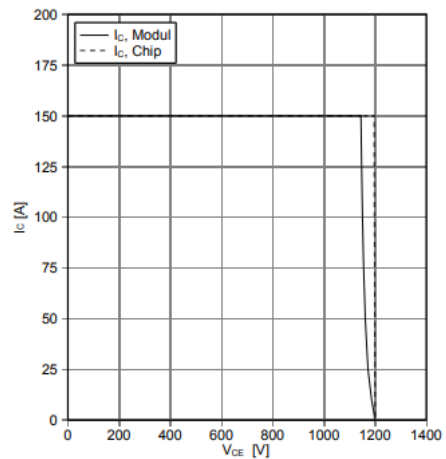
Typical transfer Characteristics( $T_{vj}=150^\circ C$ )



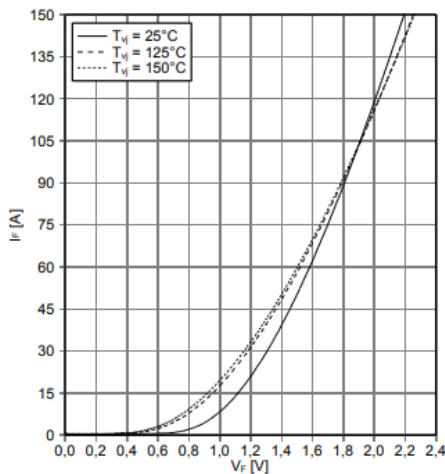
Transient Thermal Impedance (IGBT)



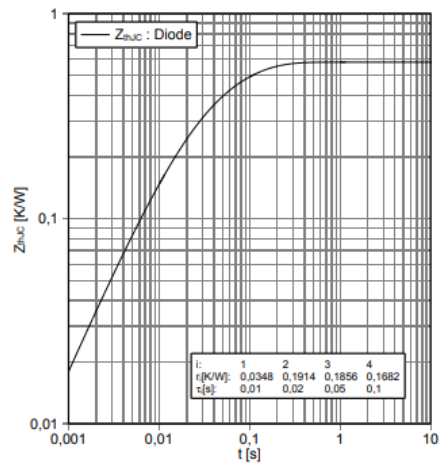
RBSOA of IGBT



Forward Characteristics of FRD

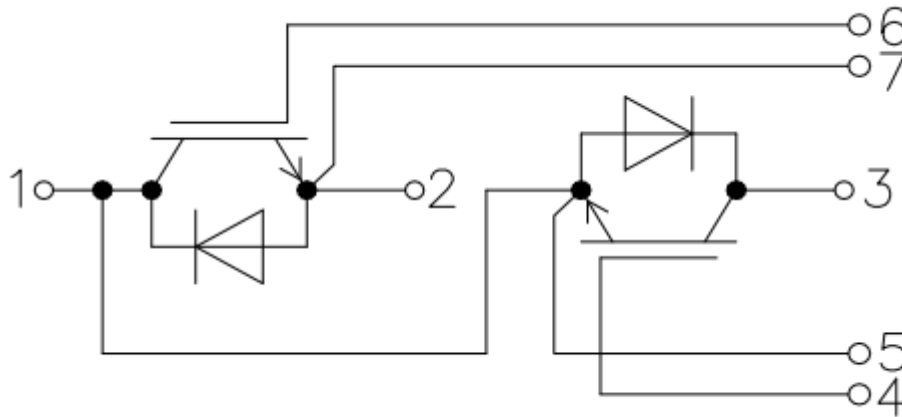


Transient Thermal Impedance (FRD)



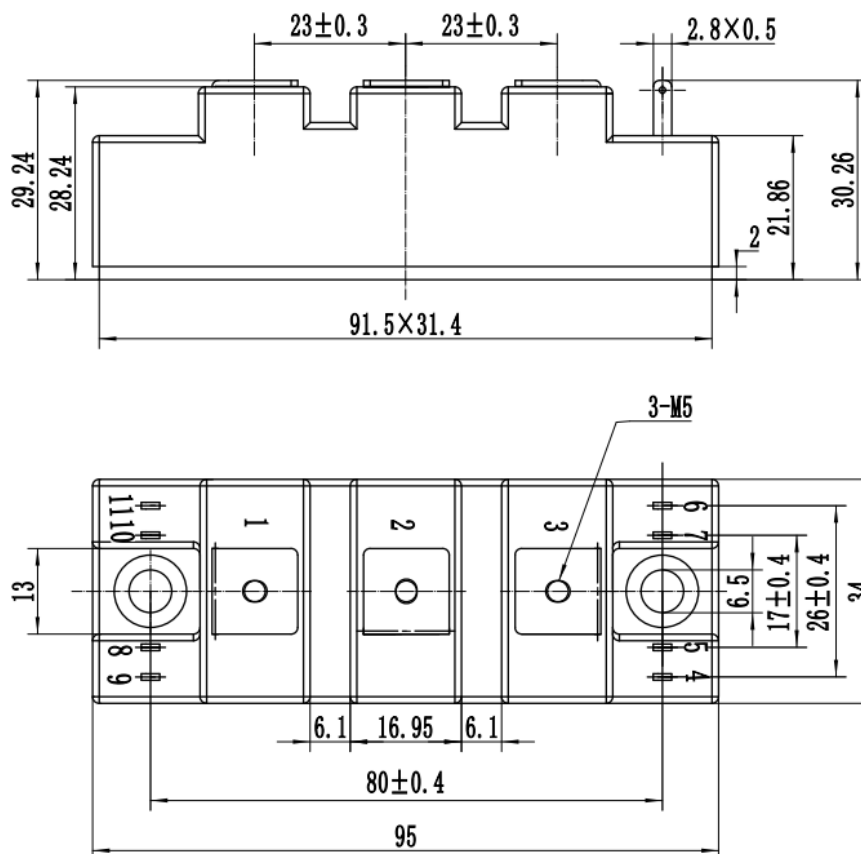


外形尺寸 PACKAGE MECHANICAL DATA  
Circuit diagram



Package outlines

单位 Unit: mm





### 注意事项

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