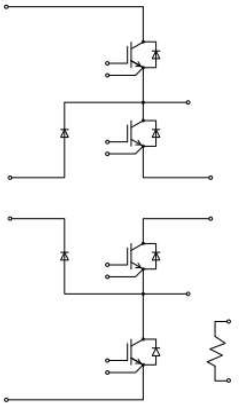
# *S3L225R12GA7H_C20* 3-Level NPC1 Inverter Module

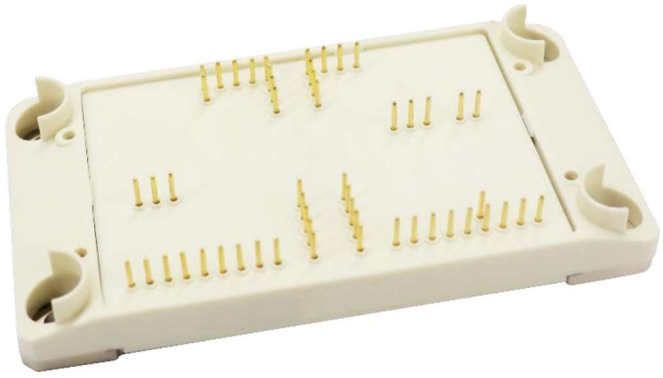
**电气特性/ Features and Benefits:**

- 1200V 沟槽栅/场终止工艺
  1200V Trench Gate / Field Termination Process
- 低开关损耗
  Low switching losses
- Vcesat 正温度系数
  Vcesat has a positive temperature coefficient



**典型应用/ Applications:**

- 储能系统
  Energy Storage System
- 光伏逆变器
  Solar Inverters
- 不间断电源
  Uninterruptable Power Supplies Systems



$V_{CES}$ =1200V，$I_{C\,nom}$ =225A / $I_{CRM}$ =450A

## IGBT, T1/T4

**最大额定值 / Maximum Ratings**

| Parameter | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| 集电极-发射极电压<br>Collector-Emitter voltage | $T_{vj}$=25°C | $V_{CES}$ | 1200 | V |
| 连续集电极直流电流<br>Continuous DC collector current | | $I_{C\,nom}$ | 225 | A |
| 集电极重复峰值电流<br>Repetitive peak collector current | tp 受限于 Tvj op | $I_{CRM}$ | 450 | A |
| 栅极-发射极电压<br>Gate emitter voltage | | $V_{GE}$ | ±20 | V |

**特征值 / Characteristic Values**

| Parameter | Conditions | | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 集电极-发射极饱和电压<br>Collector-Emitter saturation voltage | $V_{GE}$=15V, $I_C$=225A<br>$V_{GE}$=15V, $I_C$=225A<br>$V_{GE}$=15V, $I_C$=225A | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $V_{CEsat}$ | | 1.75<br>2.14<br>2.22 | 2.25 | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 栅极-发射极阈值电压<br>Gate-Emitter threshold voltage | $I_C$=7.8mA, $V_{GE}$= $V_{CE}$ | $T_{vj}$=25°C | $V_{GE(th)}$ | 5.50 | 6.10 | 6.70 | |
| 栅电荷<br>Gate charge | $V_{GE}$=-15V…+15V | | $Q_G$ | | 2.10 | | µC |
| 内部栅极电阻<br>Internal gate resistor | | | $R_{Gint}$ | | -- | | Ω |
| 输入电容<br>Input capacitance | f=1MHz, $V_{CE}$=25 V, $V_{GE}$=0 V | $T_{vj}$=25°C | $C_{ies}$ | | 34.5 | | nF |
| 反向传输电容<br>Reverse transfer capacitance | | | $C_{res}$ | | 0.23 | | nF |
| 集电极-发射极截止电流<br>Collector-emitter cut-off current | $V_{CE}$=1200V , $V_{GE}$= 0 V | $T_{vj}$=25°C | $I_{CES}$ | | | 1 | mA |
| 栅极-发射极漏电流<br>Gate-emitter leakage current | $V_{CE}$=0 V, $V_{GE}$= 20 V | $T_{vj}$=25°C | $I_{GES}$ | | | 100 | nA |
| 开通延迟时间<br>Turn-on delay time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_{d\ on}$ | | 108<br>98<br>95 | | ns |
| 上升时间<br>Rise time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_r$ | | 54<br>57<br>57 | | |
| 关断延迟时间<br>Turn-off delay time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_{d\ off}$ | | 270<br>300<br>302 | | |
| 下降时间<br>Fall time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_f$ | | 83<br>125<br>135 | | |
| 开通损耗能量（每脉冲）<br>Turn-on energy loss per pulse | $I_C$ =225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$ =5Ω<br>di/dt = 3100 A/µs<br>(Tvj = 150 °C) | Tvj=25°C<br>Tvj=125°C<br>Tvj=150°C | $E_{on}$ | | 17.7<br>22.8<br>23.9 | | mJ |
| 关断损耗能量（每脉冲）<br>Turn-off energy loss per pulse | $I_C$ =225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$ =5Ω<br>dv/dt = 8400 V/µs<br>(Tvj = 150 °C) | Tvj=25°C<br>Tvj=125°C<br>Tvj=150°C | $E_{off}$ | | 7.54<br>10.6<br>11.0 | | |
| 结-外壳热阻<br>Thermal resistance, junction to case | 每个 IGBT / per IGBT | | $R_{thJC}$ | | 0.183 | | K/W |
| 在开关状态下温度<br>Temperature under switching conditions | | | $T_{vj\ op}$ | -40 | | 175 | °C |

## IGBT, T2/T3

### 最大额定值 / Maximum Ratings

| Parameter | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| 集电极-发射极电压<br>Collector-Emitter voltage | $T_{vj}$=25°C | $V_{CES}$ | 1200 | V |
| 连续集电极直流电流<br>Continuous DC collector current | | $I_{C\ nom}$ | 225 | A |
| 集电极重复峰值电流<br>Repetitive peak collector current | tp 受限于 Tvj op | $I_{CRM}$ | 450 | A |

| | | | | |
|---|---|---|---|---|
| 栅极-发射极电压<br>Gate emitter voltage | | $V_{GE}$ | ±20 | V |

## 特征值 / Characteristic Values

| Parameter | Conditions | | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 集电极-发射极饱和电压<br>Collector-Emitter saturation voltage | $V_{GE}$=15V, $I_C$=225A<br>$V_{GE}$=15V, $I_C$=225A<br>$V_{GE}$=15V, $I_C$=225A | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $V_{CEsat}$ | | 1.75<br>2.14<br>2.22 | 2.25 | V |
| 栅极-发射极阈值电压<br>Gate-Emitter threshold voltage | $I_C$=7.8mA, $V_{GE}$= $V_{CE}$ | $T_{vj}$=25°C | $V_{GE(th)}$ | 5.50 | 6.10 | 6.70 | |
| 栅电荷<br>Gate charge | $V_{GE}$=-15V…+15V | | $Q_G$ | | 2.10 | | µC |
| 内部栅极电阻<br>Internal gate resistor | | | $R_{Gint}$ | | -- | | Ω |
| 输入电容<br>Input capacitance | f=1MHz, $V_{CE}$=25 V, $V_{GE}$=0 V | $T_{vj}$=25°C | $C_{ies}$ | | 34.5 | | nF |
| 反向传输电容<br>Reverse transfer capacitance | | | $C_{res}$ | | 0.23 | | nF |
| 集电极-发射极截止电流<br>Collector-emitter cut-off current | $V_{CE}$=1200V , $V_{GE}$= 0 V | $T_{vj}$=25°C | $I_{CES}$ | | | 1 | mA |
| 栅极-发射极漏电流<br>Gate-emitter leakage current | $V_{CE}$=0 V, $V_{GE}$= 20 V | $T_{vj}$=25°C | $I_{GES}$ | | | 100 | nA |
| 开通延迟时间<br>Turn-on delay time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_{d\ on}$ | | 108<br>92<br>97 | | ns |
| 上升时间<br>Rise time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_r$ | | 62<br>63<br>66 | | |
| 关断延迟时间<br>Turn-off delay time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_{d\ off}$ | | 266<br>293<br>303 | | |
| 下降时间<br>Fall time | $I_C$=225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$=5Ω<br>(电感负载) / (inductive load) | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $t_f$ | | 68<br>108<br>120 | | |
| 开通损耗能量（每脉冲）<br>Turn-on energy loss per pulse | $I_C$ =225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$ =5Ω<br>di/dt = 2700 A/µs<br>(Tvj = 150 °C) | Tvj=25°C<br>Tvj=125°C<br>Tvj=150°C | $E_{on}$ | | 18.0<br>21.2<br>22.5 | | mJ |
| 关断损耗能量（每脉冲）<br>Turn-off energy loss per pulse | $I_C$ =225A, $V_{CE}$=600 V<br>$V_{GE}$=±15 V, $R_G$ =5Ω<br>dv/dt = 8300 V/µs<br>(Tvj = 150 °C) | Tvj=25°C<br>Tvj=125°C<br>Tvj=150°C | $E_{off}$ | | 7.70<br>10.9<br>11.7 | | |
| 结-外壳热阻<br>Thermal resistance, junction to case | 每个 IGBT / per IGBT | | $R_{thJC}$ | | 0.183 | | K/W |
| 在开关状态下温度<br>Temperature under switching conditions | | | $T_{vj\ op}$ | -40 | | 175 | °C |

## 二极管,D1/D4

### 最大额定值 / Maximum Ratings

| Parameter | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| 反向重复峰值电压<br>Repetitive peak reverse voltage | $T_{vj}$=25°C | $V_{RRM}$ | 1200 | V |
| 连续正向直流电流<br>Continuous DC forward current | | $I_F$ | 300 | A |
| 正向重复峰值电流<br>Repetitive peak forward current | tp 受限于 Tvj op | $I_{FRM}$ | 600 | A |
| $I^2t$ 值<br>$I^2t$-value | $t_p$=10ms，sin180°，$T_j$=125°C | $I^2t$ | 20000 | $A^2S$ |

### 特征值 / Characteristic Values

| Parameter | Conditions | | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 正向电压<br>Forward voltage | $I_F$=300A, $V_{GE}$=0V<br>$I_F$=300A, $V_{GE}$=0V<br>$I_F$=300A, $V_{GE}$=0V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $V_F$ | | 1.55<br>1.68<br>1.66 | | V |
| 反向恢复峰值电流<br>Peak reverse recovery current | $I_F$=300A,<br>-di$_F$/dt=3000A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $I_{RM}$ | | 140<br>179<br>218 | | A |
| 恢复电荷<br>Recovered charge | $I_F$=300A,<br>-di$_F$/dt=3000A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $Q_r$ | | 25.3<br>44.1<br>61.5 | | μC |
| 反向恢复损耗（每脉冲）<br>Reverse recovered energy | $I_F$=300A,<br>-di$_F$/dt=3000A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $E_{rec}$ | | 9.30<br>17.6<br>20.5 | | mJ |
| 结-外壳热阻<br>Thermal resistance, junction to case | 每个二极管 / per diode | | $R_{thJC}$ | | 0.323 | | K/W |
| eses 在开关状态下温度<br>Temperature under switching conditions | | | $T_{vj\ op}$ | -40 | | 175 | °C |

## 二极管,D2/D3

### 最大额定值 / Maximum Ratings

| Parameter | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| 反向重复峰值电压<br>Repetitive peak reverse voltage | $T_{vj}$=25°C | $V_{RRM}$ | 1200 | V |
| 连续正向直流电流<br>Continuous DC forward current | | $I_F$ | 200 | A |
| 正向重复峰值电流<br>Repetitive peak forward current | tp 受限于 Tvj op | $I_{FRM}$ | 400 | A |
| $I^2t$ 值<br>$I^2t$-value | $t_p$=10ms，sin180°，$T_j$=125°C | $I^2t$ | 10000 | $A^2S$ |

### 特征值 / Characteristic Values

| Parameter | Conditions | | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 正向电压<br>Forward voltage | $I_F$=200A, $V_{GE}$=0V<br>$I_F$=200A, $V_{GE}$=0V<br>$I_F$=200A, $V_{GE}$=0V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $V_F$ | | 1.58<br>1.70<br>1.66 | | V |
| 反向恢复峰值电流<br>Peak reverse recovery current | $I_F$=200A,<br>-di$_F$/dt=2800A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $I_{RM}$ | | 122<br>141<br>147 | | A |
| 恢复电荷<br>Recovered charge | $I_F$=200A,<br>-di$_F$/dt=2800A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $Q_r$ | | 18.3<br>29.8<br>34.2 | | μC |
| 反向恢复损耗（每脉冲）<br>Reverse recovered energy | $I_F$=200A,<br>-di$_F$/dt=2800A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $E_{rec}$ | | 6.90<br>11.9<br>13.7 | | mJ |
| 结-外壳热阻<br>Thermal resistance, junction to case | 每个二极管 / per diode | | $R_{thJC}$ | | 0.39 | | K/W |
| 在开关状态下温度<br>Temperature under switching conditions | | | $T_{vj\ op}$ | -40 | | 175 | °C |

## 二极管,D5/D6

### 最大额定值 / Maximum Ratings

| Parameter | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| 反向重复峰值电压<br>Repetitive peak reverse voltage | $T_{vj}$=25°C | $V_{RRM}$ | 1200 | V |
| 连续正向直流电流<br>Continuous DC forward current | | $I_F$ | 300 | A |
| 正向重复峰值电流<br>Repetitive peak forward current | tp 受限于 Tvj op | $I_{FRM}$ | 600 | A |
| $I^2t$ 值<br>$I^2t$-value | $t_p$=10ms，sin180°，$T_j$=125°C | $I^2t$ | 14000 | $A^2S$ |

### 特征值 / Characteristic Values

| Parameter | Conditions | | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 正向电压<br>Forward voltage | $I_F$=300A, $V_{GE}$=0V<br>$I_F$=300A, $V_{GE}$=0V<br>$I_F$=300A, $V_{GE}$=0V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $V_F$ | | 1.64<br>1.79<br>1.75 | | V |
| 反向恢复峰值电流<br>Peak reverse recovery current | $I_F$=300A,<br>-di$_F$/dt=3400A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $I_{RM}$ | | 154<br>192<br>221 | | A |
| 恢复电荷<br>Recovered charge | $I_F$=300A,<br>-di$_F$/dt=3400A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $Q_r$ | | 9.62<br>44.1<br>49.6 | | μC |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 反向恢复损耗（每脉冲）<br>Reverse recovered energy | $I_F$=300A,<br>-di$_F$/dt=3400A/μs($T_{vj}$=150°C)<br>$V_R$=600V, $V_{GE}$=-15V | $T_{vj}$=25°C<br>$T_{vj}$=125°C<br>$T_{vj}$=150°C | $E_{rec}$ | | 6.90<br>18.1<br>19.7 | | mJ |
| 结-外壳热阻<br>Thermal resistance, junction to case | 每个二极管 / per diode | | $R_{thJC}$ | | 0.37 | | K/W |
| 在开关状态下温度<br>Temperature under switching conditions | | | $T_{vj\ op}$ | -40 | | 175 | °C |

## 负温度系数热敏电阻/NTC-Thermistor

### 特征值/Characteristic Values

| Parameter | Conditions | Value | | | Unit |
|---|---|---|---|---|---|
| R25 | T=25°C | | 5 | | KΩ |
| △R/R | | −5 | | 5 | % |
| B−value | B (25/50), tolerance ±3% | | 3375 | | K |
| B−value | B (25/100), tolerance ±3% | | 3433 | | K |

## 模块 / Module

| Parameter | Conditions | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|
| 绝缘测试电压<br>Isolation test voltage | RMS, f=50Hz, t=1min | $V_{ISOL}$ | 3200 | | | V |
| 内部绝缘<br>Internal isolation | | | Al2O3 | | | |
| 爬电距离<br>Creepage distance | 端子至散热器 / terminal to heatsink<br>端子至端子 / terminal to terminal | | 11.5<br>6.8 | | | mm |
| 电气间隙<br>Clearance | | | 9.4<br>5.5 | | | mm |
| 相对电痕指数<br>Comperative tracking index | | CTI | > 400 | | | |
| 相对温度指数 (电)<br>RTI Elec. | housing | RTI | 140 | | | |
| 储存温度<br>Storage temperature | | $T_{stg}$ | -40 | | 125 | °C |
| 模块安装的扭矩<br>Mounting torque for modul mounting | | M | 2.0 | | 5.0 | Nm |
| 重量<br>Weight | | W | | 268 | | g |

## IGBT T1/T4

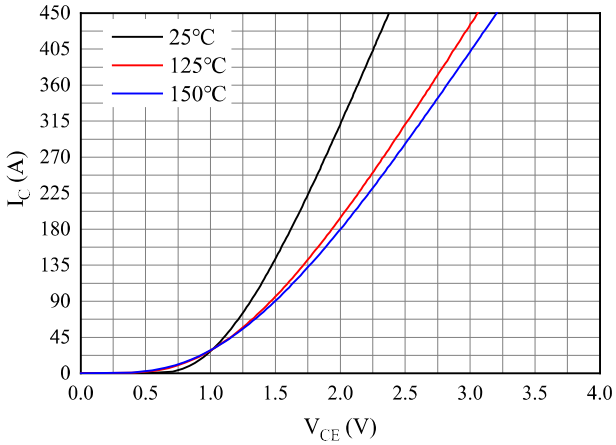



图 1. 典型输出特性 ($V_{GE}$=15V)
Figure 1. Typical output characteristics (VGE=15V)

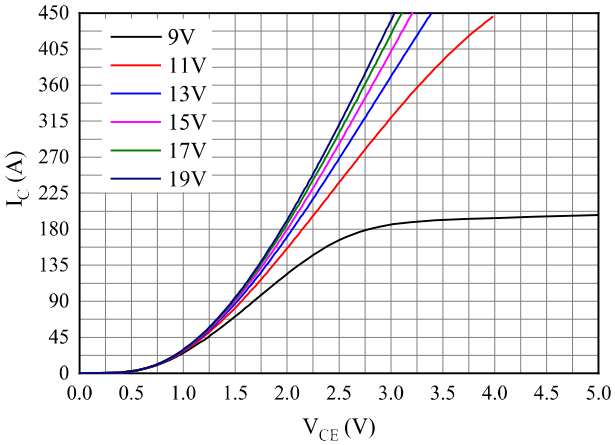



图 2. 典型输出特性 ($T_{vj}$=150℃)
Figure 2. Typical output characteristics (Tvj=150℃)

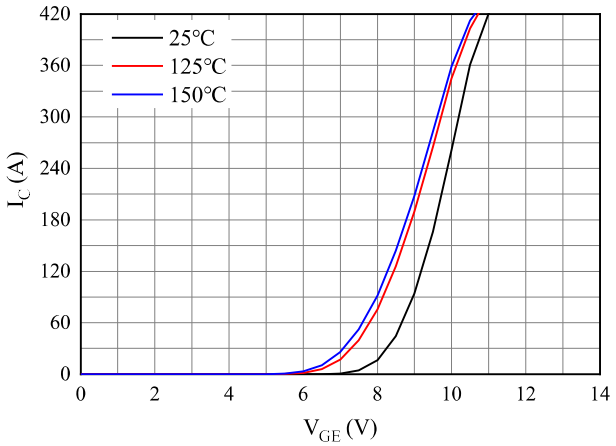



图 3. 典型传输特性($V_{CE}$=20V)
Figure 3. Typical transfer characteristic($V_{CE}$=20V)

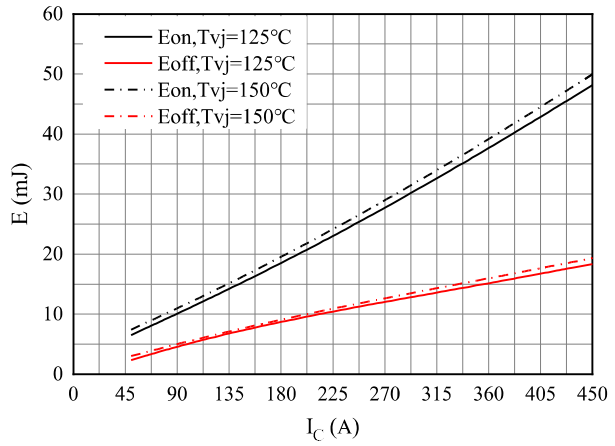



图 4.开管损耗
Figure 4. Switching losses of IGBT，
$V_{GE}$=±15V, Rg=5Ω, $V_{CE}$=600V

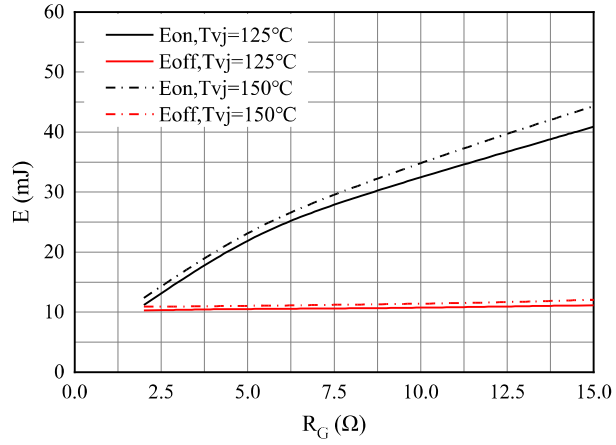



图 5. 开管损耗
Figure 5. Switching losses of IGBT,
$V_{GE}$=±15V,Ic=225A, $V_{CE}$=600V

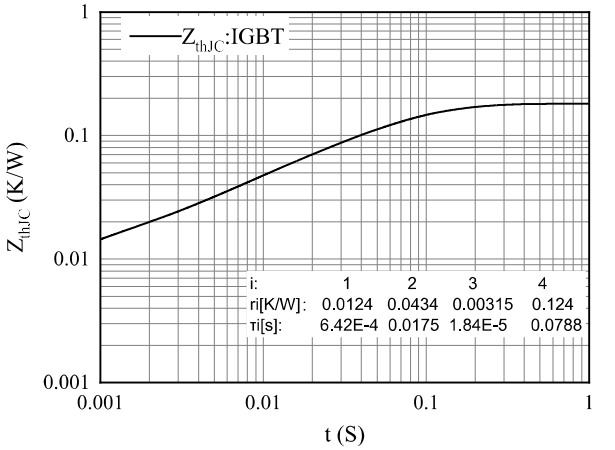



图 6. 瞬态热阻抗 IGBT
Figure 6. Transient thermal impedance IGBT,
ZthJC=f(t)

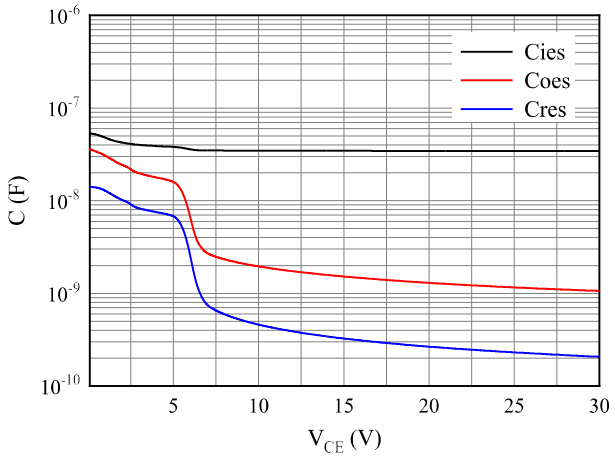



图 7. 电容特性
Figure 7. Capacitance characteristic

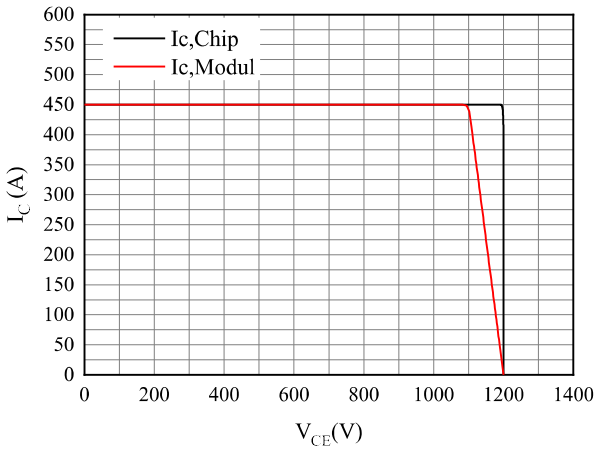



图 8. 反偏安全工作区
Figure 8. RBSOA
$V_{GE}$=±15V, Rgoff=5Ω，Tvj=150℃

## IGBT T2/T3

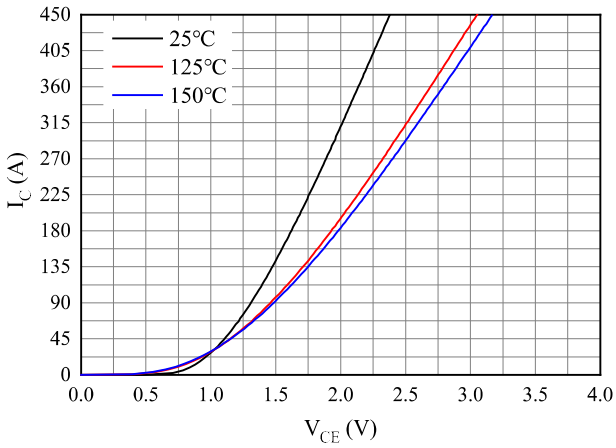



图 9. 典型输出特性 ($V_{GE}$=15V)
Figure 9. Typical output characteristics (VGE=15V)

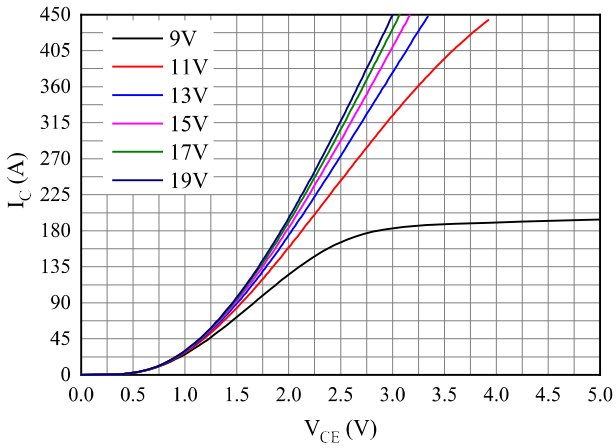



图 10. 典型输出特性 ($T_{vj}$=150℃)
Figure 10. Typical output characteristics (Tvj=150℃)

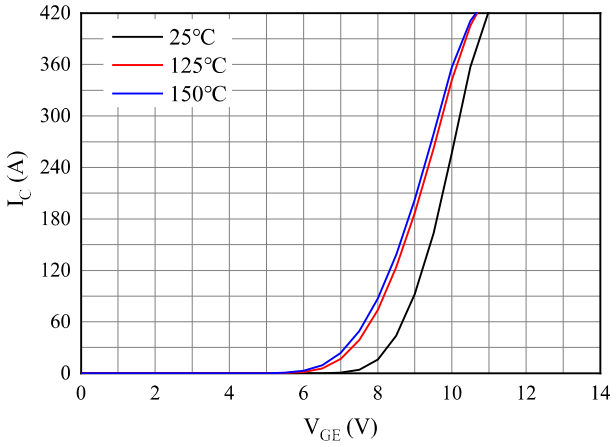



图 11. 典型传输特性($V_{CE}$=20V)
Figure 11. Typical transfer characteristic(VCE=20V)

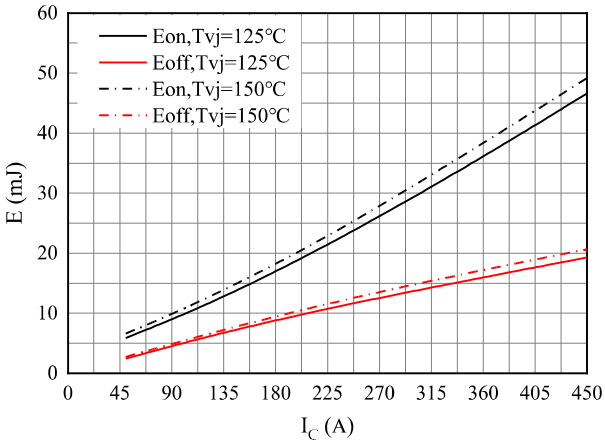



图 12.开管损耗
Figure 12. Switching losses of IGBT，
$V_{GE}$=±15V, Rg=5Ω, $V_{CE}$=600V

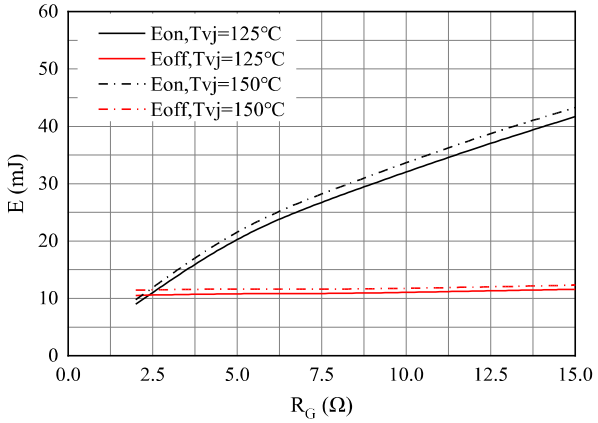



图 13. 开管损耗
Figure 13. Switching losses of IGBT,
$V_{GE}$=±15V,Ic=225A, $V_{CE}$=600V

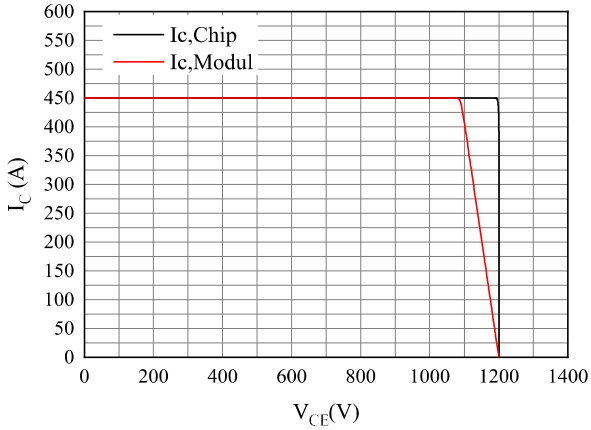



图 14. 瞬态热阻抗 IGBT
Figure 14. Transient thermal impedance IGBT,
ZthJC=f(t)

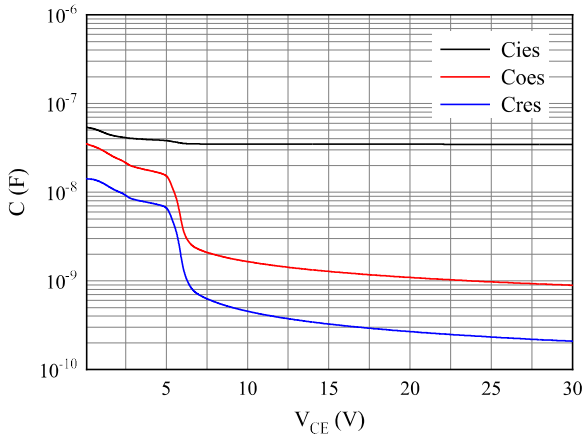



图 15. 电容特性
Figure 15. Capacitance characteristic

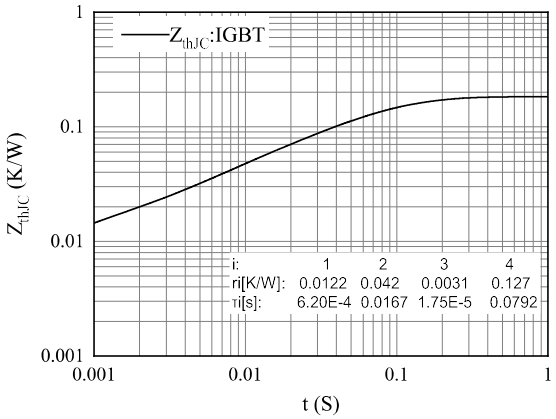



图 16. 反偏安全工作区
Figure 16. RBSOA
$V_{GE}$=±15V, Rgoff=5Ω，Tvj=150℃

## 二极管 D1/D4

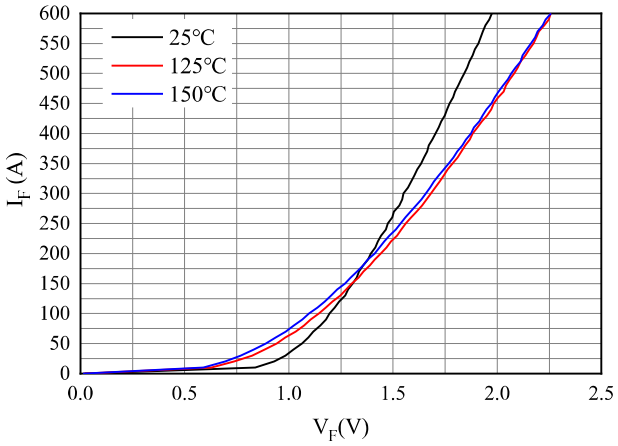



图 17. 正向偏压特性 二极管
Figure 17. Forward characteristic of Diode

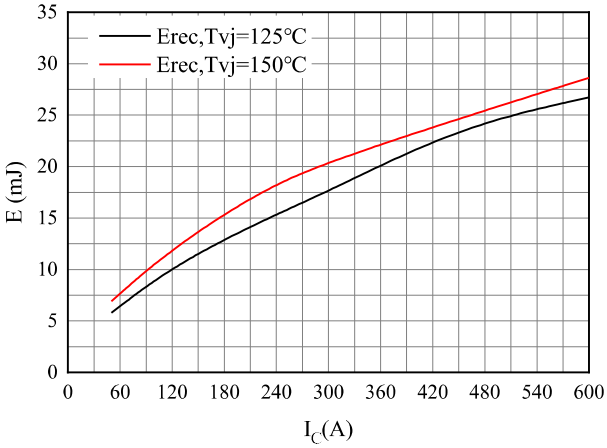



图 18. 开关损耗 二极管
Figure 18. Switching losses of Diode
Rg =5Ω, $V_{CE}$=600V

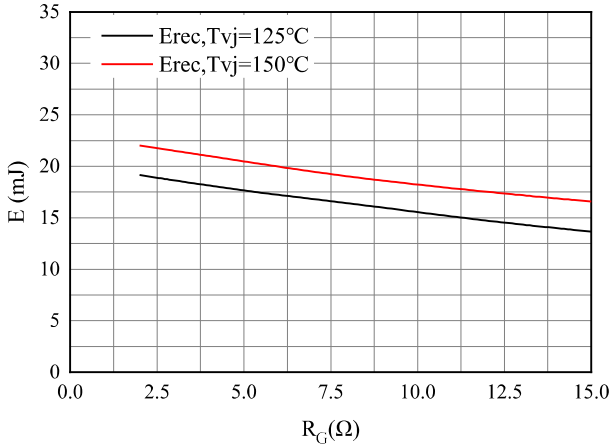



图 19. 开关损耗 二极管

Figure 19. Switching losses of Diode

$I_F$ =300A, $V_{CE}$=600V

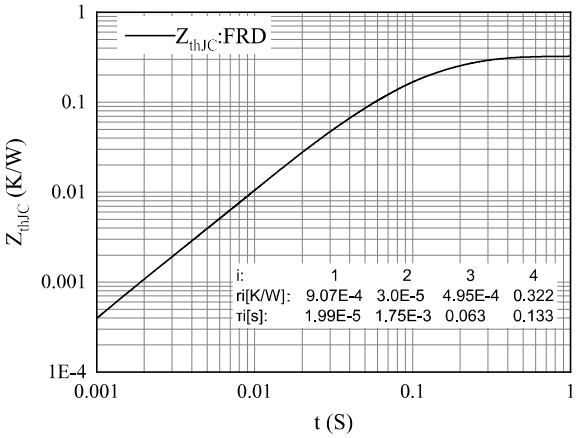



图 20. 瞬态热阻抗 FRD

Figure 20. Transient thermal impedance FRD ,

ZthJC=f(t)

## 二极管 D2/D3

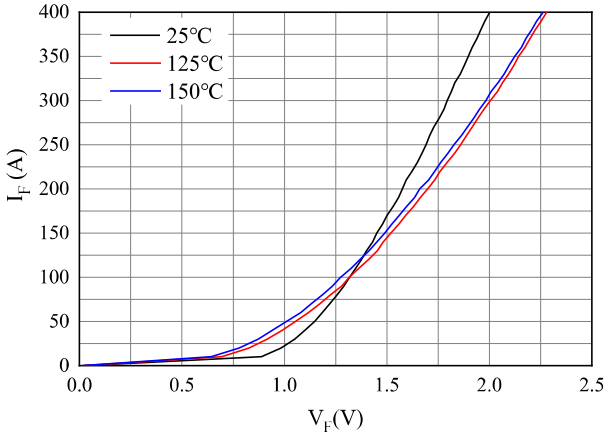



图 21. 正向偏压特性 二极管

Figure 21. Forward characteristic of Diode

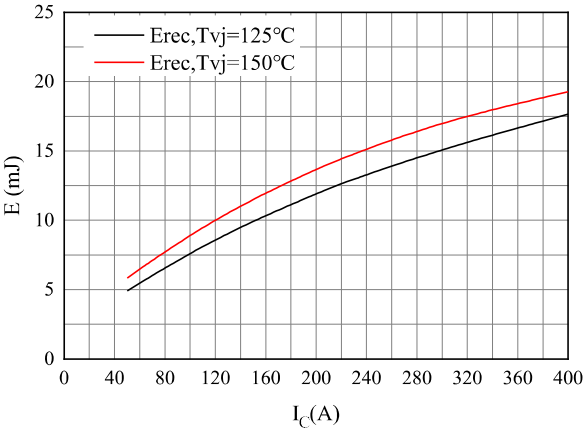



图 22. 开关损耗 二极管

Figure 22. Switching losses of Diode

Rg =5Ω, $V_{CE}$=600V

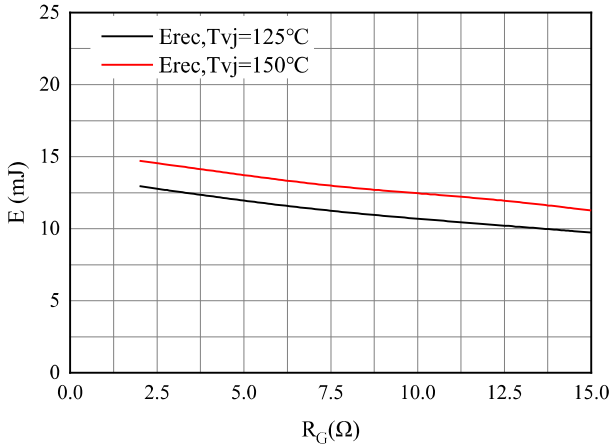



图 23. 开关损耗 二极管

Figure 23. Switching losses of Diode

$I_F$ =200A, $V_{CE}$=600V

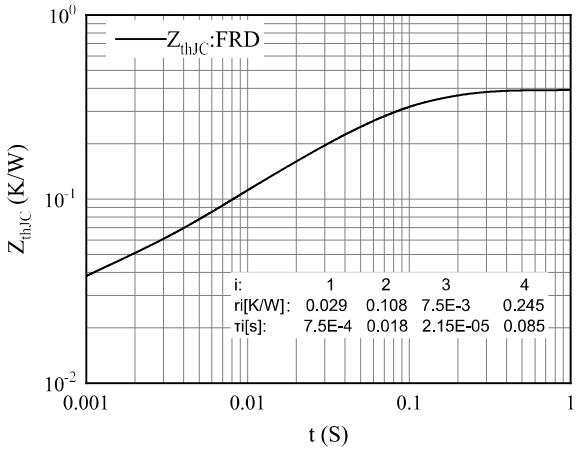



图 24. 瞬态热阻抗 FRD

Figure 24. Transient thermal impedance FRD ,

ZthJC=f(t)

## 二极管 D5/D6

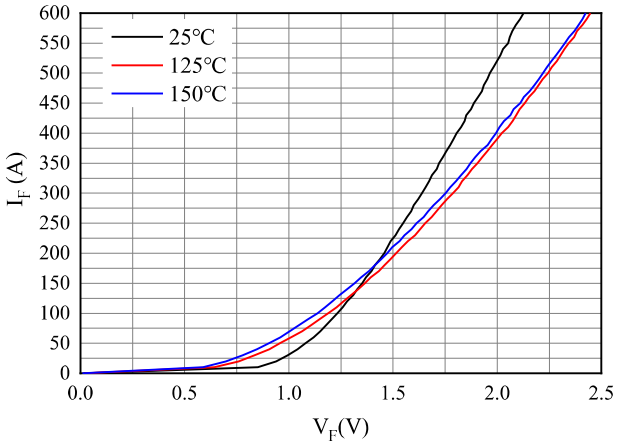



图 25. 正向偏压特性 二极管
Figure 25. Forward characteristic of Diode

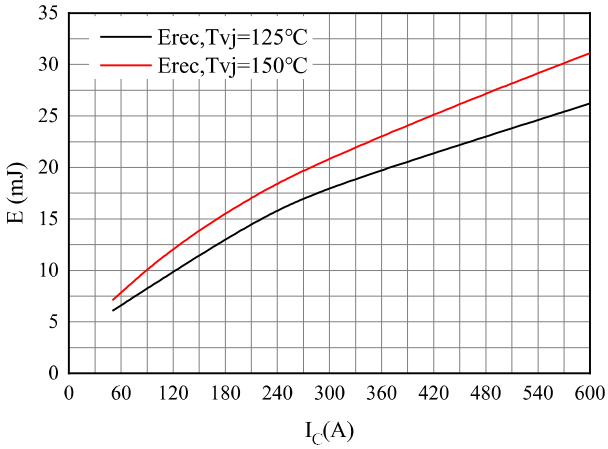



图 26. 开关损耗 二极管
Figure 26. Switching losses of Diode
Rg =5Ω, $V_{CE}$=600V

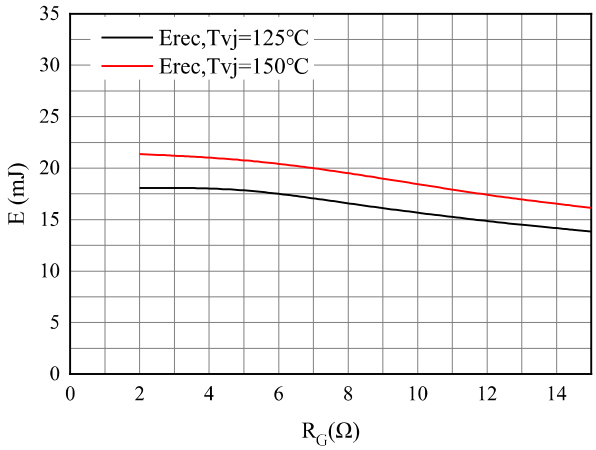



图 27. 开关损耗 二极管
Figure 27. Switching losses of Diode
If=300A, $V_{CE}$=600V

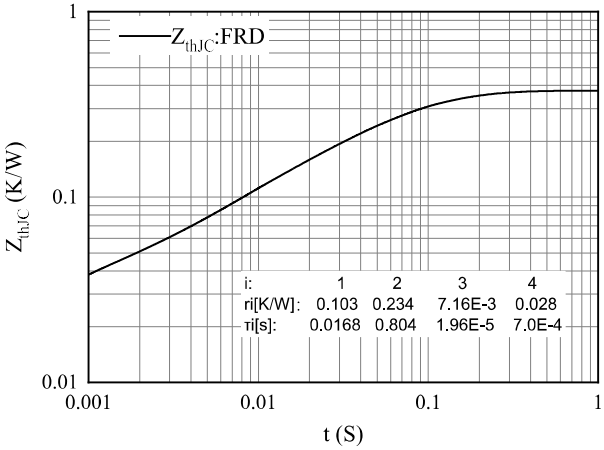



图 28. 瞬态热阻抗 FRD
Figure 28. Transient thermal impedance FRD ,
ZthJC=f(t)

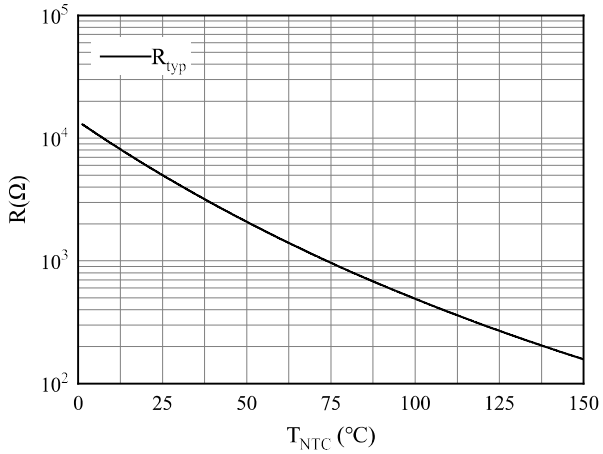
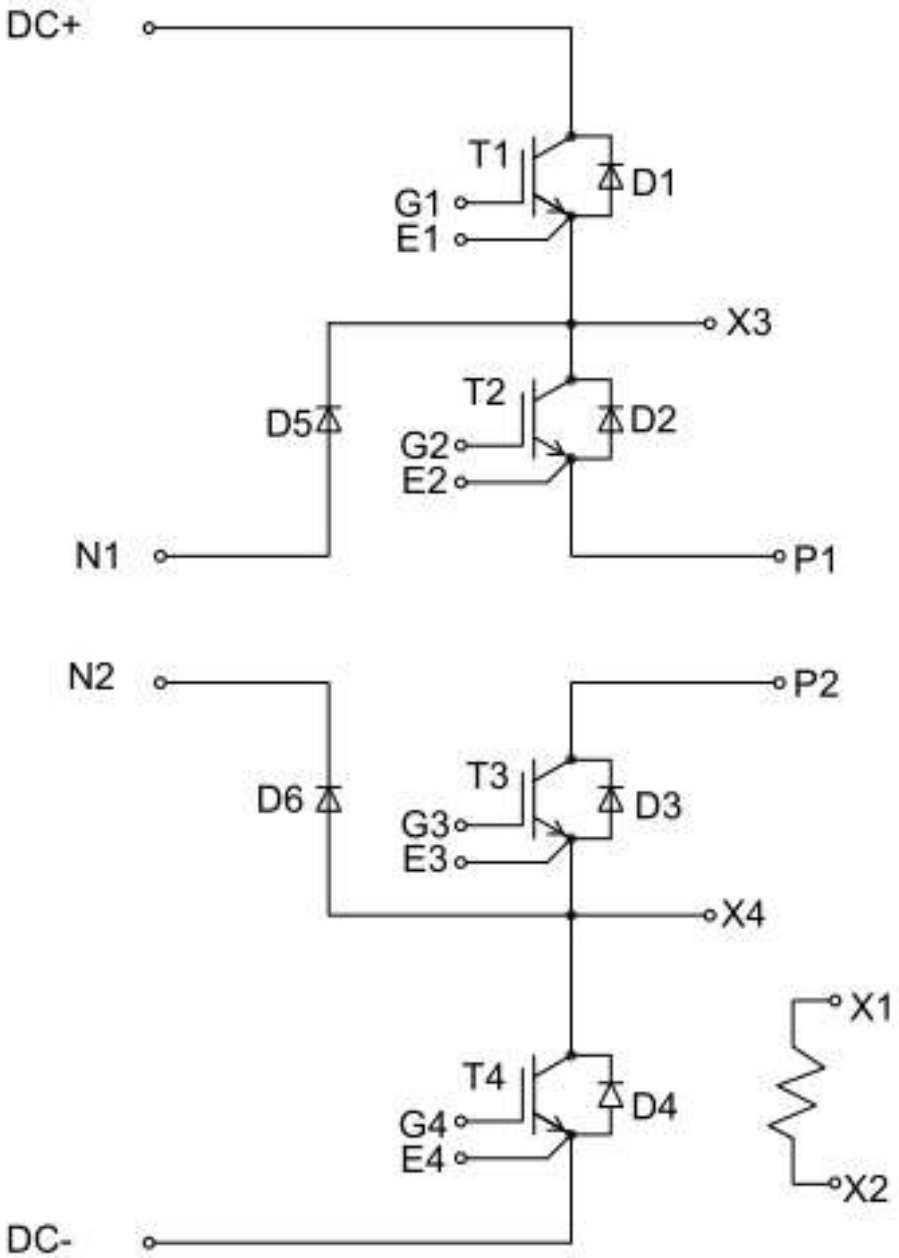
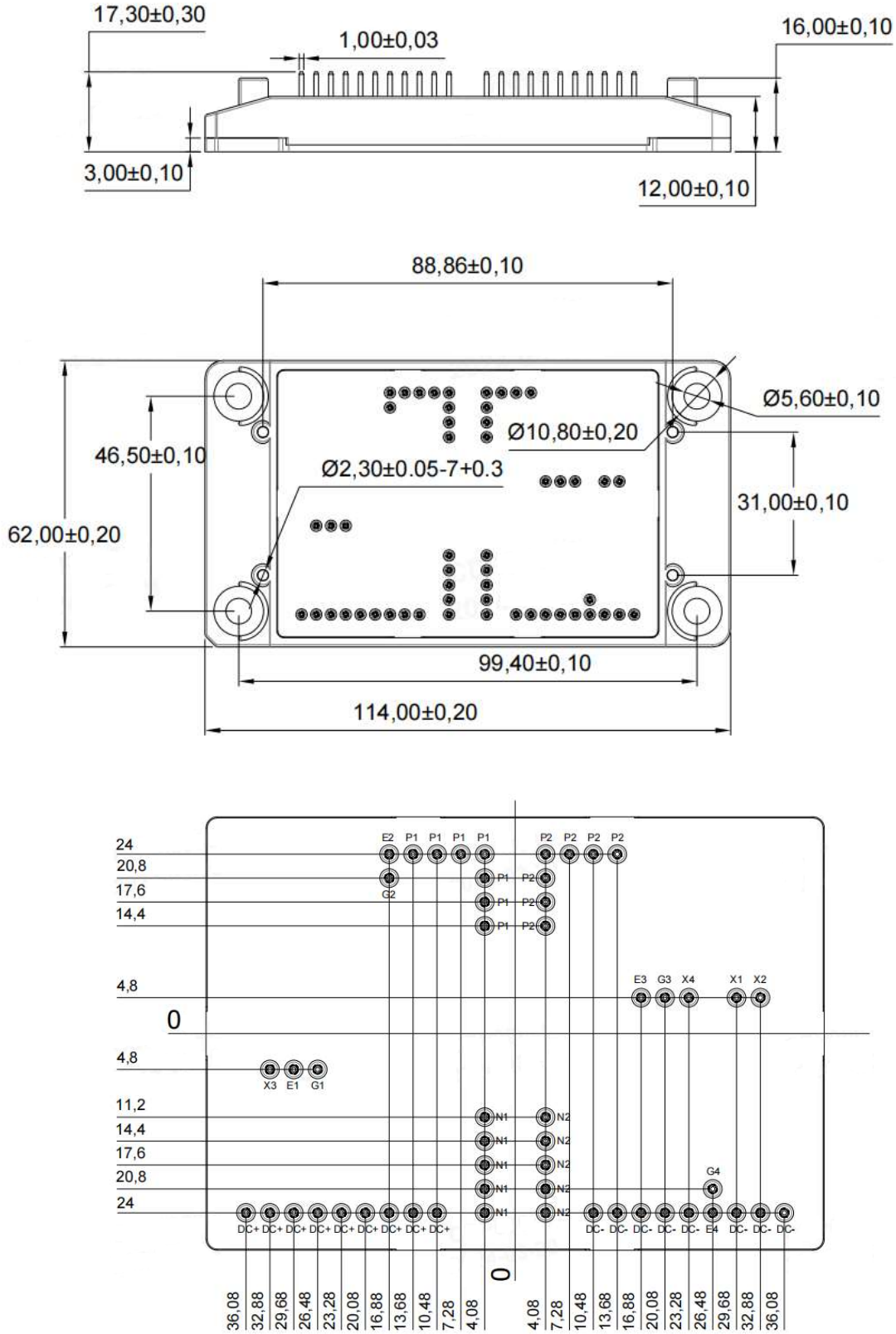



图 29. 负温度系数热敏电阻 温度特性
Figure 29. NTC-Thermistor-temperature characteristic

**接线图/Circuit Diagram**



**封装尺寸 / Package outlines**




**vision history**

Dimensions in (mm)