



N-channel 30V, 80A, TO-252 Power MOSFET 功率場效應管

■ **Features 特點**

Low on-resistance and maximum DC current capability 低導通電阻和最大直流電流能力

10V Logic Level Control 邏輯電平控制

$R_{DS(ON)}$ Type4.7mΩ@VGS=10V

$R_{DS(ON)}$ Type6mΩ@VGS=5V

■ **Applications 應用**

Power Management in Note book 筆記本電源管理

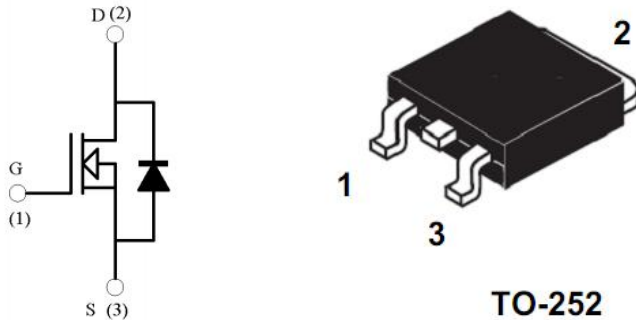
Portable Equipment 便攜式設備

Primary Side Switch 初邊開關

H-bridge Inverter 半橋變換

Car Charger 汽車充電

■ **Internal Schematic Diagram 內部結構**



■ **Absolute Maximum Ratings 最大額定值**

| Characteristic 特性參數 | Symbol 符號 | Rat 額定值 | Unit 單位 |
|--|------------------------------------|---------|---------------|
| Drain-Source Voltage 漏極-源極電壓 | BV_{DSS} | 30 | V |
| Gate- Source Voltage 柵極-源極電壓 | V_{GS} | ±20 | V |
| Drain Current (continuous)漏極電流-連續 | I_D (at $TC = 25^{\circ}C$) | 80 | A |
| Drain Current (pulsed)漏極電流-脈沖 | I_{DM} | 160 | A |
| Total Device Dissipation 總耗散功率 | P_{TOT} (at $TC = 25^{\circ}C$) | 63 | W |
| Avalanche energy, single pulsed 雪崩能量 | EAS | 209 | mJ |
| Thermal Resistance Junction to Case 熱阻 | $R_{\theta JC}$ | 2.3 | $^{\circ}C/W$ |
| Junction/Storage Temperature 結溫/儲存溫度 | T_J, T_{stg} | -50~175 | $^{\circ}C$ |



■ Electrical Characteristics 電特性

($T_A=25^{\circ}\text{C}$ unless otherwise noted 如無特殊說明，溫度為 25°C)

| Characteristic 特性參數 | Symbol 符號 | Min 最小值 | Typ 典型值 | Max 最大值 | Unit 單位 |
|--|--------------|------------|------------|------------|------------------|
| Drain-Source Breakdown Voltage 漏極-源極擊穿電壓($I_D=250\mu\text{A}, V_{GS}=0\text{V}$) | BV_{DSS} | 30 | — | — | V |
| Gate Threshold Voltage 柵極開啓電壓($I_D=250\mu\text{A}, V_{GS}=V_{DS}$) | $V_{GS(th)}$ | 1 | 1.6 | 2.5 | V |
| Zero Gate Voltage Drain Current 零柵壓漏極電流($V_{GS}=0\text{V}, V_{DS}=30\text{V}$) | I_{DSS} | — | — | 1 | μA |
| Gate Body Leakage 柵極漏電流($V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$) | I_{GSS} | — | — | ± 100 | nA |
| Static Drain-Source On-State Resistance 静态漏源導通電阻($I_D=40\text{A}, V_{GS}=10\text{V}$) ($I_D=30\text{A}, V_{GS}=5\text{V}$) | $R_{DS(ON)}$ | — | 4.7 6 | 6 8 | $\text{m}\Omega$ |
| Diode Forward Voltage Drop 內附二極管正向壓降($I_{SD}=20\text{A}, V_{GS}=0\text{V}$) | V_{SD} | — | — | 1.2 | V |
| Input Capacitance 輸入電容 ($V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$) | C_{ISS} | — | 1335 | — | pF |
| Common Source Output Capacitance 共源輸出電容($V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$) | C_{OSS} | — | 210 | — | pF |
| Reverse Transfer Capacitance 反向傳輸電容 ($V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$) | C_{RSS} | — | 140 | — | pF |
| Total Gate Charge 總柵極電荷密度 ($V_{DS}=15\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_g | — | 5 | — | nC |
| Gate Source Charge 柵源電荷密度 ($V_{DS}=15\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_{gs} | — | 3.3 | — | nC |
| Gate Drain Charge 柵漏電荷密度 ($V_{DS}=15\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_{gd} | — | 4.8 | — | nC |
| Turn-On Delay Time 開啓延遲時間 ($V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$) | $t_{d(on)}$ | — | 11 | — | ns |
| Turn-On Rise Time 開啓上升時間 ($V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$) | t_r | — | 30 | — | ns |
| Turn-Off Delay Time 關斷延遲時間 ($V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$) | $t_{d(off)}$ | — | 24 | — | ns |
| Turn-On Fall Time 開啓下降時間 ($V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$) | t_f | — | 6 | — | ns |

■ TYPICAL CHARACTERISTIC CURVE

典型特性曲線

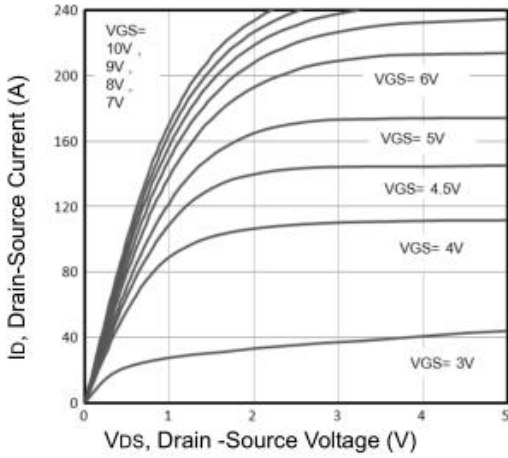


Figure 1: Output Characteristics

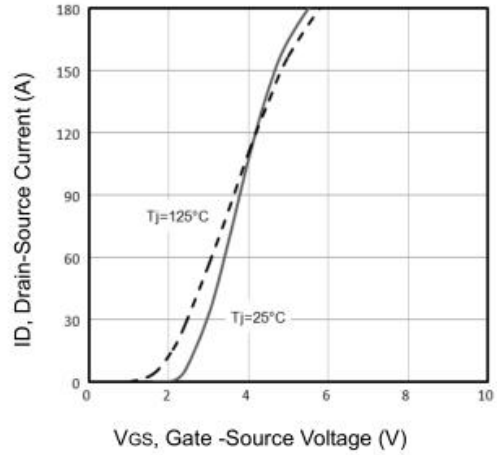


Figure 2: Transfer Characteristics

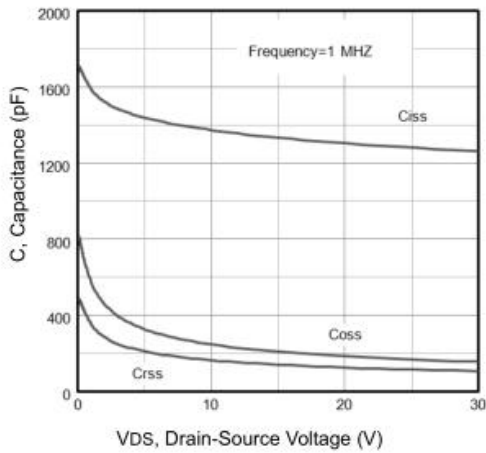


Figure 3: Capacitance

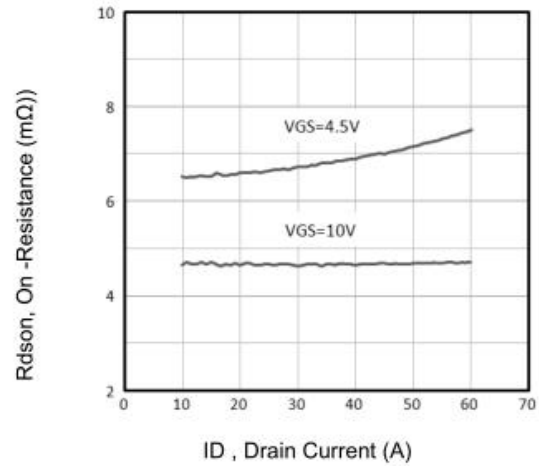


Figure 4: R_{dson} - Drain Current

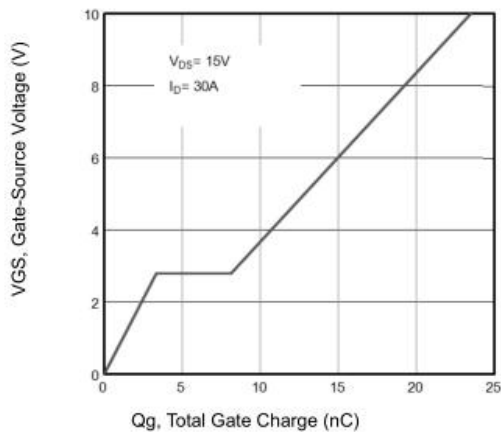


Figure 5: Gate-Charge Characteristics

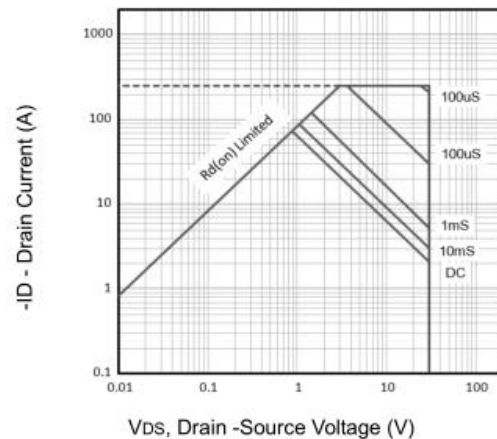
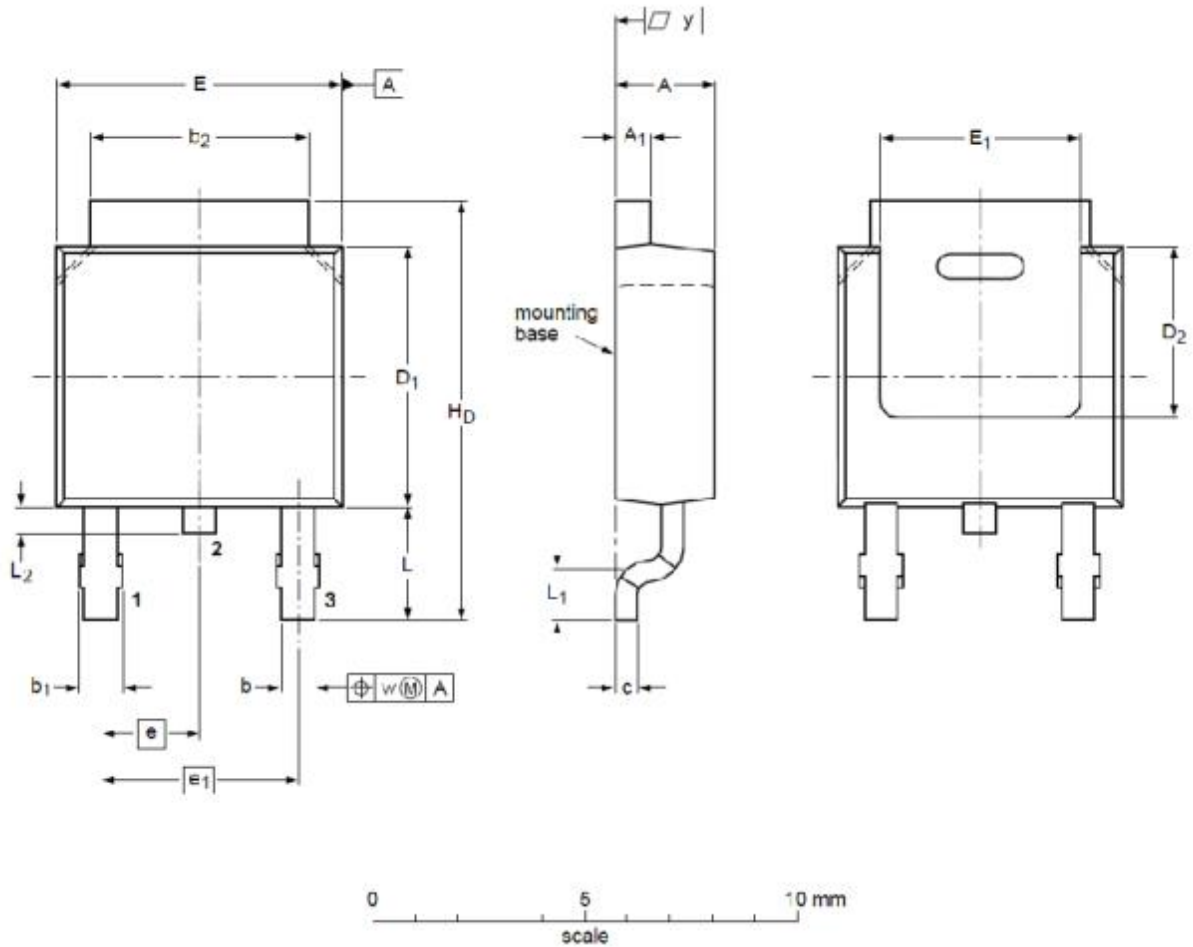


Figure 6: Safe Operating Area



■DIMENSION 外形封裝尺寸



DIMENSIONS (unit : mm)

| Symbol | Min | Typ | Max | Symbol | Min | Typ | Max |
|----------------|------|-------|-------|----------------|------|------|------|
| A | 2.22 | 2.30 | 2.38 | A ₁ | 0.4 | 0.53 | 0.65 |
| b | 0.68 | 0.78 | 0.89 | b ₁ | 0.90 | 0.98 | 1.10 |
| b ₂ | 5.20 | 5.33 | 5.55 | c | 0.45 | 0.5 | 0.55 |
| D ₁ | 5.98 | 6.10 | 6.22 | D ₂ | -- | 4.00 | -- |
| E | 6.47 | 6.60 | 6.73 | E ₁ | 5.10 | 5.28 | 5.45 |
| e | -- | 2.28 | -- | e ₁ | -- | 4.57 | -- |
| H _D | 9.60 | 10.08 | 10.40 | L | 2.75 | 2.95 | 3.05 |
| L ₁ | -- | 0.50 | -- | L ₂ | 0.50 | -- | 1.10 |
| w | -- | 0.20 | -- | y | 0.20 | -- | -- |