



**N-channel 60V, 60A, TO-220 Power MOSFET 功率場效應管**

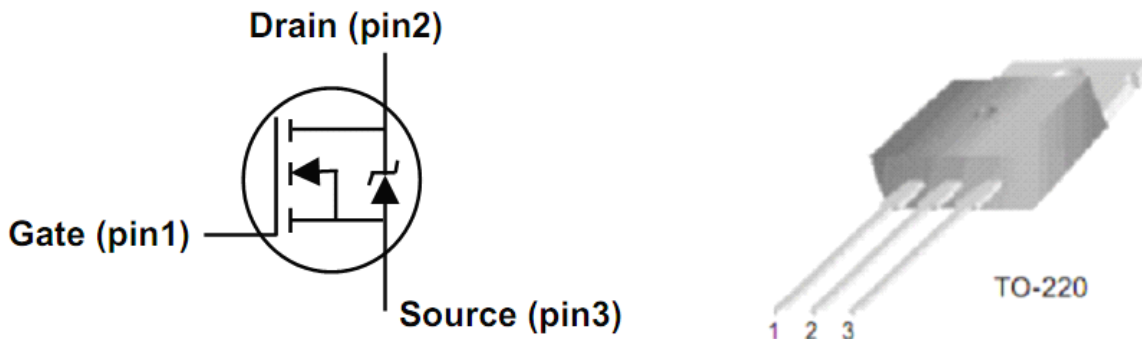
■ **Features 特點**

- Ultra low on-resistance 超低導通電阻
- Low gate charge 低柵電荷密度
- Fast switching 快速開關能力
- High operating temperature 高工作溫度範圍

■ **Applications 應用**

- Switch mode power supplies 開關電源
- DC-DC converters and UPS 直流直流變換和不間斷電源
- PWM motor controls 脈寬調製電機控制
- General switching applications 普通開關應用

■ **Internal Schematic Diagram 內部結構**



■ **Absolute Maximum Ratings 最大額定值**

| Characteristic 特性參數                    | Symbol 符號  | Max 最大值  | Unit 單位      |
|--|--|----------|--------------|
| Drain-Source Voltage 漏極-源極電壓           | $BV_{DSS}$   | 60       | V            |
| Gate- Source Voltage 柵極-源極電壓           | $V_{GS}$   | $\pm 20$ | V            |
| Drain Current (continuous) 漏極電流-連續     | $I_D$ (at $T_C = 25^\circ C$<br>at $T_C = 100^\circ C$ ) | 60<br>39 | A            |
| Drain Current (pulsed) 漏極電流-脈沖         | $I_{DM}$   | 120      | A            |
| Total Device Dissipation 總耗散功率         | $P_{TOT}$ (at $T_C = 25^\circ C$ )                       | 120      | W            |
| Thermal Resistance Junction-Case 熱阻    | $R_{\theta JC}$  | 1.25     | $^\circ C/W$ |
| Thermal Resistance Junction-Ambient 熱阻 | $R_{\theta JA}$  | 62.5     | $^\circ C/W$ |
| Junction/Storage Temperature 結溫/儲存溫度   | $T_J, T_{stg}$   | -55~150  | $^\circ C$   |



■ **Electrical Characteristics** 電特性

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

| Characteristic<br>特性參數  | Symbol<br>符號 | Min<br>最小值 | Typ<br>典型值 | Max<br>最大值 | Unit<br>單位       |
|---|--------------|------------|------------|------------|------------------|
| Drain-Source Breakdown Voltage<br>漏極-源極擊穿電壓( $I_D=250\mu\text{A}, V_{GS}=0\text{V}$ )               | $BV_{DSS}$   | 60         | —          | —          | V                |
| Gate Threshold Voltage<br>柵極開啓電壓( $I_D=250\mu\text{A}, V_{GS}=V_{DS}$ )                             | $V_{GS(th)}$ | 2          | 3          | 4          | V                |
| Zero Gate Voltage Drain Current<br>零柵壓漏極電流( $V_{GS}=0\text{V}, V_{DS}=60\text{V}$ )                 | $I_{DSS}$    | —          | —          | 1          | $\mu\text{A}$    |
| Gate Body Leakage<br>柵極漏電流( $V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$ )                             | $I_{GSS}$    | —          | —          | $\pm 100$  | nA               |
| Static Drain-Source On-State Resistance<br>靜態漏源導通電阻( $I_D=30\text{A}, V_{GS}=10\text{V}$ )          | $R_{DS(ON)}$ | —          | 16         | 18         | $\text{m}\Omega$ |
| Source Drain Current<br>源極-漏極電流   | $I_{SD}$     | —          | —          | 60         | A                |
| Source Drain Current (pulsed)<br>源極-漏極電流(脈沖)  | $I_{SDM}$    | —          | —          | 120        | A                |
| Diode Forward Voltage Drop<br>內附二極管正向壓降( $I_{SD}=60\text{A}, V_{GS}=0\text{V}$ )                    | $V_{SD}$     | —          | —          | 1.5        | V                |
| Input Capacitance 輸入電容<br>( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )                  | $C_{ISS}$    | —          | —          | 2000       | pF               |
| Common Source Output Capacitance<br>共源輸出電容( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )  | $C_{OSS}$    | —          | —          | 400        | pF               |
| Gate Source Charge 柵源電荷密度<br>( $V_{DS}=30\text{V}, I_D=60\text{A}, V_{GS}=10\text{V}$ )             | $Q_{gs}$     | —          | 12         | —          | nC               |
| Gate Drain Charge 柵漏電荷密度<br>( $V_{DS}=30\text{V}, I_D=60\text{A}, V_{GS}=10\text{V}$ )              | $Q_{gd}$     | —          | 10         | —          | nC               |
| Turn-ON Time 開啓時間<br>( $V_{DS}=30\text{V}, I_D=60\text{A}, R_{GEN}=0.5\Omega, V_{GS}=10\text{V}$ )  | $t_{(on)}$   | —          | —          | 30         | ns               |
| Turn-OFF Time 關斷時間<br>( $V_{DS}=30\text{V}, I_D=60\text{A}, R_{GEN}=0.5\Omega, V_{GS}=10\text{V}$ ) | $t_{(off)}$  | —          | —          | 50         | ns               |
| Reverse Recovery Time 反向恢復時間<br>( $I_{SD}=60\text{A}, V_{DD}=25\text{V}$ )                          | $t_{rr}$     | —          | 132        | —          | ns               |