



N-channel 60V, 7.5mΩ, 80A, TO-263 Trench Power MOSFET 溝槽式功率場效應管

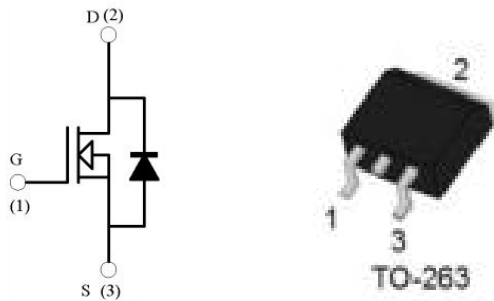
■ **Features 特點**

Advanced trench technology 優秀溝槽技術
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

■ **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 | Rat 額定值 | 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} | ± 20 | V |
| Drain Current (continuous) 漏極電流-連續 | I_D (at $TC = 25^\circ C$ at $TC = 100^\circ C$) | 80 55 | A |
| Drain Current (pulsed) 漏極電流-脈沖 | I_{DM} | 300 | A |
| Total Device Dissipation 總耗散功率 | P_{TOT} (at $TC = 25^\circ C$) | 108 | W |
| Single Pulse Avalanche Energy 雪崩能量 | E_{AS} | 380* | mJ |
| Thermal Resistance Junction-Case 熱阻 | $R_{\theta JC}$ | 1.3 | $^\circ C/W$ |
| Junction/Storage Temperature 結溫/儲存溫度 | T_J, T_{stg} | -55~175 | $^\circ C$ |

* E_{AS} condition: $L=0.5mH$, $R_g=25\Omega$, $V_D=30V$, $V_{GS}=10V$, I_D rating 20A



■ Electrical Characteristics 電特性

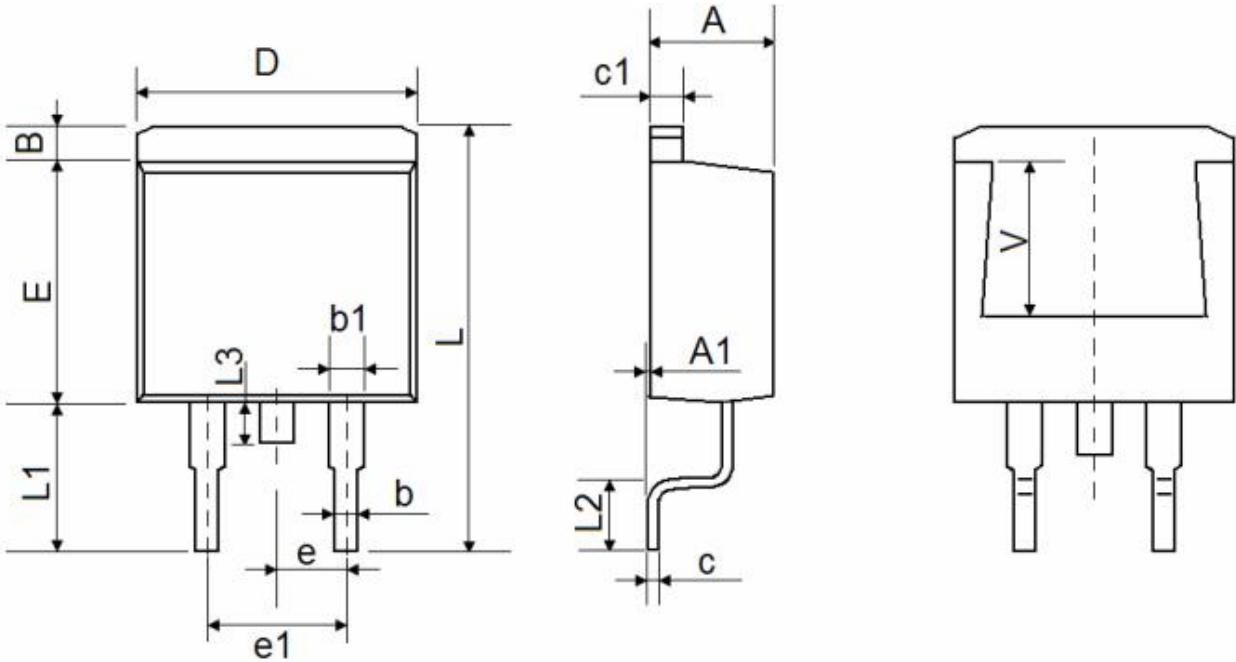
($T_A=25^{\circ}\text{C}$ unless otherwise noted 如無特殊說明，溫度為 25°C)

| 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} | 60 | — | — | V |
| Gate Threshold Voltage 柵極開后電壓($I_D=250\mu\text{A}, V_{GS}=V_{DS}$) | $V_{GS(th)}$ | 1 | 1.7 | 2.5 | V |
| Zero Gate Voltage Drain Current 零柵壓漏極電流($V_{GS}=0\text{V}, V_{DS}=60\text{V}$) | 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($I_D=30\text{A}, V_{GS}=10\text{V}$) ($I_D=20\text{A}, V_{GS}=4.5\text{V}$) | $R_{DS(ON)}$ | — | 7.5 10 | 10 14 | $\text{m}\Omega$ |
| 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 |
| Forward Transfer Admittance 正向傳輸導納($V_{DS}=5\text{V}, I_D=20\text{A}$) | G_{FS} | 20 | — | — | S |
| Input Capacitance 輸入電容 ($V_{GS}=0\text{V}, V_{DS}=30\text{V}, f=1\text{MHz}$) | C_{ISS} | — | 3800 | — | pF |
| Common Source Output Capacitance 共源輸出電容($V_{GS}=0\text{V}, V_{DS}=30\text{V}, f=1\text{MHz}$) | C_{OSS} | — | 280 | — | pF |
| Reverse Transfer Capacitance 回饋電容($V_{GS}=0\text{V}, V_{DS}=30\text{V}, f=1\text{MHz}$) | C_{RSS} | — | 200 | — | pF |
| Total Gate Charge 柵極電荷密度 ($V_{DS}=30\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_g | — | 90 | — | nC |
| Gate Source Charge 柵源電荷密度 ($V_{DS}=30\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_{gs} | — | 9 | — | nC |
| Gate Drain Charge 柵漏電荷密度 ($V_{DS}=30\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$) | Q_{gd} | — | 18 | — | nC |
| Turn-On Delay Time 開后延遲時間 ($V_{DS}=30\text{V}, I_D=3.5\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$) | $t_{d(on)}$ | — | 9 | — | ns |
| Turn-On Rise Time 開后上升時間 ($V_{DS}=30\text{V}, I_D=3.5\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$) | t_r | — | 8 | — | ns |
| Turn-Off Delay Time 關断延遲時間 ($V_{DS}=30\text{V}, I_D=3.5\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$) | $t_{d(off)}$ | — | 42 | — | ns |
| Turn-On Fall Time 開后下降時間 ($V_{DS}=30\text{V}, I_D=3.5\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$) | t_f | — | 16 | — | ns |



■ Dimension 外形封裝尺寸

T0-263



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 0.000 | 0.150 | 0.000 | 0.006 |
| B | 1.170 | 1.370 | 0.046 | 0.054 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| e | 2.540 TYP. | | 0.100 TYP. | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| L | 15.050 | 15.450 | 0.593 | 0.608 |
| L1 | 5.080 | 5.480 | 0.200 | 0.216 |
| L2 | 2.340 | 2.740 | 0.092 | 0.108 |
| L3 | 1.300 | 1.700 | 0.051 | 0.067 |
| V | 5.600 REF | | 0.220 REF | |