



**N-channel 30V, 50A, 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

Super high density cell design 超高元胞密度設計

$R_{DS(ON)} < 9m\Omega @ V_{GS}=10V$

$R_{DS(ON)} < 17m\Omega @ V_{GS}=5V$

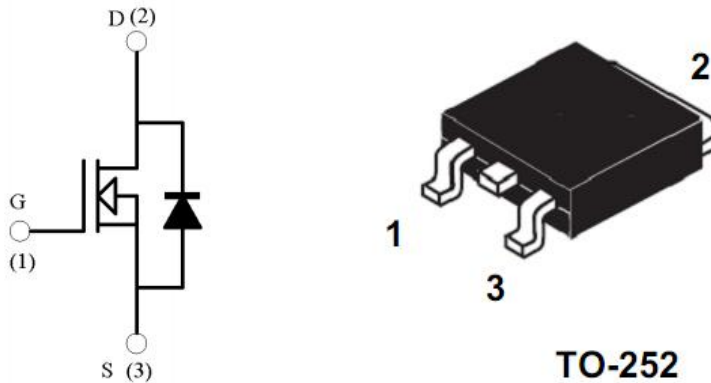
■ **Applications 應用**

Power Management 電源管理

PWM Applications 脉宽调制

Load Switch 負載開關應用

■ **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	$BV_{DSS}$	30	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 $TC = 25^\circ C$ )	50	A
Drain Current (pulsed) 漏極電流-脉冲	$I_{DM}$	200	A
Single Pulse Avalanche Energy 雪崩能量	$E_{AS}$	90*	mJ
Total Device Dissipation 總耗散功率	$P_{TOT}$ (at $TC = 25^\circ C$ )	50	W
Thermal Resistance Junction-Case 熱阻	$R_{\theta JC}$	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  $25^{\circ}\text{C}$ )

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	1.5	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	$\mu\text{A}$
Gate Body Leakage 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 静态漏源導通電阻( $I_D=20\text{A}, V_{GS}=10\text{V}$ ) ( $I_D=15\text{A}, V_{GS}=5\text{V}$ )	$R_{DS(ON)}$	—	7.2 11	9 17	$\text{m}\Omega$
Source Drain Current 源極-漏極電流	$I_{SD}$	—	—	50	A
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 ( $V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$ )	$C_{ISS}$	—	1050	—	pF
Common Source Output Capacitance 共源輸出電容( $V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$ )	$C_{OSS}$	—	145	—	pF
Reverse Transfer Capacitance 回饋電容( $V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$ )	$C_{RSS}$	—	120	—	pF
Total Gate Charge 柵極電荷密度 ( $V_{DS}=25\text{V}, I_D=12\text{A}, V_{GS}=10\text{V}$ )	$Q_g$	—	22	—	nC
Gate Source Charge 柵源電荷密度 ( $V_{DS}=25\text{V}, I_D=12\text{A}, V_{GS}=10\text{V}$ )	$Q_{gs}$	—	4	—	nC
Gate Drain Charge 柵漏電荷密度 ( $V_{DS}=25\text{V}, I_D=12\text{A}, V_{GS}=10\text{V}$ )	$Q_{gd}$	—	7	—	nC
Turn-On Delay Time 開啓延遲時間 ( $V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$ )	$t_{d(on)}$	—	7	—	ns
Turn-On Rise Time 開啓上升時間 ( $V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$ )	$t_r$	—	22	—	ns
Turn-Off Delay Time 關斷延遲時間 ( $V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$ )	$t_{d(off)}$	—	30	—	ns
Turn-On Fall Time 開啓下降時間 ( $V_{DS}=15\text{V}, I_D=15\text{A}, R_{GEN}=3.3\Omega, V_{GS}=10\text{V}$ )	$t_f$	—	5	—	ns

■ TYPICAL CHARACTERISTIC CURVE

典型特性曲线

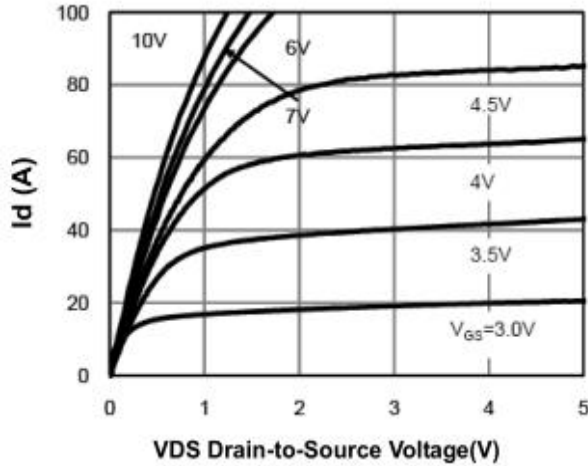


Fig 1: Output Characteristics

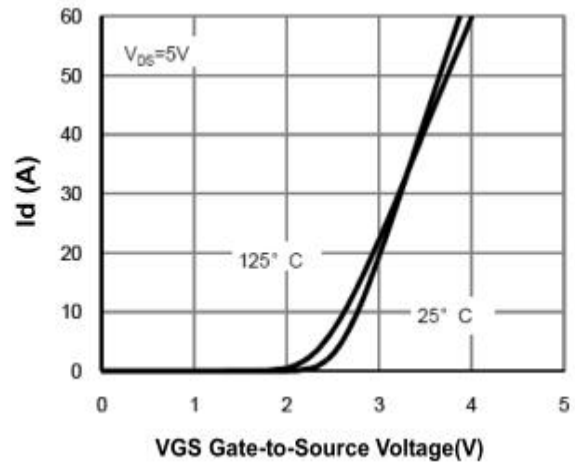


Figure 2: Transfer Characteristics

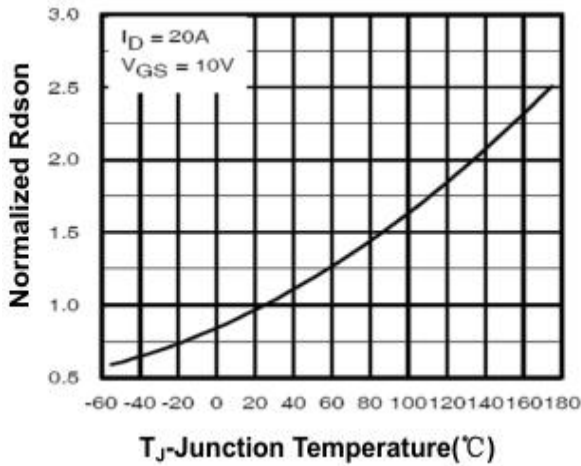


Figure 3: On-Resistance vs.  $T_j$

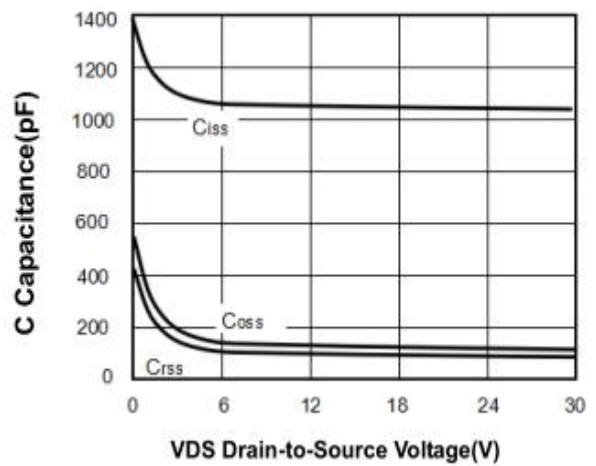


Figure 4: Capacitance

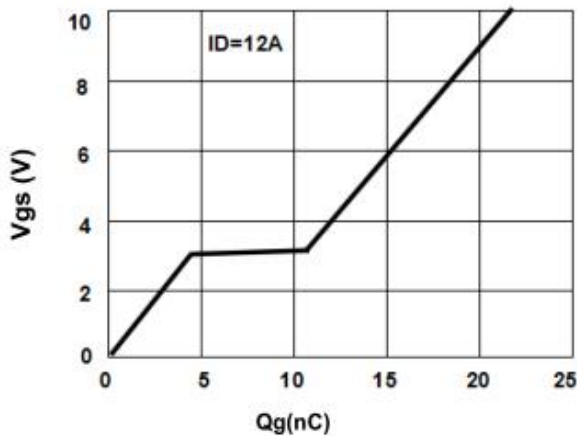


Figure 5: Gate-Charge Characteristics

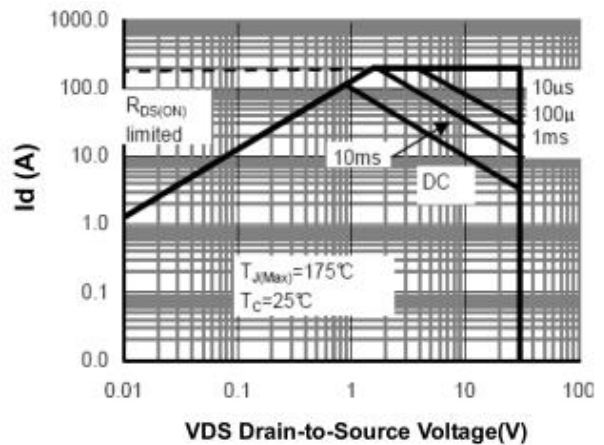


Figure 6: Safe Operating Area



■DIMENSION 外形封裝尺寸

Unit 單位:mm 毫米

