



N-channel 40V, 60A, TO-252 Power MOSFET 功率場效應管

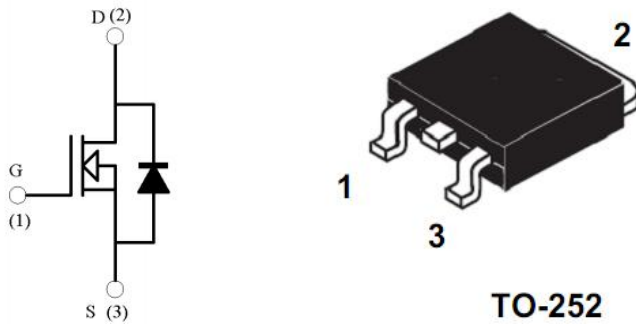
■ **Features 特點**

- Low on-resistance 低導通電阻
- Maximum DC current capability 最大直流電流能力
- Low Gate Charge 低電荷密度
- $R_{DS(ON)Type} 9m\Omega @ V_{GS}=10V$
- $R_{DS(ON)Type} 12m\Omega @ V_{GS}=4.5V$

■ **Applications 應用**

- Load Switch Application 負載開關應用
- PWM Application 脈寬調製應用
- Uninterruptible Power Supply 不間斷電源

■ **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}	40	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 $TC = 25^\circ C$)	60	A
Drain Current (pulsed) 漏極電流-脈衝	I_{DM}	200	A
Total Device Dissipation 總耗散功率	P_{TOT} (at $TC = 25^\circ C$)	50	W
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}	-55~175	$^\circ C$



■ 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}	40	—	—	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	V
Zero Gate Voltage Drain Current 零柵壓漏極電流($V_{GS}=0\text{V}, V_{DS}=40\text{V}$)	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($I_D=30\text{A}, V_{GS}=10\text{V}$) ($I_D=20\text{A}, V_{GS}=4.5\text{V}$)	$R_{DS(ON)}$	—	9 12	13 17	$\text{m}\Omega$
Diode Forward Voltage Drop 內附二極管正向壓降($I_{SD}=30\text{A}, V_{GS}=0\text{V}$)	V_{SD}	—	—	1.2	V
Input Capacitance 輸入電容 ($V_{GS}=0\text{V}, V_{DS}=20\text{V}, f=1\text{MHz}$)	C_{ISS}	—	1800	—	pF
Common Source Output Capacitance 共源輸出電容($V_{GS}=0\text{V}, V_{DS}=20\text{V}, f=1\text{MHz}$)	C_{OSS}	—	280	—	pF
Reverse Transfer Capacitance 反向傳輸電容 ($V_{GS}=0\text{V}, V_{DS}=20\text{V}, f=1\text{MHz}$)	C_{RSS}	—	190	—	pF
Total Gate Charge 總柵極電荷密度 ($V_{DS}=20\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$)	Q_g	—	9	—	nC
Gate Source Charge 柵源電荷密度 ($V_{DS}=20\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$)	Q_{gs}	—	4.5	—	nC
Gate Drain Charge 柵漏電荷密度 ($V_{DS}=20\text{V}, I_D=30\text{A}, V_{GS}=10\text{V}$)	Q_{gd}	—	6.4	—	nC
Turn-On Delay Time 開啓延遲時間 ($V_{DS}=20\text{V}, I_D=30\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$)	$t_{d(on)}$	—	6.4	—	ns
Turn-On Rise Time 開啓上升時間 ($V_{DS}=20\text{V}, I_D=30\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$)	t_r	—	17	—	ns
Turn-Off Delay Time 關斷延遲時間 ($V_{DS}=20\text{V}, I_D=30\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$)	$t_{d(off)}$	—	30	—	ns
Turn-On Fall Time 開啓下降時間 ($V_{DS}=20\text{V}, I_D=30\text{A}, R_{GEN}=3\Omega, V_{GS}=10\text{V}$)	t_f	—	16	—	ns

■ TYPICAL CHARACTERISTIC CURVE

典型特性曲線

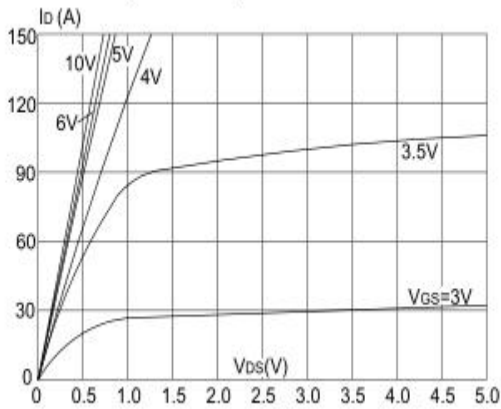


Figure 1: Output Characteristics

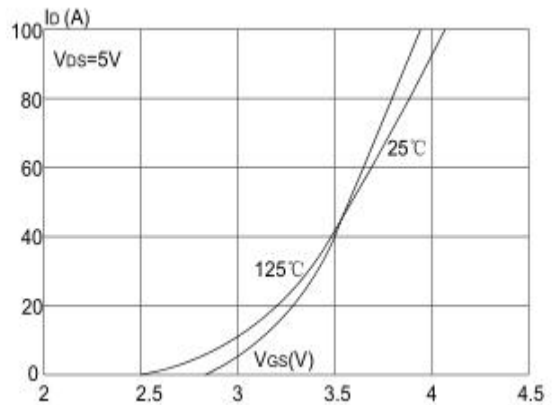


Figure 2: Transfer Characteristics

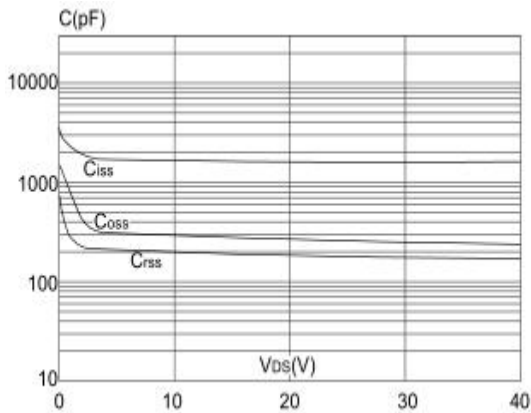


Figure 3: Capacitance

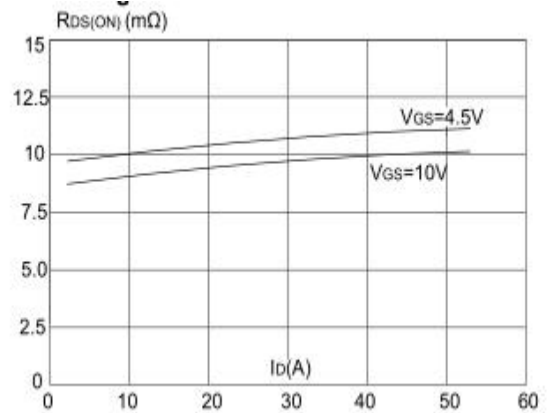


Figure 4: $R_{ds(on)}$ vs. Drain Current

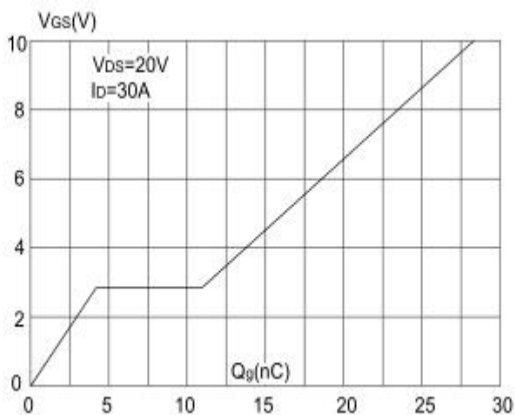


Figure 5: Gate-Charge Characteristics

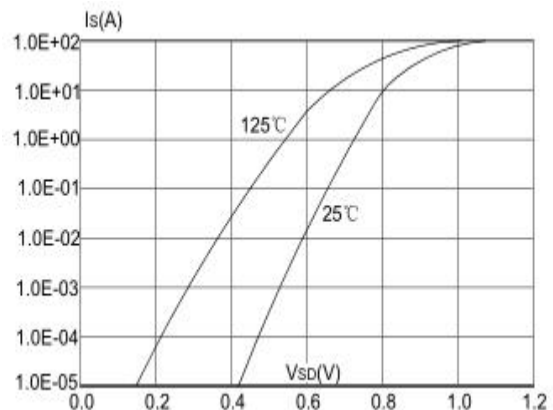


Figure 6: Body Diode Characteristics

■ TYPICAL CHARACTERISTIC CURVE

典型特性曲線

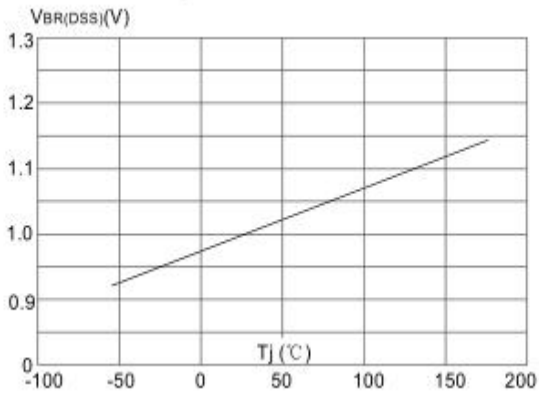


Figure 7: Breakdown Voltage vs. Temperature

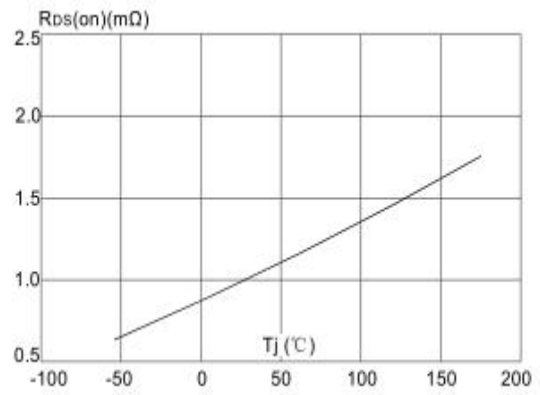


Figure 8: Resistance vs. Temperature

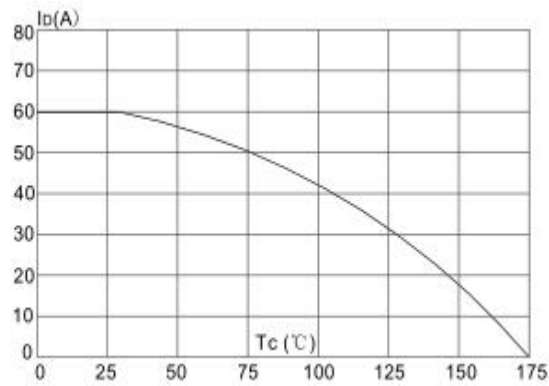


Figure 9: Continuous Drain Current vs. Temperature

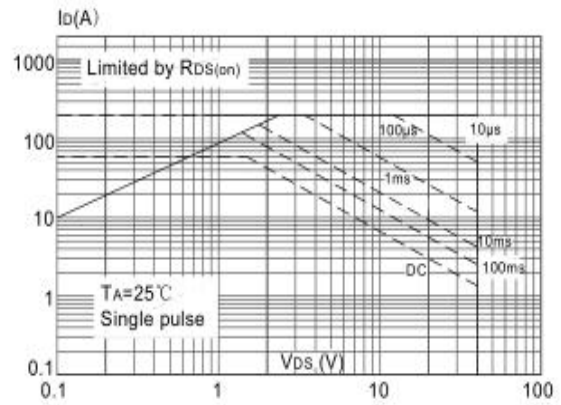


Figure 10: Safe Operating Area

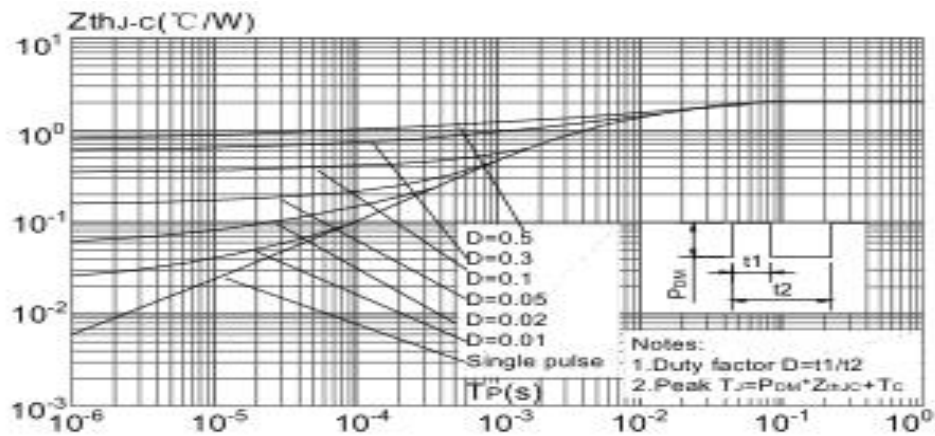


Figure 11: Effective Transient Thermal Impedance



■DIMENSION 外形封裝尺寸

UNIT:mm

