



**N-channel 650V, 4A, TO-252 Power MOSFET 功率場效應管**

**■Features 特點**

Fast switching 快速開關

Improved dv/dt Capability 優化電壓變率能力

100% Avalanche Tested 雪崩測試

**■Applications 應用**

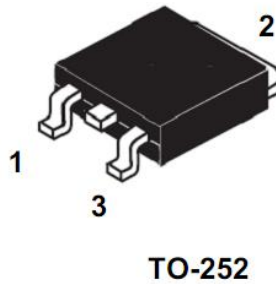
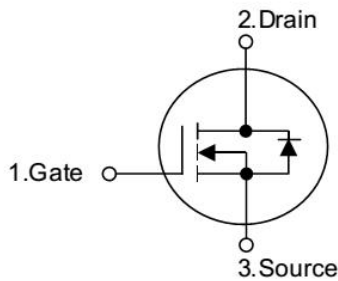
Switch mode power supplies 開關電源

DC-DC converters and UPS 直流直流变换和不间断電源

PWM motor controls 脉宽调制電機控制

General switching applications 普通開關应用

**■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	$BV_{DSS}$	650	V
Gate- Source Voltage 柵極-源極電壓	$V_{GS}$	$\pm 30$	V
Drain Current (continuous)漏極電流-連續	$I_D$ (at $T_C = 25^\circ C$ )	4	A
Drain Current (pulsed)漏極電流-脉冲	$I_{DM}$	16	A
Total Device Dissipation 總耗散功率	$P_{TOT}$ (at $T_C = 25^\circ C$ )	72	W
Avalanche Energy, Single Pulsed 單脉冲雪崩能量	$E_{AS}$	120	mJ
Thermal Resistance Junction-Case 熱阻	$R_{\theta JC}$	1.74	$^\circ C/W$
Junction/Storage Temperature 結溫/儲存溫度	$T_J, T_{stg}$	-55~150	$^\circ C$



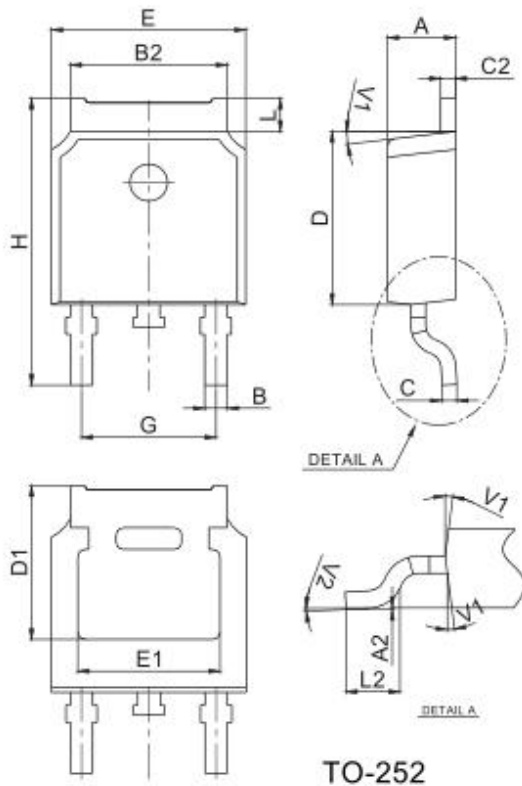
■ Electrical Characteristics 電特性

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

Characteristic 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( $I_D=250\mu\text{A}, V_{GS}=0\text{V}$ )	$BV_{DSS}$	650	—	—	V
Gate Threshold Voltage 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 零柵壓漏極電流( $V_{GS}=0\text{V}, V_{DS}=650\text{V}$ )	$I_{DSS}$	—	—	1	$\mu\text{A}$
Gate Body Leakage 柵極漏電流( $V_{GS}=\pm 30\text{V}, V_{DS}=0\text{V}$ )	$I_{GSS}$	—	—	$\pm 100$	nA
Static Drain-Source On-State Resistance 静态漏源導通電阻( $I_D=2\text{A}, V_{GS}=10\text{V}$ )	$R_{DS(ON)}$	—	2.2	2.6	$\Omega$
Source Drain Current 源極-漏極電流	$I_{SD}$	—	—	4	A
Diode Forward Voltage Drop 內附二極管正向壓降( $I_{SD}=4\text{A}, V_{GS}=0\text{V}$ )	$V_{SD}$	—	—	1.4	V
Input Capacitance 輸入電容 ( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )	$C_{ISS}$	—	512	—	pF
Common Source Output Capacitance 共源輸出電容( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )	$C_{OSS}$	—	61	—	pF
Reverse Transfer Capacitance 反向傳輸電容( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )	$C_{RSS}$	—	10	—	pF
Total Gate Charge 柵極電荷密度 ( $V_{DS}=520\text{V}, I_D=4\text{A}, V_{GS}=10\text{V}$ )	$Q_g$	—	13.5	—	nC
Gate Source Charge 柵源電荷密度 ( $V_{DS}=520\text{V}, I_D=4\text{A}, V_{GS}=10\text{V}$ )	$Q_{gs}$	—	2	—	nC
Gate Drain Charge 柵漏電荷密度 ( $V_{DS}=520\text{V}, I_D=4\text{A}, V_{GS}=10\text{V}$ )	$Q_{gd}$	—	6	—	nC
Turn-On Delay Time 開啓延遲時間 ( $V_{DS}=325\text{V}, I_D=4\text{A}, R_{GEN}=25\Omega, V_{GS}=10\text{V}$ )	$t_{d(on)}$	—	11	—	ns
Turn-On Rise Time 開啓上升時間 ( $V_{DS}=325\text{V}, I_D=4\text{A}, R_{GEN}=25\Omega, V_{GS}=10\text{V}$ )	$t_r$	—	24	—	ns
Turn-Off Delay Time 關斷延遲時間 ( $V_{DS}=325\text{V}, I_D=4\text{A}, R_{GEN}=25\Omega, V_{GS}=10\text{V}$ )	$t_{d(off)}$	—	45	—	ns
Turn-On Fall Time 開啓下降時間 ( $V_{DS}=325\text{V}, I_D=4\text{A}, R_{GEN}=25\Omega, V_{GS}=10\text{V}$ )	$t_f$	—	50	—	ns

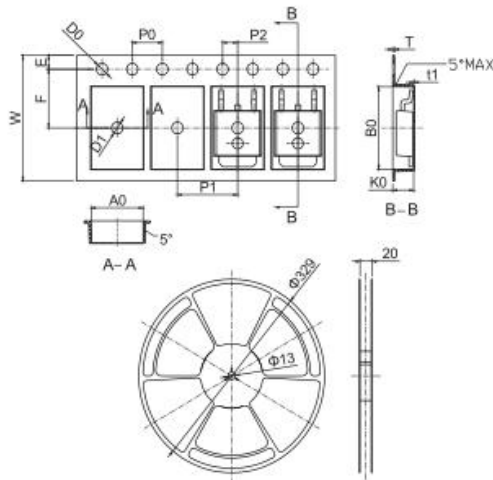


■DIMENSION 外形封裝尺寸



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2		0°	6°		0°	6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TAPING	2,500	25,000	13inch