桂林斯壯桂微電子有限責任公司
Guilin Strong Micro-Electronics Co.,Ltd.

GMN009N03

N-channel 30V, 50A, DFN5*6-8　Power MOSFET 功率場效應管

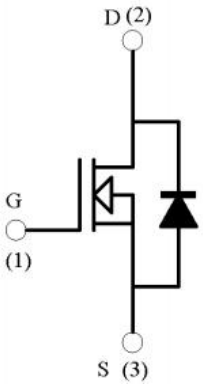
■Features 特點

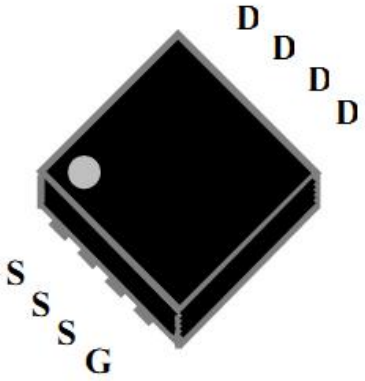
Low on-resistance and maximum DC current capability 低導通電阻和最大直流電流能力
Super high density cell design 超高元胞密度設計
$R_{DS(ON)}$<9mΩ@VGS=10V
$R_{DS(ON)}$<17mΩ@VGS=5V

■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}	±20	V
Drain Current (continuous)漏極電流-連續	I_D（at TC = 25°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°C)	50	W
Thermal Resistance Junction-Case 熱阻	$R_{\Theta JC}$	3	℃/W
Junction/Storage Temperature 結溫/儲存溫度	T_J,T_{stg}	-55~175	℃

* E_{AS} condition： L=0.5mH，Rg＝25Ω，V_D=30V，V_{GS}=10V，I_D rating　20A

■Electrical Characteristics 電特性

(T_A=25℃ unless otherwise noted 如無特殊說明，溫度爲 25℃)

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 =250uA,V_{GS}=0V)	BV_{DSS}	30	—	—	V
Gate Threshold Voltage 柵極開启電壓(I_D =250uA,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}=0V, V_{DS}= 30V)	I_{DSS}	—	—	1	uA
Gate Body Leakage 柵極漏電流(V_{GS}=±20V, V_{DS}=0V)	I_{GSS}	—	—	±100	nA
Static Drain-Source On-State Resistance 静态漏源導通電阻(I_D=20A,V_{GS}=10V) (I_D=15A,V_{GS}=5V)	$R_{DS(ON)}$	—	7.2 11	9 17	mΩ
Source Drain Current 源極-漏極電流	I_{SD}	—	—	50	A
Diode Forward Voltage Drop 内附二極管正向壓降(I_{SD}=20A,V_{GS}=0V)	V_{SD}	—	—	1.2	V
Input Capacitance 輸入電容 (V_{GS}=0V, V_{DS}=15V,f=1MHz)	C_{ISS}	—	1050	—	pF
Common Source Output Capacitance 共源輸出電容(V_{GS}=0V, V_{DS}=15V,f=1MHz)	C_{OSS}	—	145	—	pF
Reverse Transfer Capacitance 回饋電容(V_{GS}=0V, V_{DS}=15V,f=1MHz)	C_{RSS}	—	120	—	pF
Total Gate Charge 柵極電荷密度 (V_{DS}=25V, I_D=12A, V_{GS}=10V)	Q_g	—	22	—	nC
Gate Source Charge 柵源電荷密度 (V_{DS}=25V, I_D=12A, V_{GS}=10V)	Q_{gs}	—	4	—	nC
Gate Drain Charge 柵漏電荷密度 (V_{DS}=25V, I_D=12A, V_{GS}=10V)	Q_{gd}	—	7	—	nC
Turn-On Delay Time 開启延迟時間 (V_{DS}=15V, I_D=15A, R_{GEN}=3.3Ω,V_{GS}=10V)	$t_{d(on)}$	—	7	—	ns
Turn-On Rise Time 開启上升時間 (V_{DS}=15V, I_D=15A, R_{GEN}=3.3Ω,V_{GS}=10V)	t_r	—	22	—	ns
Turn-Off Delay Time 關断延迟時間 (V_{DS}=15V, I_D=15A, R_{GEN}=3.3Ω,V_{GS}=10V)	$t_{d(off)}$	—	30	—	ns
Turn-On Fall Time 開启下降時間 (V_{DS}=15V, I_D=15A, R_{GEN}=3.3Ω,V_{GS}=10V)	t_f	—	5	—	ns

■TYPICAL CHARACTERISTIC CURVE
典型特性曲线

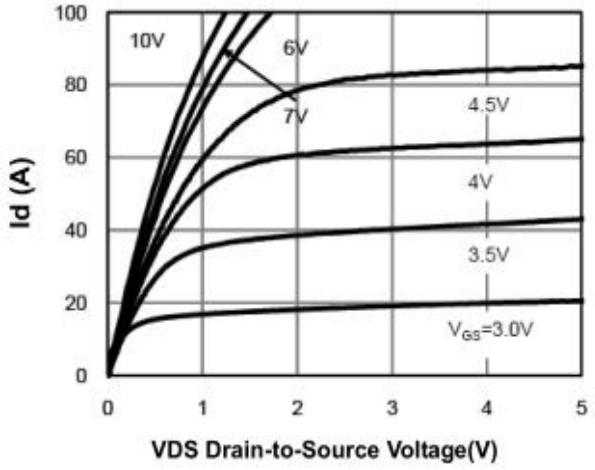


Fig 1: Output Characteristics

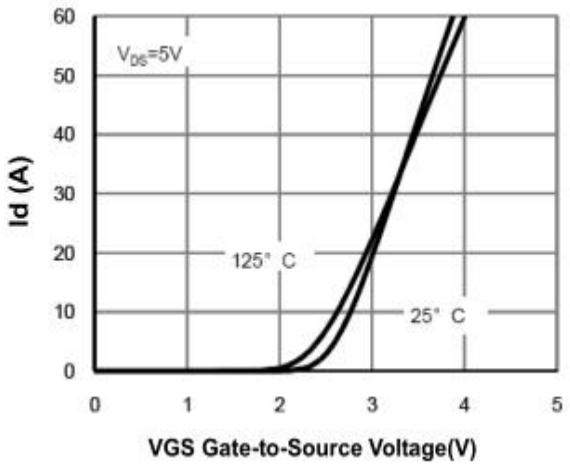


Figure 2: Transfer Characteristics

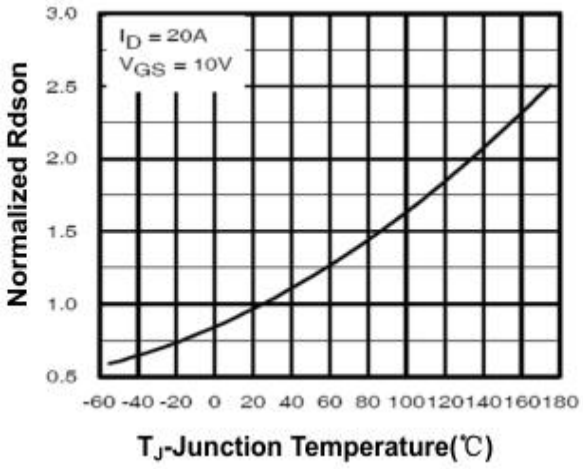


Figure 3: On-Resistance vs. T_J

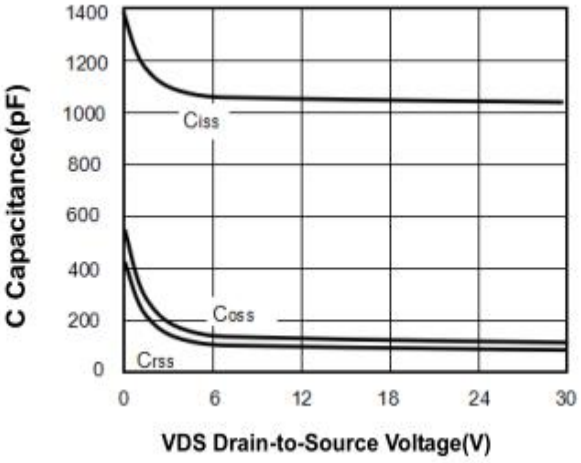


Figure 4: Capacitance

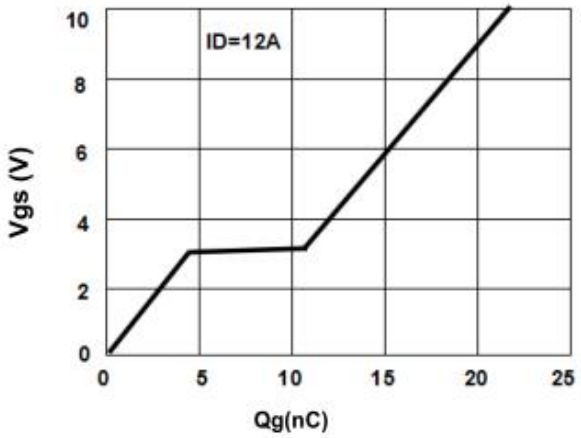


Figure 5: Gate-Charge Characteristics

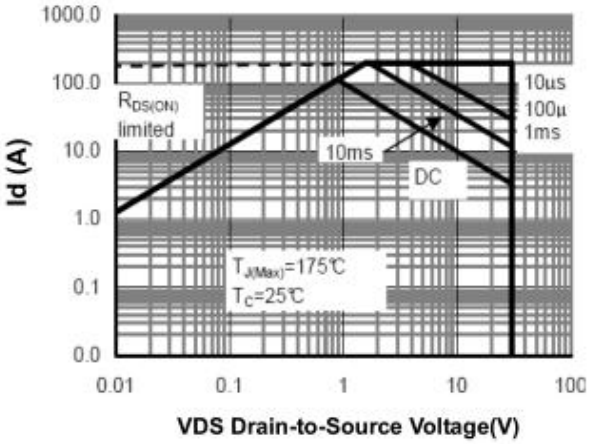
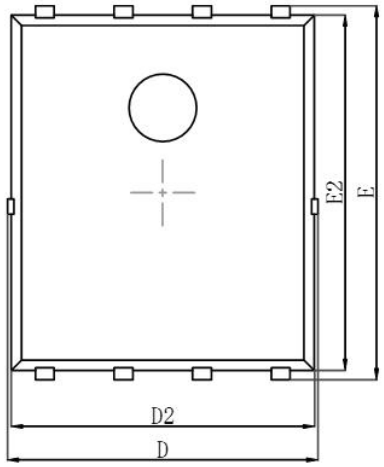
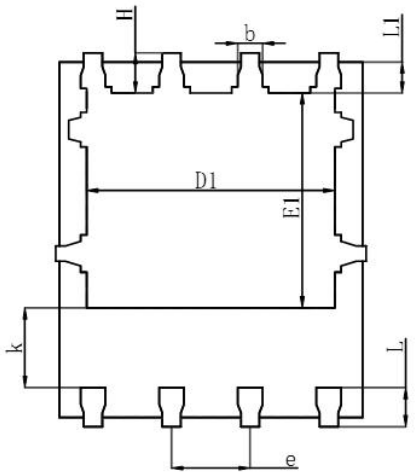
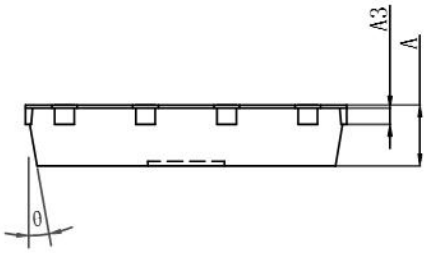


Figure 6: Safe Operating Area

■**DIMENSION** 外形封裝尺寸







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°