



安徽富信半导体科技有限公司

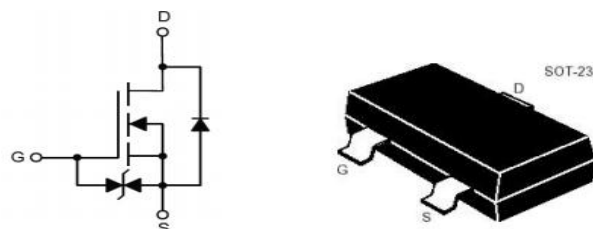
ANHUI FOSAN SEMICONDUCTOR TECHNOLOGY CO., LTD.

2N7002KCQ

SOT-23 60V N Channel ESD Protection 沟道带静电保护

MOS Field Effect Transistor 场效应管

Q 代表 AEC-Q101 车规



■ Absolute Maximum Ratings 最大额定值

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Drain-Source Voltage 漏极-源极电压	BV_{DSS}	60	V
Gate- Source Voltage 栅极-源极电压	V_{GS}	± 20	V
Drain Current (continuous)漏极电流-连续	I_D (at $T_A = 25^\circ\text{C}$)	300	mA
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	1.5	A
Total Device Dissipation 总耗散功率	P_D (at $T_A = 25^\circ\text{C}$)	300	mW
ESD Protected Up to 人体模式静电保护范围	ESD(HBM)	2.0	kV
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	416	$^\circ\text{C}/\text{W}$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ\text{C}$

■ Device Marking 产品字标

2N7002KCQ=72KC.



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■Electrical Characteristics 电特性

(T_A=25℃ unless otherwise noted 如无特殊说明, 温度为 25℃)

Characteristic 特性参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Drain-Source Breakdown Voltage 漏极-源极击穿电压(I _D =250uA, V _{GS} =0V)	BV _{DSS}	60	—	—	V
Gate Threshold Voltage 栅极开启电压(I _D =250uA, V _{GS} =V _{DS})	V _{GS(th)}	1	1.5	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V _{GS} =0V, V _{DS} =60V)	I _{DSS}	—	—	1	uA
Gate Body Leakage 栅极漏电流(V _{GS} =±20V, V _{DS} =0V)	I _{GSS}	—	—	±10	uA
Static Drain-Source On-State Resistance 静态漏源导通电阻(I _D =300mA, V _{GS} =10V) (I _D =200mA, V _{GS} =4.5V)	R _{DS(ON)}	—	1.9 2.0	2.5 3.0	Ω
Diode Forward Voltage Drop 内附二极管正向压降(I _{SD} =300mA, V _{GS} =0V)	V _{SD}	—	—	1.2	V
Input Capacitance 输入电容 (V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{ISS}	—	27	—	pF
Common Source Output Capacitance 共源输出电容(V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{OSS}	—	3	—	pF
Reverse Transfer Capacitance 反馈电容(V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{RSS}	—	2	—	pF
Total Gate Charge 栅极电荷密度 (V _{DS} =30V, I _D =300mA, V _{GS} =10V)	Q _g	—	1.65	—	nC
Gate Source Charge 栅源电荷密度 (V _{DS} =30V, I _D =300mA, V _{GS} =10V)	Q _{gs}	—	0.5	—	nC
Gate Drain Charge 栅漏电荷密度 (V _{DS} =30V, I _D =300mA, V _{GS} =10V)	Q _{gd}	—	0.3	—	nC
Turn-ON Delay Time 开启延迟时间 (V _{DS} =30V I _D =300mA, R _{GEN} =6 Ω, V _{GS} =10V)	t _{d(on)}	—	6.5	—	ns
Turn-ON Rise Time 开启上升时间 (V _{DS} =30V I _D =300mA, R _{GEN} =6 Ω, V _{GS} =10V)	t _r	—	16	—	ns
Turn-OFF Delay Time 关断延迟时间 (V _{DS} =30V I _D =300mA, R _{GEN} =6 Ω, V _{GS} =10V)	t _{d(off)}	—	9.6	—	ns
Turn-OFF Fall Time 关断下降时间 (V _{DS} =30V I _D =300mA, R _{GEN} =6 Ω, V _{GS} =10V)	t _f	—	80	—	ns



■ Typical Characteristic Curve 典型特性曲线

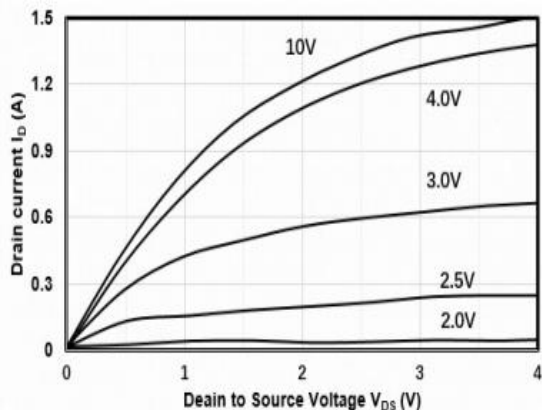


Figure 1: Output Characteristics

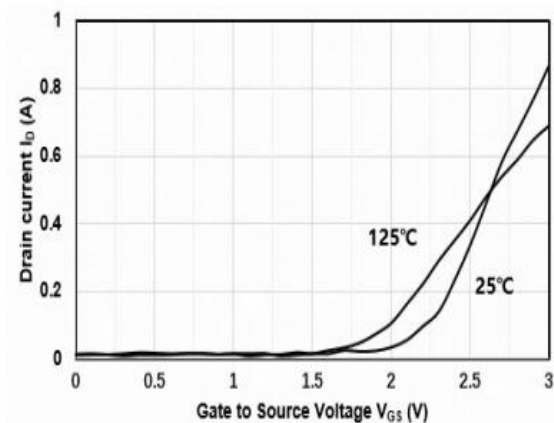


Figure 2: Transfer Characteristics

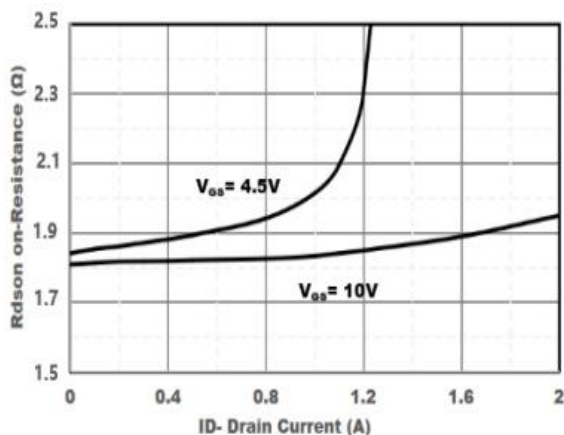


Figure 3: On-Resistance vs. Drain Current

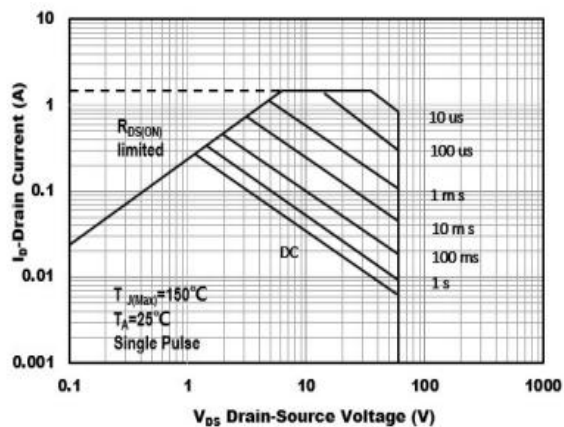


Figure 4: Safe Operating Area

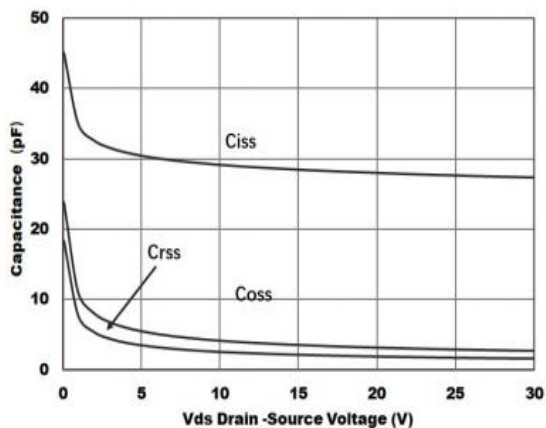


Figure 5: Capacitance Characteristics

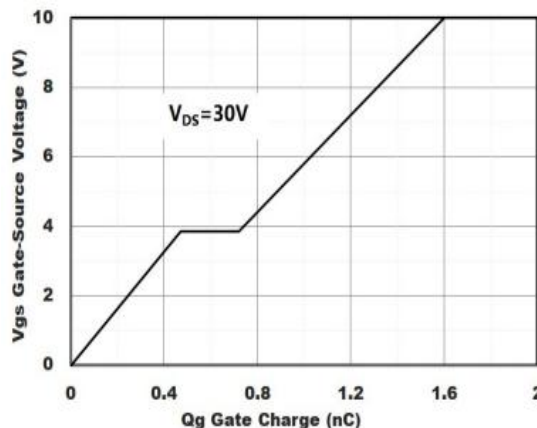
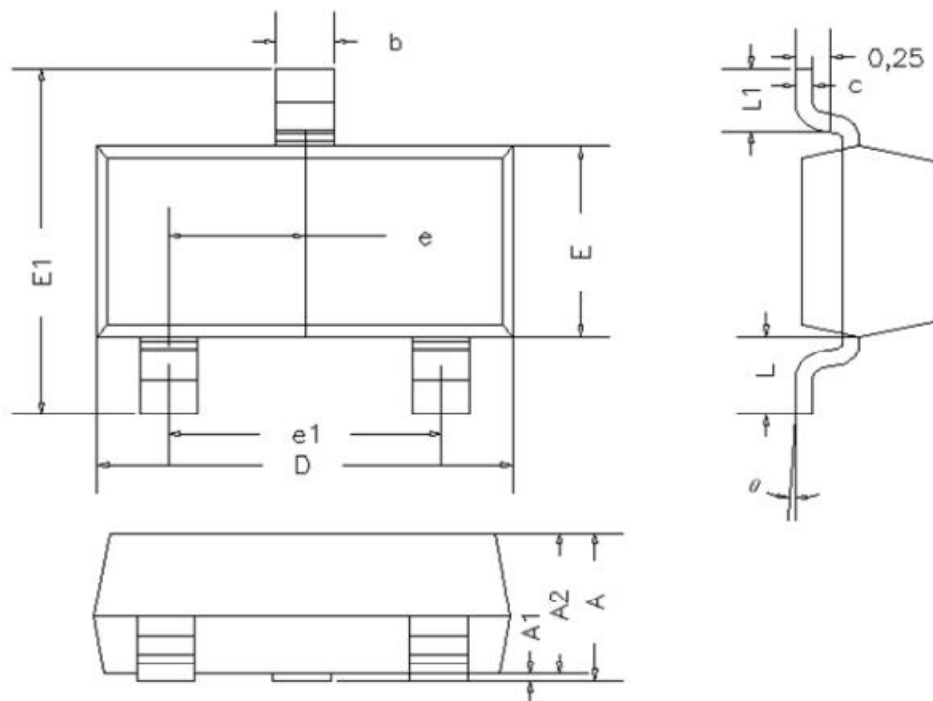


Figure 6: Gate-Charge Characteristics

■Dimension 外形封装尺寸



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
θ	0°	8°	0°	8°	