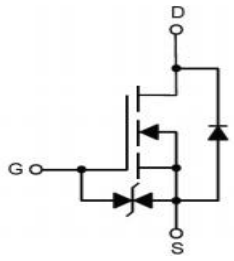
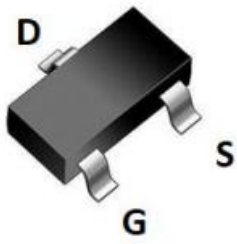
2N7002KW

SOT-323 60V N Channel ESD Protection 沟道带静电保护
MOS Field Effect Transistor 场效应管





■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°C）	340	mA
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	800	mA
Total Device Dissipation 总耗散功率	P_D(at T_A = 25°C)	200	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	$R_{\Theta JA}$	625	℃/W
Junction/Storage Temperature 结温/储存温度	T_J,T_{stg}	-55~150	℃

■Applications 应用/Marking 产品字标

Load Switch 负载开关
DC/DC Converter 电源转换
2N7002KW=72K

■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 =1mA,V_{GS}= V_{DS})	$V_{GS(th)}$	1	1.3	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V_{GS}=0V, V_{DS}= 48V)	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=500mA,V_{GS}=10V) (I_D=200mA,V_{GS}=4.5V)	$R_{DS(ON)}$	—	0.9 1.1	5 5.3	Ω
Diode Forward Voltage Drop 内附二极管正向压降(I_{SD}=300mA,V_{GS}=0V)	V_{SD}	—	—	1.5	V
Input Capacitance 输入电容 (V_{GS}=0V, V_{DS}=10V,f=1MHz)	C_{ISS}	—	40	—	pF
Common Source Output Capacitance 共源输出电容(V_{GS}=0V, V_{DS}=10V,f=1MHz)	C_{OSS}	—	30	—	pF
Reverse Transfer Capacitance 反馈电容(V_{GS}=0V, V_{DS}=10V,f=1MHz)	C_{RSS}	—	10	—	pF
Total Gate Charge 栅极电荷密度 (V_{DS}=30V, I_D=300mA, V_{GS}=10V)	Q_g	—	1.6	—	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}=6Ω,V_{GS}=10V)	$t_{d(on)}$	—	10	—	ns
Turn-ON Rise Time 开启上升时间 (V_{DS}=30V I_D=300mA, R_{GEN}=6Ω,V_{GS}=10V)	t_r	—	30	—	ns
Turn-OFF Delay Time 关断延迟时间 (V_{DS}=30V I_D=300mA, R_{GEN}=6Ω,V_{GS}=10V)	$t_{d(off)}$	—	20	—	ns
Turn-OFF Fall Time 关断下降时间 (V_{DS}=30V I_D=300mA, R_{GEN}=6Ω,V_{GS}=10V)	t_f	—	80	—	ns

■Typical Characteristic Curve 典型特性曲线

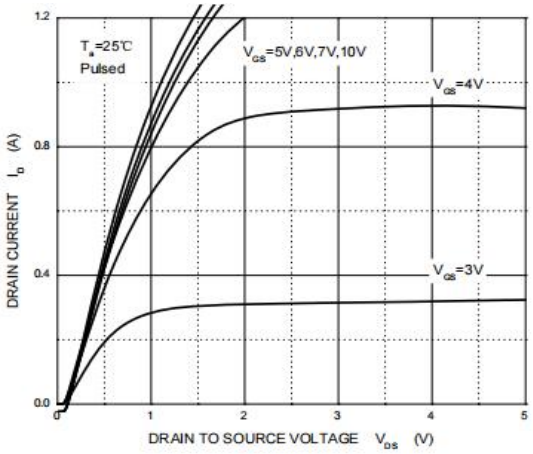


Figure 1: Output Characteristics

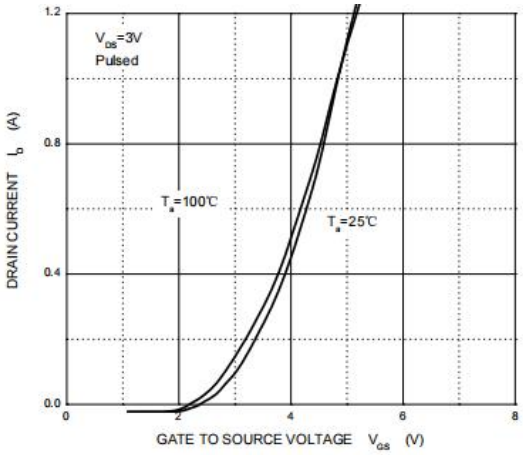


Figure 2: Transfer Characteristics

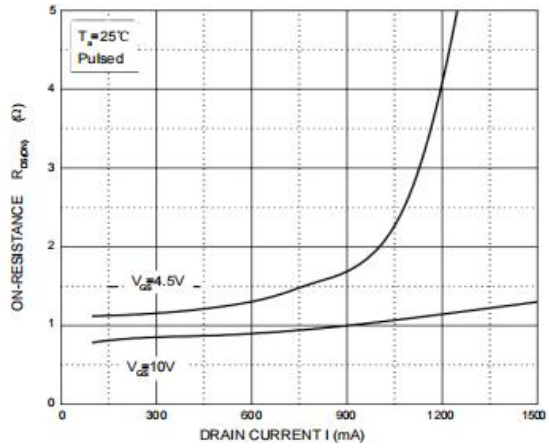


Figure 3: On-Resistance vs. Drain Current

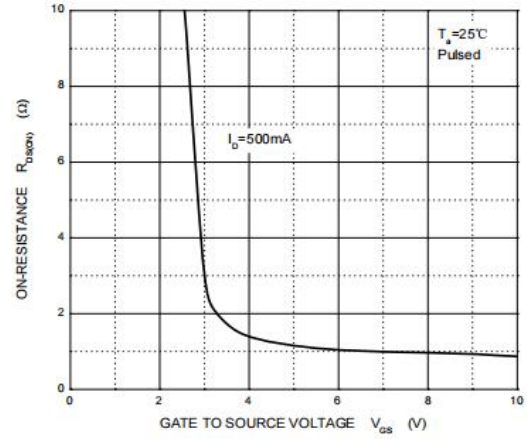


Figure 4: On-Resistance vs. V_{GS}

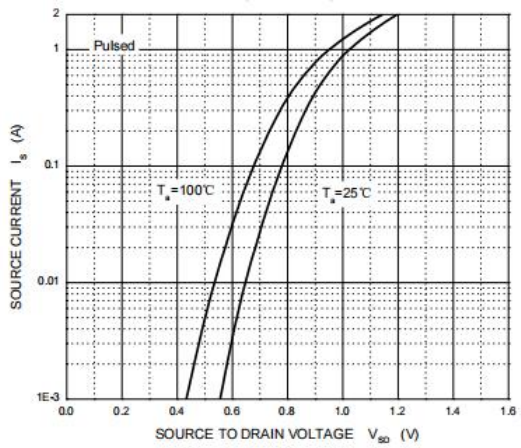


Figure 5: Diode Characteristics

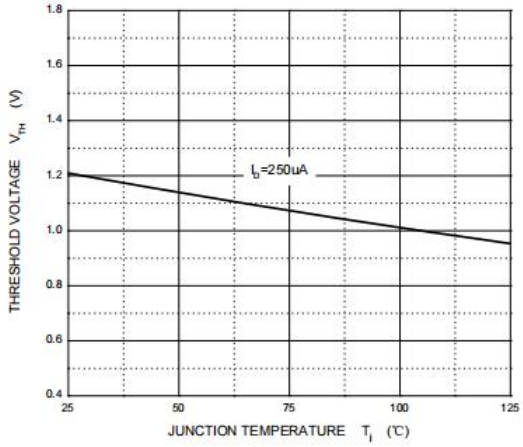
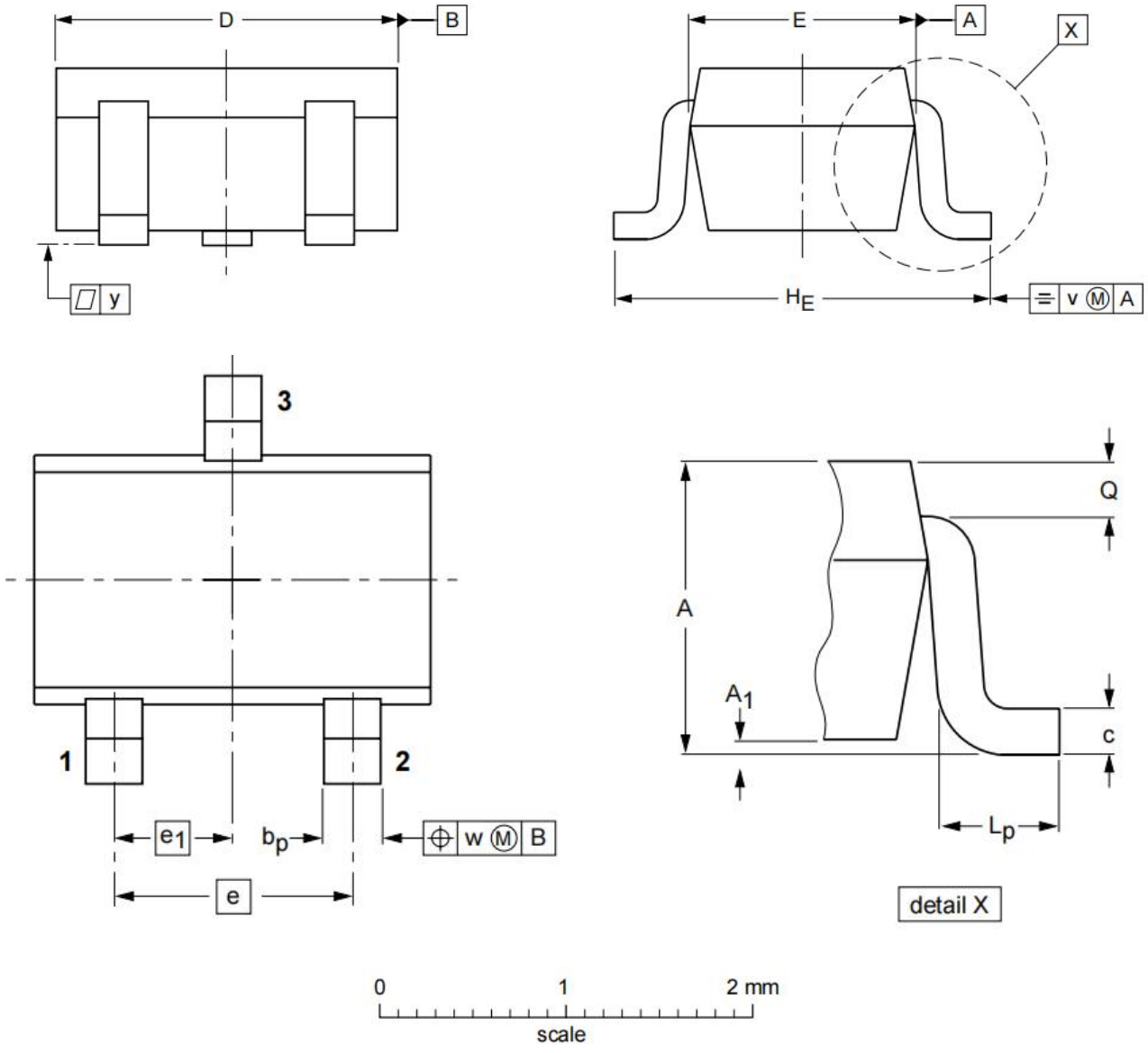


Figure 6: Threshold Voltage Characteristics

■Dimension 外形封装尺寸



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2