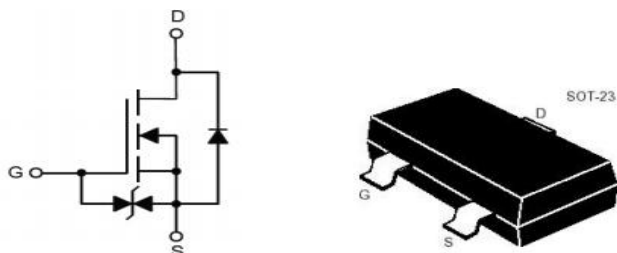


SOT-23 50V N Channel ESD Protection 沟道带静电保护
MOS Field Effect Transistor 场效应管



■ **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}	50	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 $T_A = 25^\circ C$)	220	mA
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	880	mA
Total Device Dissipation 总耗散功率	P_D (at $T_A = 25^\circ C$)	350	mW
ESD Protected Up to 人体模式静电保护范围	ESD(HBM)	2300	V
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	350	$^\circ C/W$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ C$

■ **Device Marking 产品字标**

BSS138K=138K

■ **Electrical Characteristics 电特性**

($T_A=25^\circ\text{C}$ unless otherwise noted 如无特殊说明, 温度为 25°C)

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($I_D=250\mu\text{A}, V_{GS}=0\text{V}$)	BV_{DSS}	50	65	—	V
Gate Threshold Voltage 栅极开启电压($I_D=250\mu\text{A}, V_{GS}=V_{DS}$)	$V_{GS(th)}$	0.6	1.1	1.6	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}, V_{DS}=50\text{V}$)	I_{DSS}	—	—	1	μA
Gate Body Leakage($V_{GS}=\pm 10\text{V}, V_{DS}=0\text{V}$) 栅极漏电流($V_{GS}=\pm 12\text{V}, V_{DS}=0\text{V}$)	I_{GSS}	—	± 110 ± 0.3	± 500 ± 10	nA μA
Static Drain-Source On-State Resistance 静态漏源导通电阻($I_D=220\text{mA}, V_{GS}=10\text{V}$) ($I_D=200\text{mA}, V_{GS}=5\text{V}$)	$R_{DS(on)}$	—	1 1.3	2 3.0	Ω
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD}=220\text{mA}, V_{GS}=0\text{V}$)	V_{SD}	—	—	1.3	V
Forward Trans conductance 正向传输导纳($V_{DS}=10\text{V}, I_D=200\text{mA}$)	g_{FS}	0.2	—	—	S
Input Capacitance 输入电容 ($V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$)	C_{ISS}	—	30	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$)	C_{OSS}	—	15	—	pF
Reverse Transfer Capacitance 反馈电容($V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$)	C_{RSS}	—	6	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}=25\text{V}, I_D=200\text{mA}, V_{GS}=10\text{V}$)	Q_g	—	2.4	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}=30\text{V}, I_D=220\text{mA}, R_{GEN}=6\Omega, V_{GS}=10\text{V}$)	$t_{d(on)}$	—	5	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}=30\text{V}, I_D=220\text{mA}, R_{GEN}=6\Omega, V_{GS}=10\text{V}$)	t_r	—	5	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}=30\text{V}, I_D=220\text{mA}, R_{GEN}=6\Omega, V_{GS}=10\text{V}$)	$t_{d(off)}$	—	60	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}=30\text{V}, I_D=220\text{mA}, R_{GEN}=6\Omega, V_{GS}=10\text{V}$)	t_f	—	35	—	ns

■ Typical Characteristic Curve 典型特性曲线

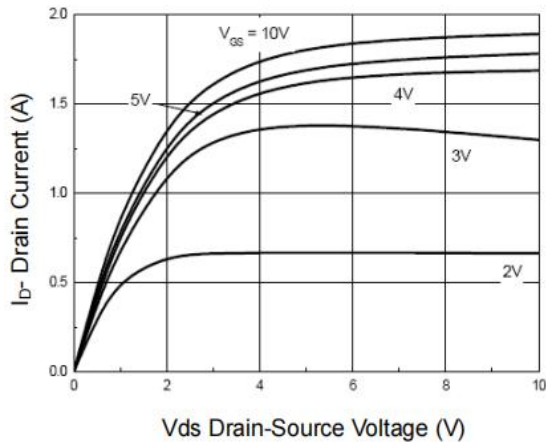


Figure 1: Output Characteristics

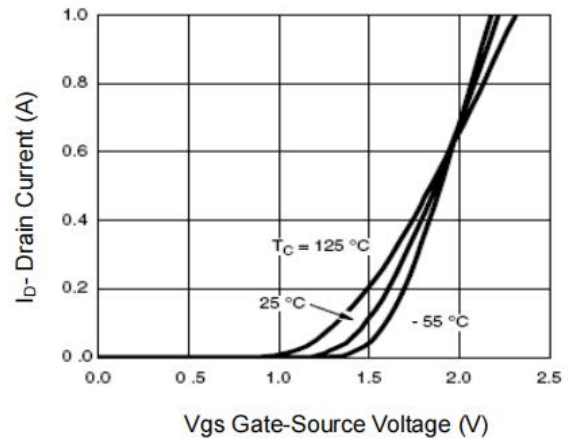


Figure 2: Transfer Characteristics

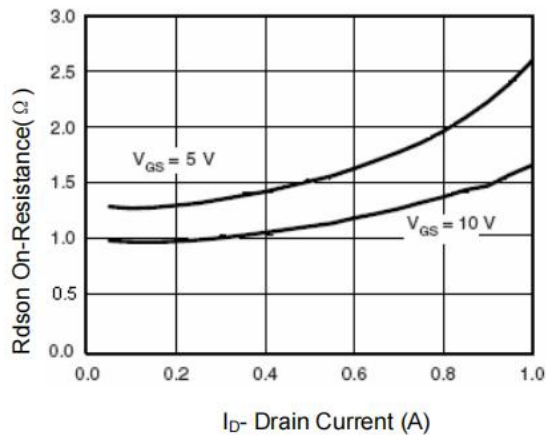


Figure 3: On-Resistance vs. Drain Current

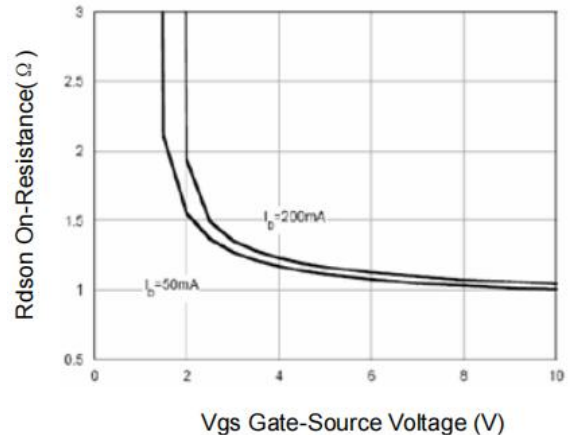


Figure 4: On-Resistance vs. V_{GS}

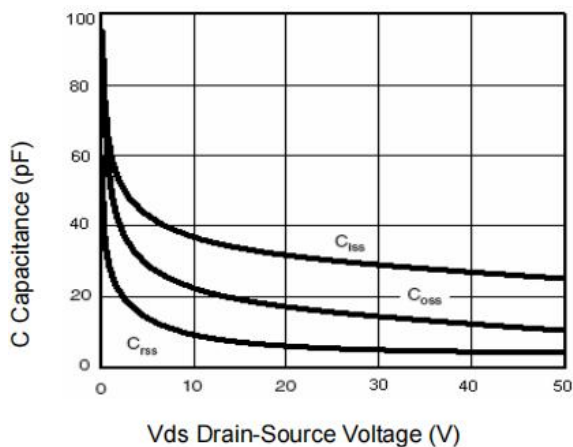


Figure 5: Capacitance Characteristics

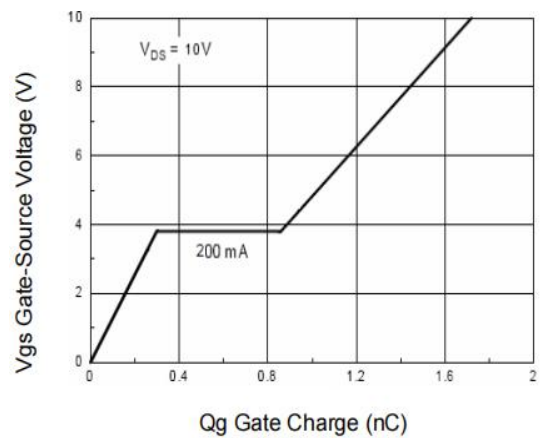


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

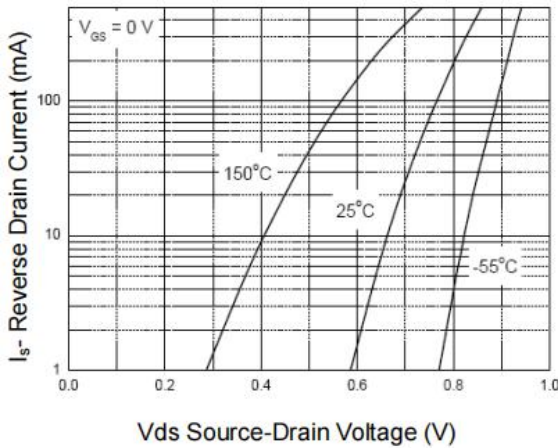


Figure 7: Diode Characteristics

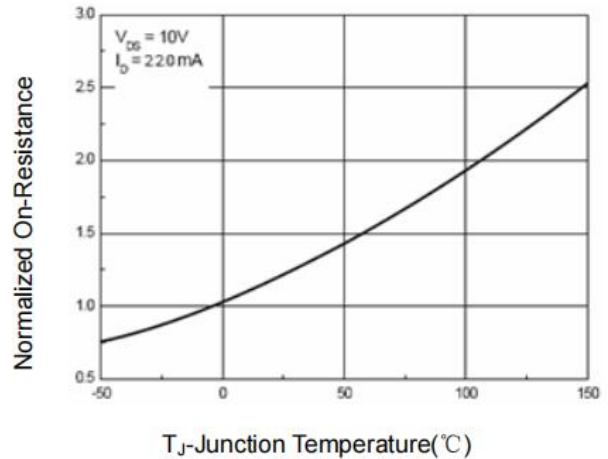


Figure 8: On-Resistance vs. T_J

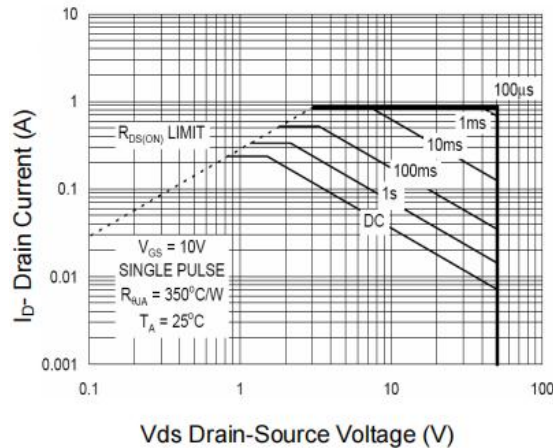


Figure 9: Safe Operating Area

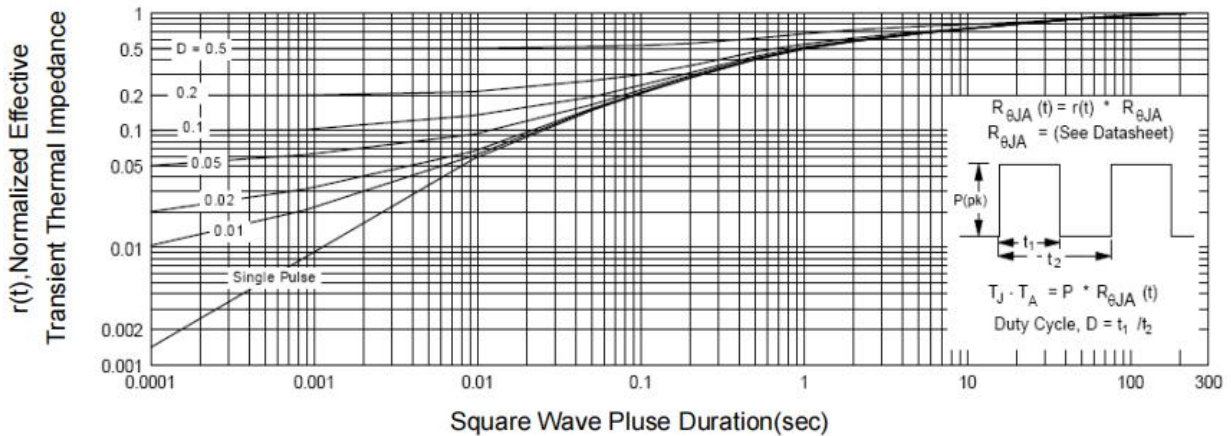
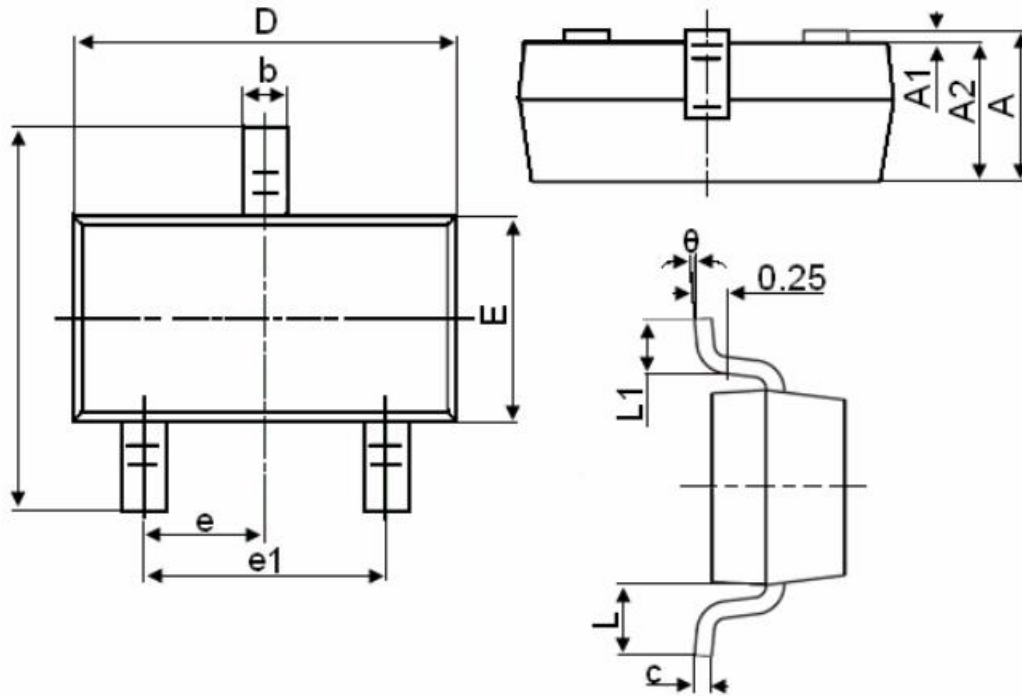


Figure 10: Transient Thermal Impedance

■ Dimension 外形封装尺寸



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°