

SOT-89 -20V P Channel Enhancement 沟道增强型 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}	-20	V
Gate- Source Voltage 栅极-源极电压	V_{GS}	± 10	V
Drain Current (continuous)漏极电流-连续	I_D (at $T_A = 25^\circ\text{C}$)	-5.5	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	-23	A
Total Device Dissipation 总耗散功率	P_D (at $T_A = 25^\circ\text{C}$)	1200	mW
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	105	$^\circ\text{C}/\text{W}$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ\text{C}$

■ Device Marking 产品字标

SI2305F=A5

■ 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}	-20	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D = -250\mu\text{A}, V_{GS} = V_{DS}$)	$V_{GS(th)}$	-0.4	-0.62	-1	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}, V_{DS}= -20\text{V}$)	I_{DSS}	—	—	1	μA
Gate Body Leakage 栅极漏电流($V_{GS}=\pm 10\text{V}, V_{DS}=0\text{V}$)	I_{GSS}	—	—	± 100	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻($I_D= -5\text{A}, V_{GS}= -4.5\text{V}$) ($I_D= -4\text{A}, V_{GS}= -2.5\text{V}$) ($I_D= -3\text{A}, V_{GS}= -1.8\text{V}$)	$R_{DS(ON)}$	—	29 35 45	42 55 75	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD}= -5\text{A}, V_{GS}=0\text{V}$)	V_{SD}	—	—	-1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}, V_{DS}= -10\text{V}, f=1\text{MHz}$)	C_{ISS}	—	1010	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}, V_{DS}= -10\text{V}, f=1\text{MHz}$)	C_{OSS}	—	135	—	pF
Reverse Transfer Capacitance 反馈电容($V_{GS}=0\text{V}, V_{DS}= -10\text{V}, f=1\text{MHz}$)	C_{RSS}	—	109	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}= -10\text{V}, I_D= -4\text{A}, V_{GS}= -4.5\text{V}$)	Q_g	—	11	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}= -10\text{V}, I_D= -4\text{A}, V_{GS}= -4.5\text{V}$)	Q_{gs}	—	2	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}= -10\text{V}, I_D= -4\text{A}, V_{GS}= -4.5\text{V}$)	Q_{gd}	—	2	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}= -10\text{V}, I_D= -1\text{A}, R_{GEN}=2.5\Omega, V_{GS}= -4.5\text{V}$)	$t_{d(on)}$	—	8	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}= -10\text{V}, I_D= -1\text{A}, R_{GEN}=2.5\Omega, V_{GS}= -4.5\text{V}$)	t_r	—	36	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}= -10\text{V}, I_D= -1\text{A}, R_{GEN}=2.5\Omega, V_{GS}= -4.5\text{V}$)	$t_{d(off)}$	—	78	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}= -10\text{V}, I_D= -1\text{A}, R_{GEN}=2.5\Omega, V_{GS}= -4.5\text{V}$)	t_f	—	55	—	ns

■ Typical Characteristic Curve 典型特性曲线

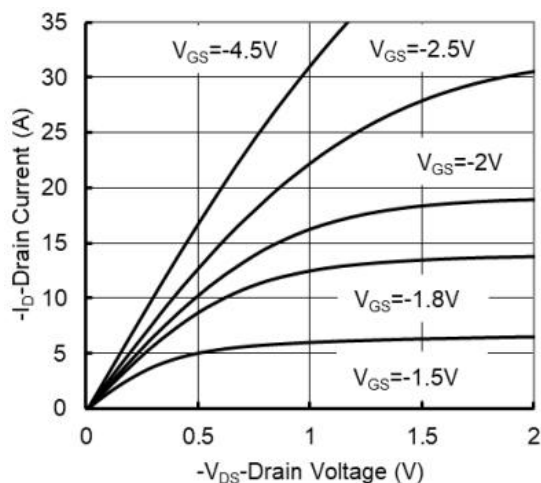


Figure 1: Output Characteristics

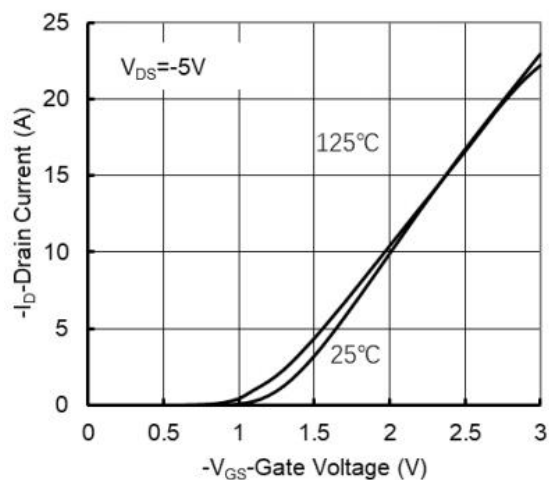


Figure 2: Transfer Characteristics

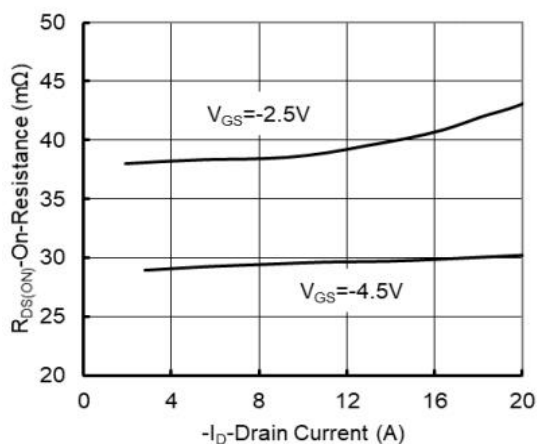


Figure 3: On-Resistance vs. Drain Current

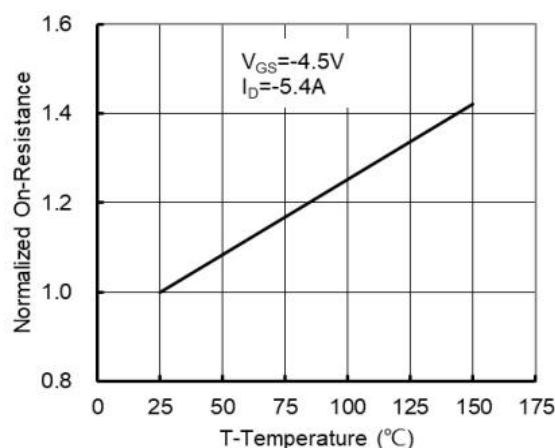


Figure 4: On-Resistance vs. Temperature

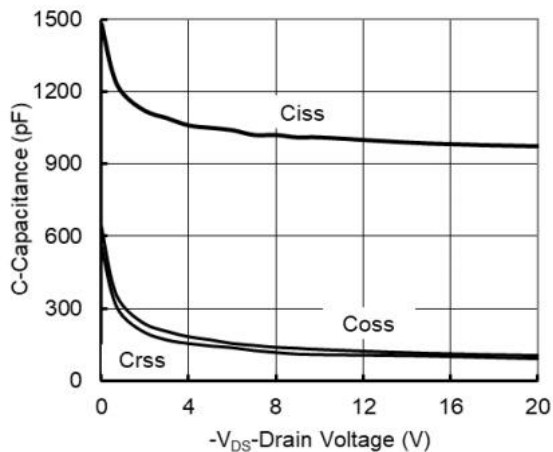


Figure 5: Capacitance Characteristics

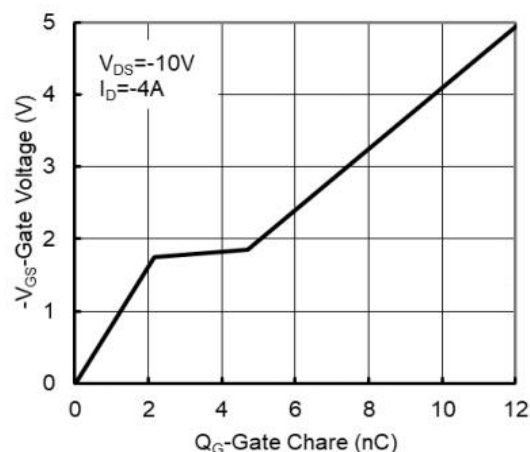


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

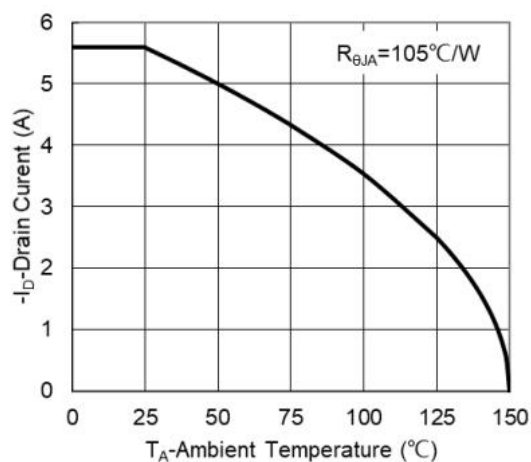


Figure 7: Drain Current vs. Temperature

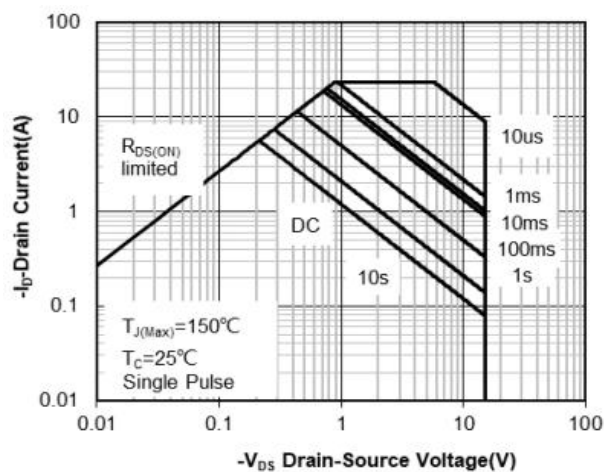


Figure 8: Safe Operating Area

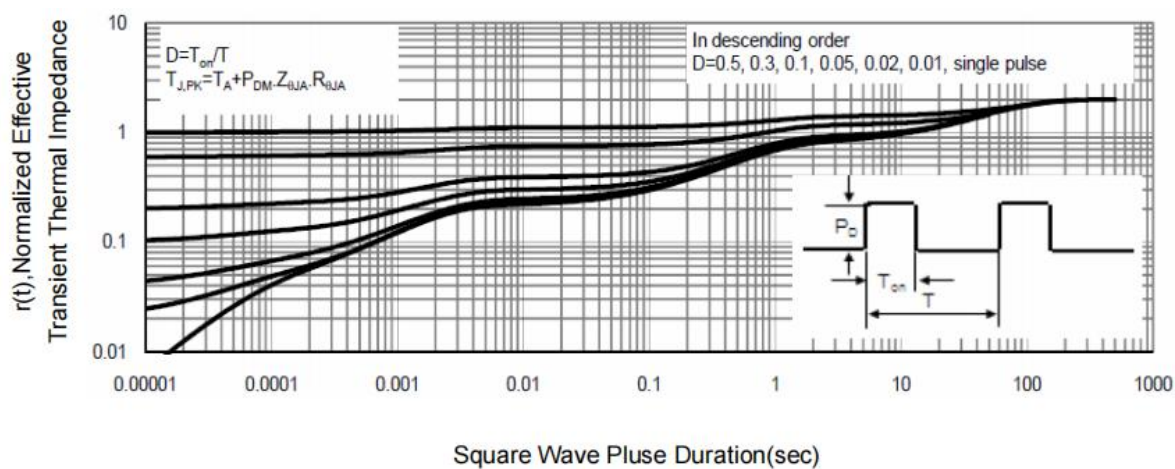
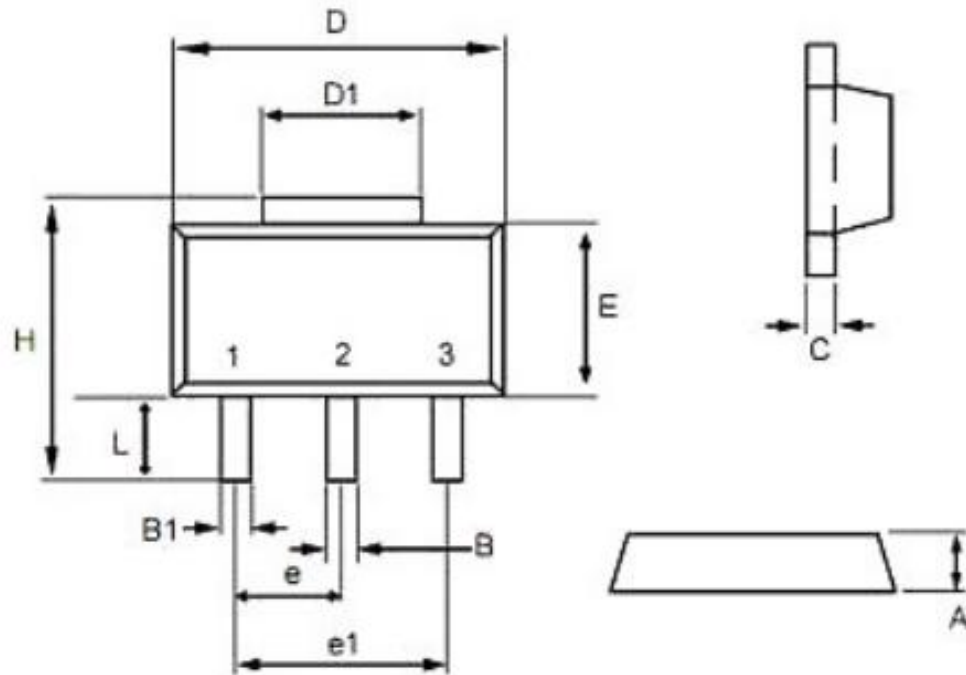


Figure 9: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.40	1.60	0.055	0.063
B	0.40	0.56	0.016	0.022
B1	0.35	0.48	0.014	0.019
C	0.35	0.44	0.014	0.017
D	4.40	4.60	0.173	0.181
D1	1.35	1.83	0.053	0.072
e	1.45	1.55	0.057	0.061
e1	2.95	3.05	0.116	0.120
E	2.29	2.60	0.090	0.102
H	3.75	4.25	0.148	0.167
L	0.80	1.20	0.031	0.047