

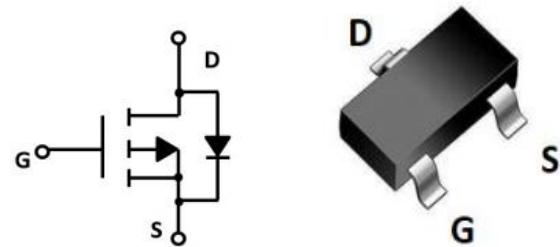


安徽富信半导体科技有限公司

ANHUI FOSAN SEMICONDUCTOR TECHNOLOGY CO., LTD.

FS5P04

SOT-23-3L -40V 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	Rating 额定值	Unit 单位
Drain-Source Voltage 漏极-源极电压	$BV_{DSS}$	-40	V
Gate- Source Voltage 栅极-源极电压	$V_{GS}$	$\pm 20$	V
Drain Current (continuous)漏极电流-连续	$I_D$ (at $T_A = 25^\circ C$ )	-5	A
Drain Current (pulsed)漏极电流-脉冲	$I_{DM}$	-20	A
Total Device Dissipation 总耗散功率	$P_D$ (at $T_A = 25^\circ C$ )	1500	mW
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	83	°C/W
Junction/Storage Temperature 结温/储存温度	$T_J, T_{stg}$	-55~150	°C

■ Device Marking 产品字标

FS5P04=4105



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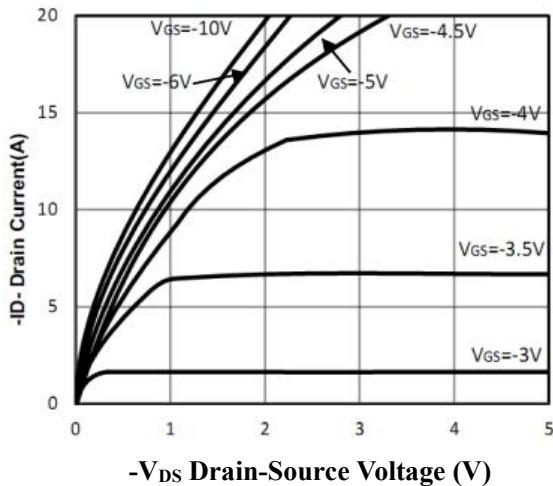
FS5P04

## ■ Electrical Characteristics 电特性

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

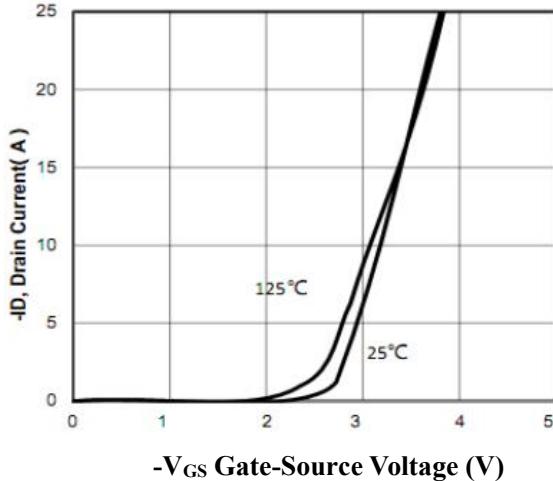
Characteristic 特性参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Drain-Source Breakdown Voltage 漏极-源极击穿电压( $I_D = -250\mu\text{A}, V_{GS} = 0\text{V}$ )	$\text{BV}_{DSS}$	-40	—	—	V
Gate Threshold Voltage 栅极开启电压( $I_D = -250\mu\text{A}, V_{GS} = V_{DS}$ )	$V_{GS(\text{th})}$	-1	-1.6	-2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流( $V_{GS} = 0\text{V}, V_{DS} = -40\text{V}$ )	$I_{DSS}$	—	—	-1	$\mu\text{A}$
Gate Body Leakage 栅极漏电流( $V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$ )	$I_{GSS}$	—	—	$\pm 100$	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻( $I_D = -5\text{A}, V_{GS} = -10\text{V}$ ) ( $I_D = -4\text{A}, V_{GS} = -4.5\text{V}$ )	$R_{DS(\text{ON})}$	—	66 109	88 120	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降( $I_{SD} = -2.5\text{A}, V_{GS} = 0\text{V}$ )	$V_{SD}$	—	—	-1.2	V
Input Capacitance 输入电容 ( $V_{GS} = 0\text{V}, V_{DS} = -20\text{V}, f = 1\text{MHz}$ )	$C_{ISS}$	—	550	—	pF
Common Source Output Capacitance 共源输出电容( $V_{GS} = 0\text{V}, V_{DS} = -20\text{V}, f = 1\text{MHz}$ )	$C_{OSS}$	—	85	—	pF
Reverse Transfer Capacitance 反馈电容( $V_{GS} = 0\text{V}, V_{DS} = -20\text{V}, f = 1\text{MHz}$ )	$C_{RSS}$	—	75	—	pF
Total Gate Charge 棚极电荷密度 ( $V_{DS} = -20\text{V}, I_D = -5\text{A}, V_{GS} = -10\text{V}$ )	$Q_g$	—	14	—	nC
Gate Source Charge 棚源电荷密度 ( $V_{DS} = -20\text{V}, I_D = -5\text{A}, V_{GS} = -10\text{V}$ )	$Q_{gs}$	—	3	—	nC
Gate Drain Charge 棚漏电荷密度 ( $V_{DS} = -20\text{V}, I_D = -5\text{A}, V_{GS} = -10\text{V}$ )	$Q_{gd}$	—	4	—	nC
Turn-ON Delay Time 开启延迟时间 ( $V_{DS} = -20\text{V}, I_D = -3\text{A}, R_{GEN} = 3\Omega, V_{GS} = -10\text{V}$ )	$t_{d(\text{on})}$	—	9	—	ns
Turn-ON Rise Time 开启上升时间 ( $V_{DS} = -20\text{V}, I_D = -3\text{A}, R_{GEN} = 3\Omega, V_{GS} = -10\text{V}$ )	$t_r$	—	8	—	ns
Turn-OFF Delay Time 关断延迟时间 ( $V_{DS} = -20\text{V}, I_D = -3\text{A}, R_{GEN} = 3\Omega, V_{GS} = -10\text{V}$ )	$t_{d(\text{off})}$	—	28	—	ns
Turn-OFF Fall Time 关断下降时间 ( $V_{DS} = -20\text{V}, I_D = -3\text{A}, R_{GEN} = 3\Omega, V_{GS} = -10\text{V}$ )	$t_f$	—	10	—	ns

## ■ Typical Characteristic Curve 典型特性曲线



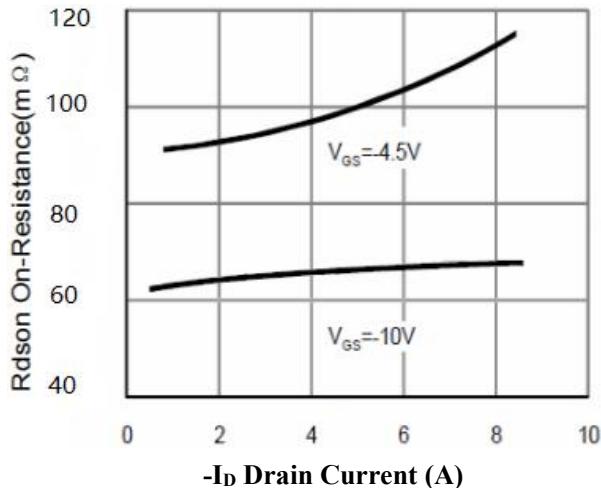
-V<sub>DS</sub> Drain-Source Voltage (V)

Figure 1: Output Characteristics



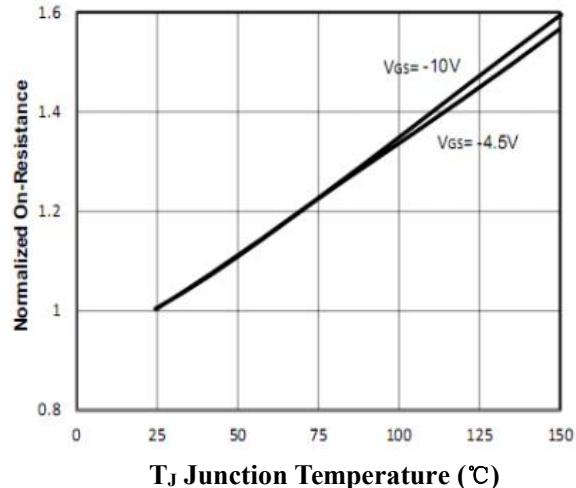
-V<sub>GS</sub> Gate-Source Voltage (V)

Figure 2: Transfer Characteristics



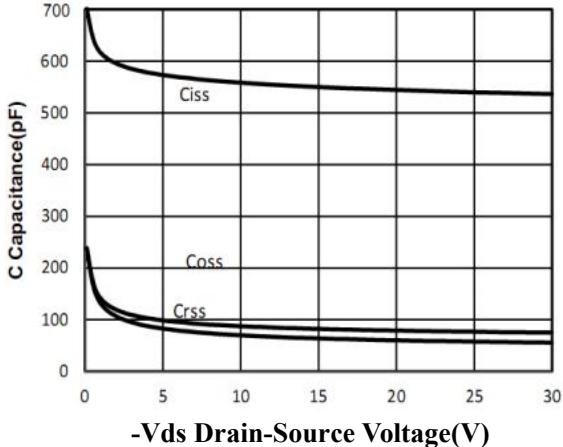
-I<sub>D</sub> Drain Current (A)

Figure 3: On-Resistance vs. Drain Current



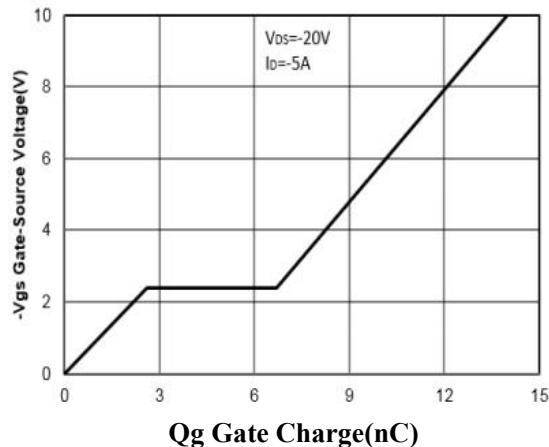
T<sub>J</sub> Junction Temperature (°C)

Figure 4: On-Resistance vs. Temperature



-V<sub>DS</sub> Drain-Source Voltage(V)

Figure 5: Capacitance Characteristics



Q<sub>G</sub> Gate Charge(nC)

Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

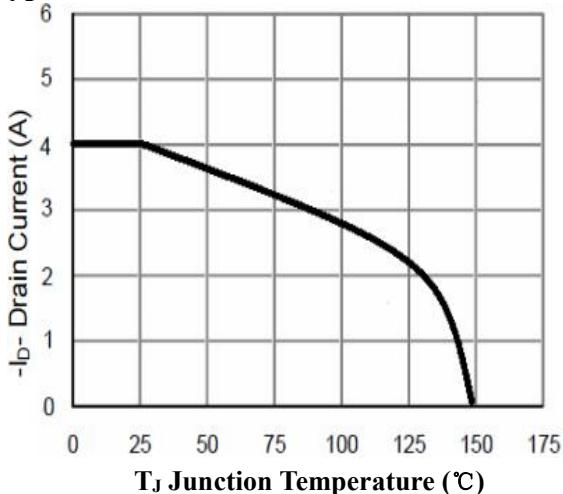


Figure 7: Drain Current vs. Temperature

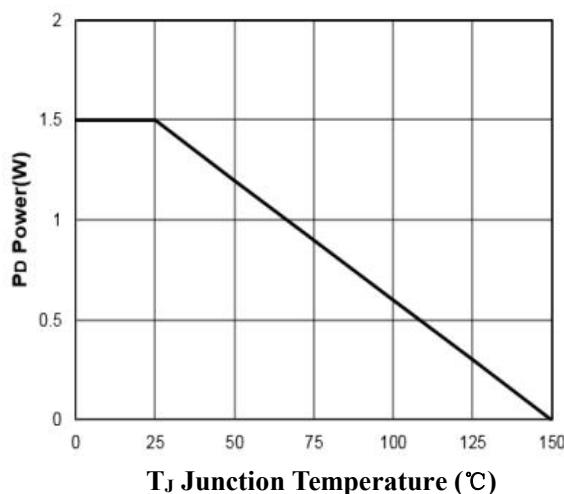


Figure 8: Power Dissipation

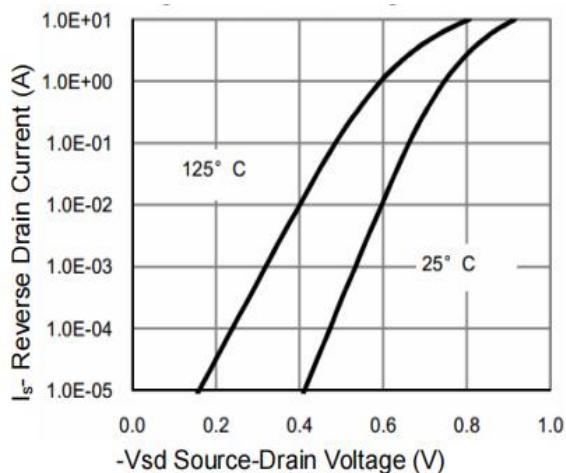


Figure 9: Body Diode Characteristics

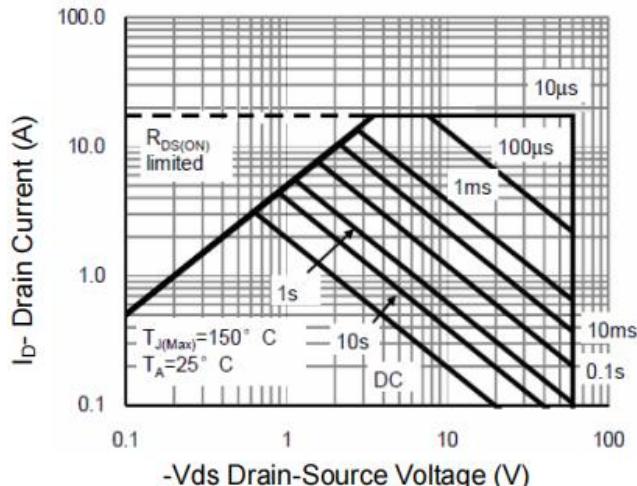


Figure 10: Safe Operating Area

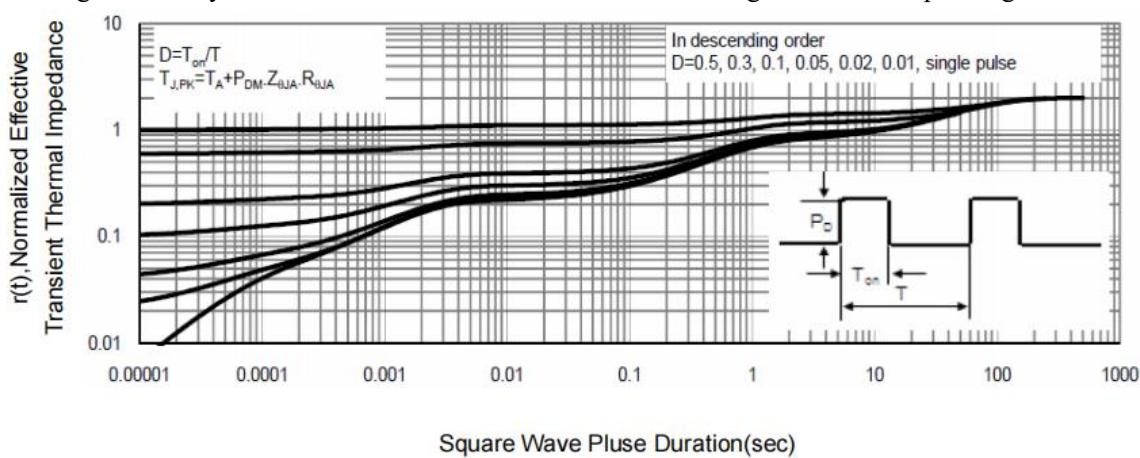
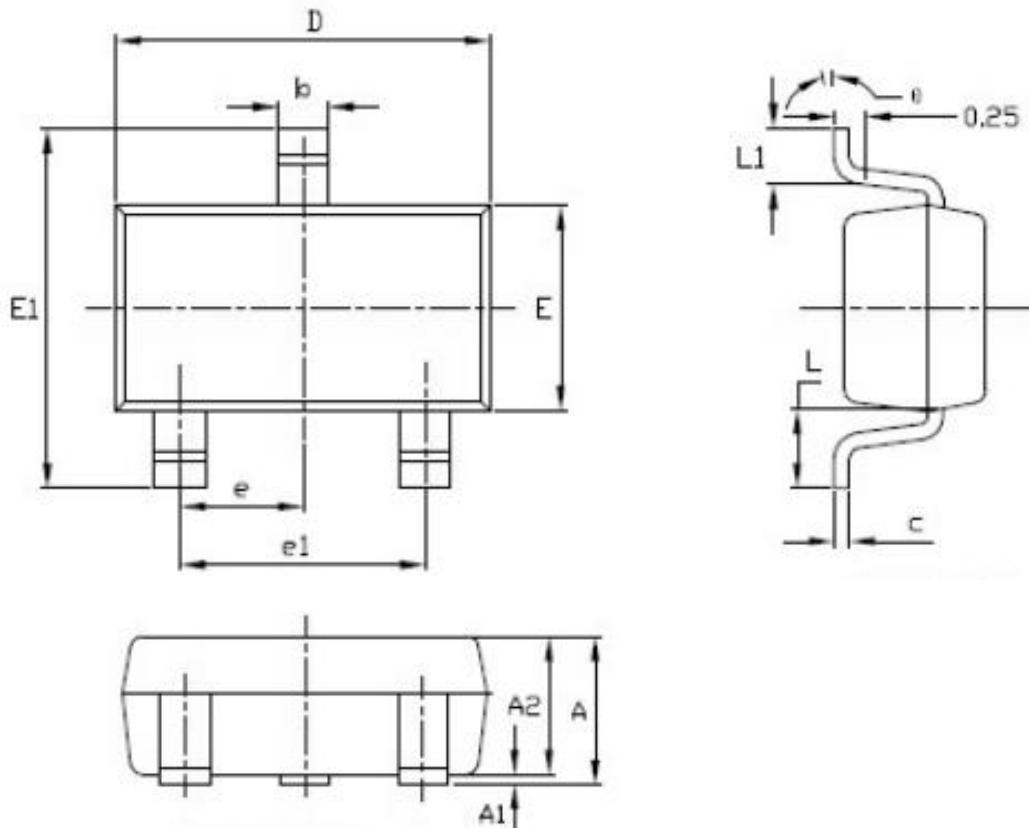


Figure 11: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.600REF		0.024REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°