

FH2301S

P-Channel Enhancement Mode MOSFET

特征 Features

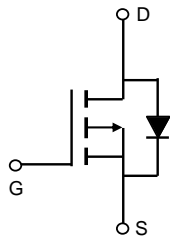
- 低导通电阻 Low $R_{ds(on)}$ @ $V_{GS} = -4.5V$
- 沟道功率 MOS 管 TrenchFET Power MOSFET
- 高电流处理能力 High Current Handling Capability
- 无卤、RoHS 认证 Halogen-free、RoHS Compliant
- 表贴型封装 Surface Mount Package

产品特性总结 Product Summary

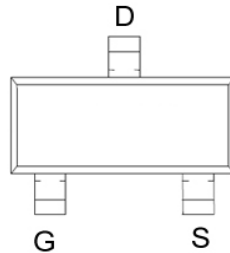
V_{DS}	-20V
$R_{DS(on)}$ (@ $V_{GS} = -4.5V$)	< 140m Ω
$R_{DS(on)}$ (@ $V_{GS} = -2.5V$)	< 210m Ω

应用 Applications

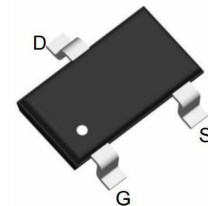
- 便携式设备的直流/直流转换
DC/DC Converter for Portable Devices
- 高端负载开关 High-side Load Switch
- 高速线路驱动 High Speed line Driver



Schematic diagram



Marking and Pin Assignment



SOT-23 top view

极限值和温度特性 ($T_A = 25^\circ C$ 除非另有规定)

Maximum Ratings & Thermal Characteristics (Ratings at $25^\circ C$ ambient temperature unless otherwise specified.)

参数 Parameters	符号 Symbol	数值 Value	单位 Unit
漏源电压 Drain-Source Voltage	V_{DS}	-20	V
栅源电压 Gate-Source Voltage	V_{GS}	± 10	V
漏极连续电流 Continuous Drain Current	I_D	-2.3	A
漏极脉冲电流 Pulsed Drain Current (note 1)	I_{DM}	-9	A
最大功耗 Maximum Power Dissipation	P_D	1.0	W
结环热阻 Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	125	$^\circ C/W$
结温和存储温度 Junction and Storage Temperature	T_J, T_{STG}	-50~+150	$^\circ C$

电特性 (TA = 25°C 除非另有规定)

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

参数 Parameters	符号 Symbol	测试条件 Test Condition	最小值 Min	典型值 Typ	最大值 Max	单位Unit
静态特性Static Characteristics						
漏源击穿电压 Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	20			V
零栅压漏极电流 Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	--	--	-1	μA
栅源漏电流Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$	--	--	± 100	nA
栅源阈值电压 Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.6	-1.0	V
漏源极导通电阻 Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -2A$	--	125	140	m Ω
		$V_{GS} = -3.3V, I_D = -1A$	--	140	170	m Ω
		$V_{GS} = -2.5V, I_D = -1A$	--	170	210	m Ω
二极管正向电压 Diode forward voltage (note 3)	V_{SD}	$I_S = -1A, V_{GS} = 0V$	--	-0.83	-1.2	V
动态特性Dynamic Characteristics (note4)						
输入电容Input Capacitance	C_{ISS}	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1MHz$	--	177	--	pF
输出电容Output Capacitance	C_{OSS}		--	30	--	pF
反向传输电容 Reverse Transfer Capacitance	C_{RSS}		--	25	--	pF
开关特性Switching Characteristics (note 4)						
开启延迟时间Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V, I_D = -2A, R_G = 3.3\Omega,$ $V_{GS} = -4.5V$	--	11	--	ns
开启上升沿时间Turn on rise time	t_r		--	32	--	ns
关断延迟时间Turn-off delay time	$t_{d(off)}$		--	25	--	ns
关断下降沿时间Turn-off fall time	t_f		--	38	--	ns
总栅极电荷Total Gate Charge	Q_g	$V_{DS} = -10V, I_D = -2A,$ $V_{GS} = -4.5V$	--	5.3	--	nC
栅源电荷Gate-Source Charge	Q_{gs}		--	0.7	--	nC
栅漏电荷Gate-Drain Charge	Q_{gd}		--	1.4	--	nC

***Notes :**

1. Repetitive rating: Pulse width limited by maximum junction temperature
2. Surface Mounted on FR4 board, $t \leq 10$ sec.
3. Pulse test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

典型特性曲线 Typical characteristics

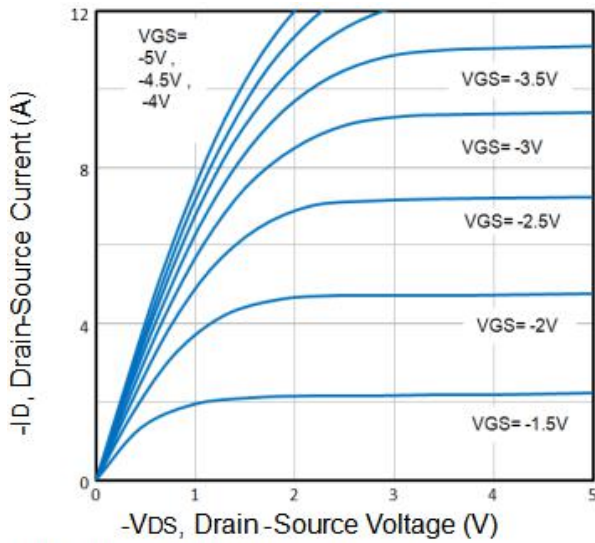


Fig1. Typical Output Characteristics

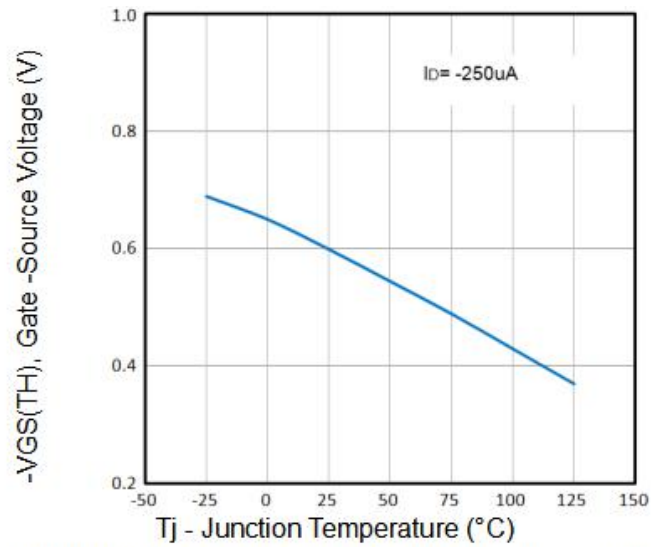


Fig2. Normalized Threshold Voltage Vs. Temperature

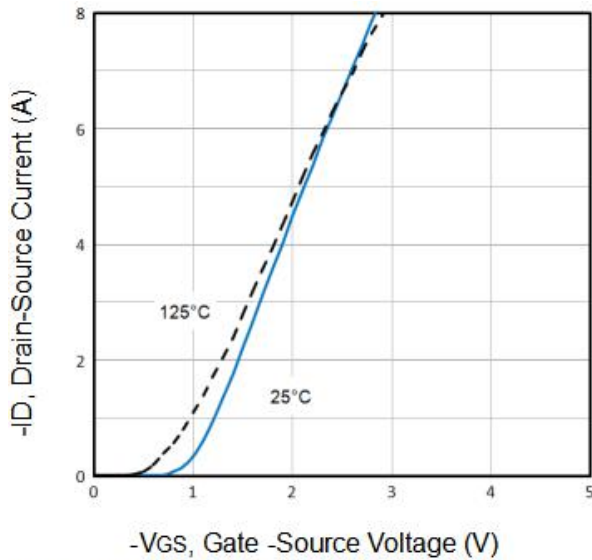


Fig3. Typical Transfer Characteristics

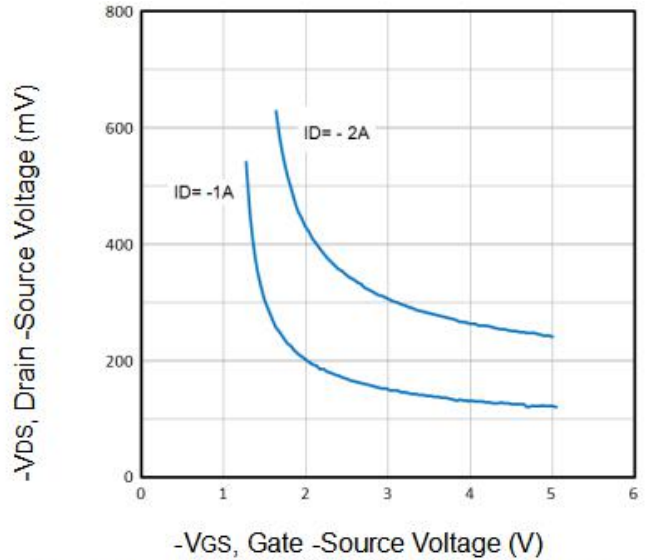


Fig4. Drain-Source Voltage vs Gate-Source Voltage

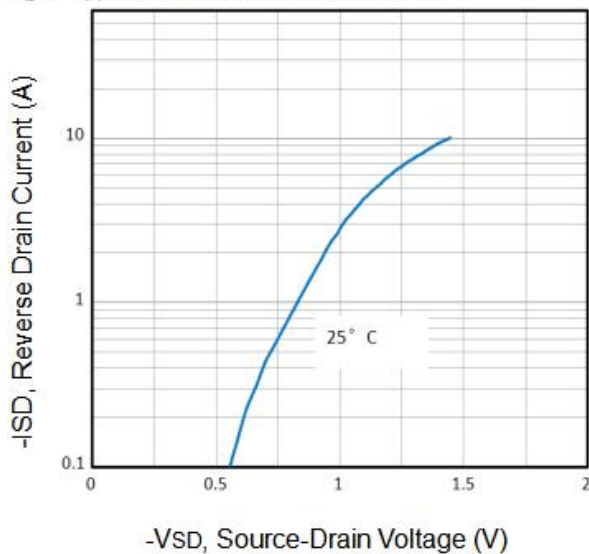


Fig5. Typical Source-Drain Diode Forward Voltage

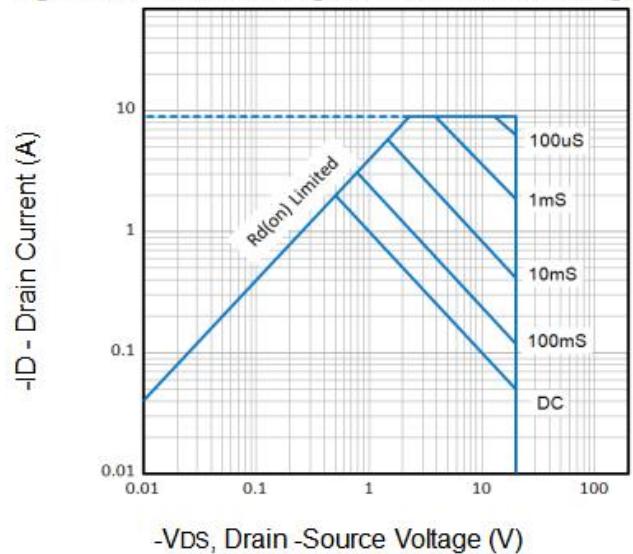


Fig6. Maximum Safe Operating Area

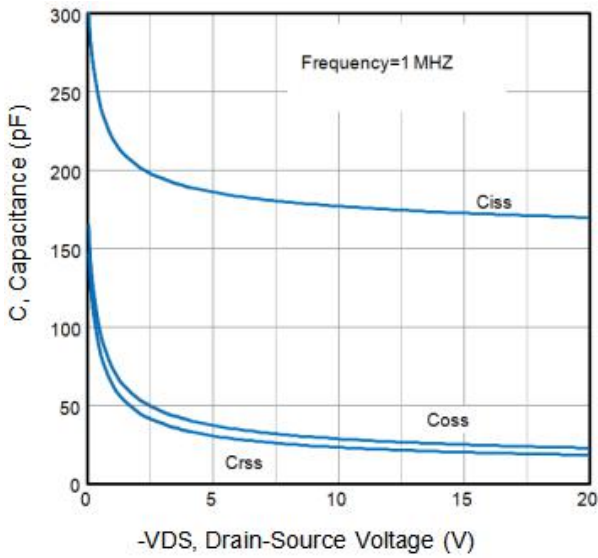


Fig7. Typical Capacitance Vs. Drain-Source Voltage

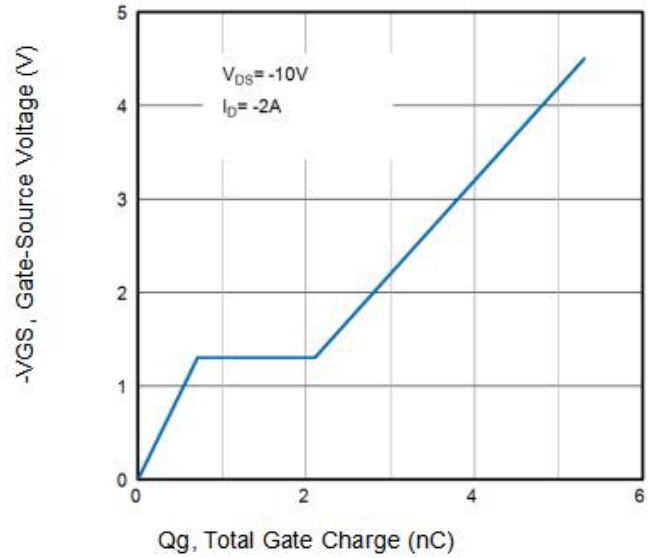
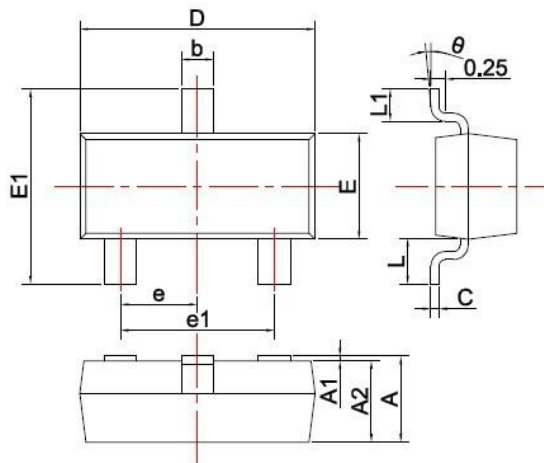


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

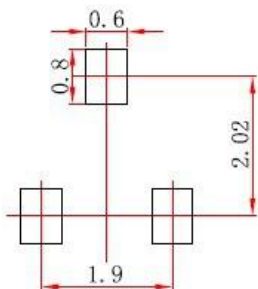
封装外形图 SOT-23 Package Outline Dimensions



SYMBOL	DIMENSIONS	
	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°

Unit: mm

焊盘设计参考 Precautions: PCB Design



- Note:
1. Controlling dimension: In millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.