

FSD7608-C 系列芯片式电流传感器



产品概述/Product overview

FSD7608-C 系列芯片式电流传感器基于电磁感应原理，使用高灵敏度、高信噪比的隧道磁阻（TMR）设计，其内部内置温漂补偿电路，在原副边电气隔离的情况下，可以精确测量直流、交流和脉冲等形式的电流信号。

The FSD7608-C series on-chip current sensor is based on the principle of electromagnetic induction, and uses the tunnel magnetoresistance (TMR) design with high sensitivity and high signal-to-noise ratio. The built-in temperature drift compensation circuit can accurately measure current signals in the form of DC, AC and pulse under the condition of electrical isolation of the primary and secondary sides.

产品特性/Product characteristics

- SOP8 封装/SOP8 package
- 精度高/High precision
- 低噪声/Low noise
- 频带宽，响应快/Wide frequency band, fast response
- 优秀的温度稳定性/Excellent temperature stability

应用领域/Applications

- 变频器电流检测/Inverter current detection
- 电源监控/Power monitoring
- 电机驱动/Motor drive
- 光伏逆变器/Photovoltaic inverter
- 过流保护/Overcurrent protection

产品选型表/Product selection table

型号 Type	供电电压 Supply voltage	测量电流范围 Measuring range	零点偏置电压 Zero bias voltage	灵敏度 sensitivity
FSD7608-010C5BFB	5 V	±10 A	2.5 V	200 mV/A
FSD7608-020C5BFB	5 V	±20 A	2.5 V	100 mV/A
FSD7608-030C5BFB	5 V	±30 A	2.5 V	66.67 mV/A
FSD7608-040C5BFB	5 V	±40 A	2.5 V	50 mV/A
FSD7608-050C5BFB	5 V	±50 A	2.5 V	40 mV/A
FSD7608-065C5BFB	5 V	±65 A	2.5 V	30.77 mV/A

绝对最大额定值/Absolute maximum rating

参数 Parameter	符号 Symbol	典型值 Typical value	单位 Unit
供电电压 Supply voltage	V_{CC}	6	V
ESD 性能 (HBM) ESD Performance (HBM)	V_{ESD}	4	kV
使用温度 Operating temperature	T_A	-40 ~ +125	°C
储存温度 Storage temperature	T_{STG}	-40 ~ +125	°C
最大结温 Maximum junction temperature	$T_J(MAX)$	165	°C

绝缘隔离特性/Insulation isolation characteristic

参数 Parameter	符号 Symbol	典型值 Typical value	单位 Unit
绝缘耐压强度 Compressive strength of insulation	V_D	3	kV(50Hz, 1min)
最大工作隔离电压 Maximum operating isolation voltage	V_{ISO}	600	V _{PK}
		420	V _{RMS}
爬电距离 Creepage distance	d_{CP}	4	mm
电气间隙 Electrical clearance	d_{CL}	4	mm
相对漏电起痕指数 Relative leakage marking index	C_{TI}	600	V

1. 功能框图/Functional block diagram

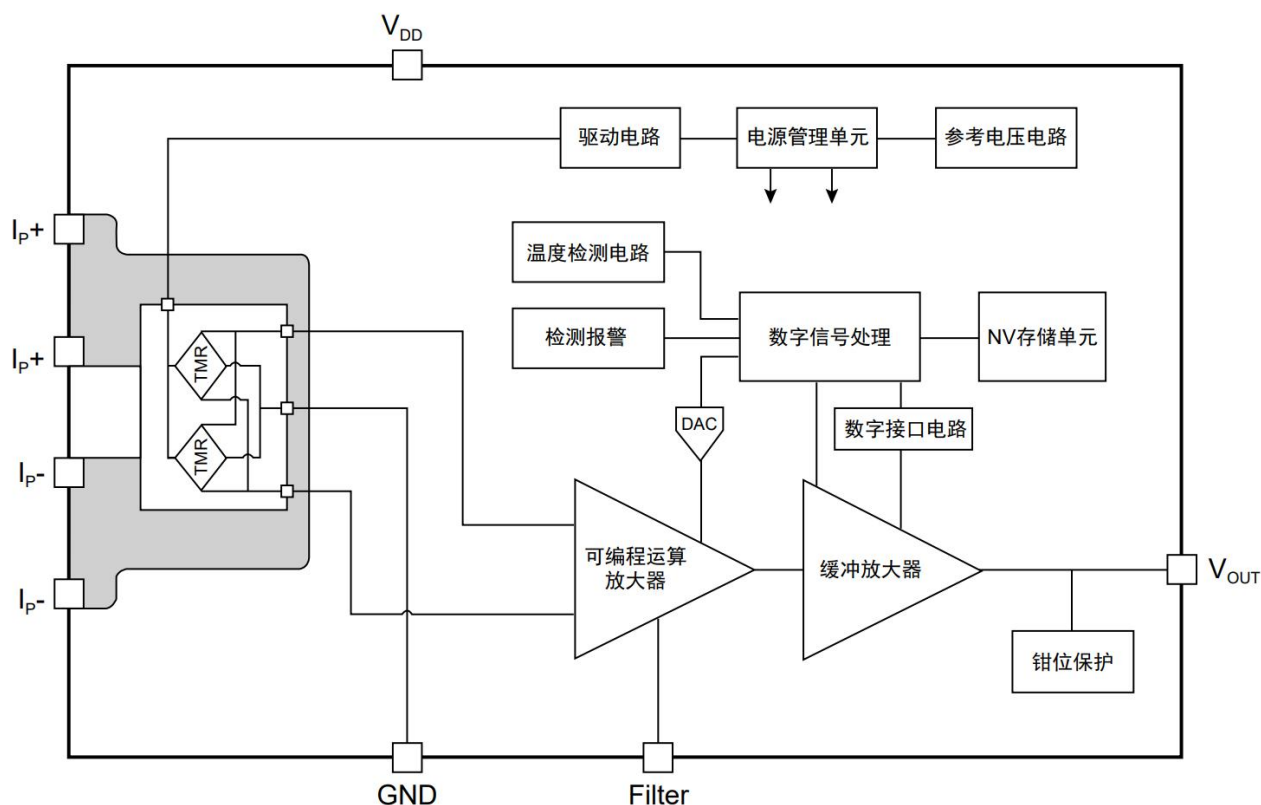


图 1 FSD7608-C 功能框图/Figure 1 FSD7608-C functional block diagram

2. 电气参数/Electrical parameter

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
供电电压 Supply voltage	V_{CC}	-	4.75	5	5.25	V
零点偏置电压 Zero bias voltage	V_{OFF}	$I_P = 0$	-	2.5	-	V
输出饱和电压 Output saturation voltage	V_{OL}	-	0.2	-	-	V
	V_{OH}	-	-	-	$V_{CC}-0.2$	V
电流消耗 Current consumption	I_C	$I_P = 0$	-	3.5	4	mA
上电时间 Power-on time	t_{PO}	$V_{CC} \geq 2.5V$	-	100	-	μs
原边导体电阻 Primary side conductor resistance	R_{IN}	$T_A = 25^\circ C$	-	1	-	m Ω
输出内阻 Output internal resistance	R_{OUT}	-	-	2	5	Ω
输出电阻负载 Output resistance load	R_L	V_{OUT} 与 GND 之间 Between V_{OUT} and GND	-	10	-	k Ω
输出电容负载 Output capacitance load	C_L	V_{OUT} 与 GND 之间 Between V_{OUT} and GND	-	-	10	nF
输出拉电流 Output pull current	$I_{OUT(SOURCE)}$	V_{OUT} 短路到 GND V_{OUT} shorted to GND	-	85	-	mA
输出灌电流 Output filling current	$I_{OUT(SINK)}$	V_{OUT} 短路到 V_{CC} V_{OUT} shorted to V_{CC}	-	65	-	mA
VREF 电阻负载 VREF resistance load	R_{LREF}	V_{REF} 与 GND 之间 Between V_{REF} and GND	-	10	-	k Ω
VREF 电容负载 VREF capacitive load	C_{LREF}	V_{REF} 与 GND 之间 Between V_{REF} and GND	-	-	100	pF
上升时间 Rise time	t_{rise}	$I_P = 20 A (100 A/\mu s)$	-	0.5	-	μs
延迟时间 Delay time	t_D	$I_P = 20 A (100 A/\mu s)$	-	0.3	-	μs
响应时间 Response time	t_R	$I_P = 20 A (100 A/\mu s)$	-	0.5	-	μs
带宽 bandwidth	BW	小信号 -3dB Small signal -3dB	-	500	-	kHz

3. FSD7608-010C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	I_{PM}	-	-10	-	10	A
灵敏度 Sensitivity	S	-	-	200	-	mV/A
基本误差 Basic error	X_G	$T_A = 25\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-	± 1	-	% $I_{PM(max)}$
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-3	-	3	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-3	-	3	
线性度误差 Linearity error	ε_L	$I_p = I_{PM(min)} \sim I_{PM(max)}$	-	0.5	1	% $I_{PM(max)}$
灵敏度误差 Sensitivity error	ε_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_p = I_{PM(min)} \sim I_{PM(max)}$	-2	-	2	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_p = 0$	-15	-	15	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_p = 0$	-20	-	20	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_p = 0$	-20	-	20	
磁滞 hysteresis	V_{OH}	$I_p = I_{PM(min)} \text{ or } I_{PM(max)} \rightarrow 0$	-	± 10	-	mV
噪声 noise	V_N	$T_A = 25\text{ }^{\circ}\text{C}$, BW = 100 kHz	-	25	-	mV _{pp}

4. FSD7608-020C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	IPM	-	-20	-	20	A
灵敏度 sensitivity	S	-	-	100	-	mV/A
基本误差 Basic error	XG	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-	± 1	-	%IPM(max)
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-3	-	3	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-3	-	3	
线性度误差 Linearity error	ϵ_L	$I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-	0.5	1	%IPM(max)
灵敏度误差 Sensitivity error	ϵ_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-2	-	2	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = 0$	-10	-	10	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
磁滞 hysteresis	V_{OH}	$I_P = I_{PM(\min)} \text{ or } I_{PM(\max)} \rightarrow 0$	-	± 10	-	mV
噪声 noise	VN	$T_A = 25\text{ }^{\circ}\text{C}$, BW = 100 kHz	-	20	-	mVPP

5. FSD7608-030C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	IPM	-	-30	-	30	A
灵敏度 sensitivity	S	-	-	66.7	-	mV/A
基本误差 Basic error	XG	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-	± 1	-	% $I_{PM(\max)}$
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-2	-	2	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-3	-	3	
线性度误差 Linearity error	ε_L	$I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-	0.5	1	% $I_{PM(\max)}$
灵敏度误差 Sensitivity error	ε_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = I_{PM(\min)} \sim I_{PM(\max)}$	-2	-	2	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = 0$	-10	-	10	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
磁滞 hysteresis	V_{OH}	$I_P = I_{PM(\min)}$ or $I_{PM(\max)} \rightarrow 0$	-	± 10	-	mV
噪声 noise	V_N	$T_A = 25\text{ }^{\circ}\text{C}$, $BW = 100\text{ kHz}$	-	15	-	mVPP

6. FSD7608-040C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	I_{PM}	-	-40	-	40	A
灵敏度 sensitivity	S	-	-	50	-	mV/A
基本误差 Basic error	XG	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	± 1	-	% $I_{PM}(\max)$
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-2	-	2	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-3	-	3	
线性度误差 Linearity error	ε_L	$I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	0.5	1	% $I_{PM}(\max)$
灵敏度误差 Sensitivity error	ε_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-2	-	2	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = 0$	-10	-	10	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
磁滞 hysteresis	V_{OH}	$I_P = I_{PM}(\min)$ or $I_{PM}(\max) \rightarrow 0$	-	± 10	-	mV
噪声 noise	V_N	$T_A = 25\text{ }^{\circ}\text{C}$, $BW = 100\text{ kHz}$	-	15	-	mVPP

7. FSD7608-050C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	I_{PM}	-	-50	-	50	A
灵敏度 sensitivity	S	-	-	40	-	mV/A
基本误差 Basic error	XG	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	± 1	-	% $I_{PM}(\max)$
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-3	-	3	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-3	-	3	
线性度误差 Linearity error	ε_L	$I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	0.5	1	% $I_{PM}(\max)$
灵敏度误差 Sensitivity error	ε_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-2	-	2	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = 0$	-10	-	10	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
磁滞 hysteresis	V_{OH}	$I_P = I_{PM}(\min)$ or $I_{PM}(\max) \rightarrow 0$	-	± 10	-	mV
噪声 noise	V_N	$T_A = 25\text{ }^{\circ}\text{C}$, $BW = 100\text{ kHz}$	-	10	-	mV _{PP}

8. FSD7608-065C5BFB 性能参数/Performance parameter

除特殊说明外 $T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$

$T_A = 25\text{ }^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$, $R_L = 10\text{ k}\Omega$ unless otherwise specified

参数 Parameter	符号 Symbol	条件 Conditions	最小值 Minimum value	典型值 Typical value	最大值 Maximum value	单位 Unit
测量电流范围 Measuring current range	I_{PM}	-	-65	-	65	A
灵敏度 Sensitivity	S	-	-	30.77	-	mV/A
基本误差 Basic error	XG	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	± 1	-	% $I_{PM}(\max)$
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-3	-	3	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-3	-	3	
线性度误差 Linearity error	ϵ_L	$I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-	0.5	1	% $I_{PM}(\max)$
灵敏度误差 Sensitivity error	ϵ_S	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1	-	1	%
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = I_{PM}(\min) \sim I_{PM}(\max)$	-1.5	-	1.5	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = -30\text{ A} \sim 30\text{ A}$	-1.5	-	1.5	
零点失调电压 Zero offset voltage	V_{OE}	$T_A = 25\text{ }^{\circ}\text{C}$, $I_P = 0$	-10	-	10	mV
		$T_A = -40\text{ }^{\circ}\text{C} \sim +25\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
		$T_A = 25\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$, $I_P = 0$	-15	-	15	
磁滞 hysteresis	V_{OH}	$I_P = I_{PM}(\min)$ or $I_{PM}(\max) \rightarrow 0$	-	± 10	-	mV
噪声 noise	V_N	$T_A = 25\text{ }^{\circ}\text{C}$, $BW = 100\text{ kHz}$	-	10	-	mVPP

9. 典型输出特性曲线 / Typical output characteristic curve

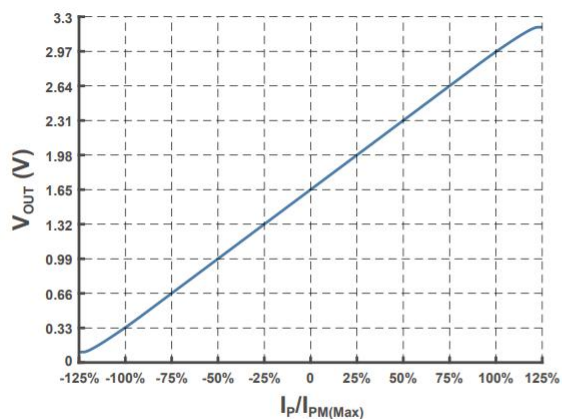


图 2 输入电流与输出电压关系曲线

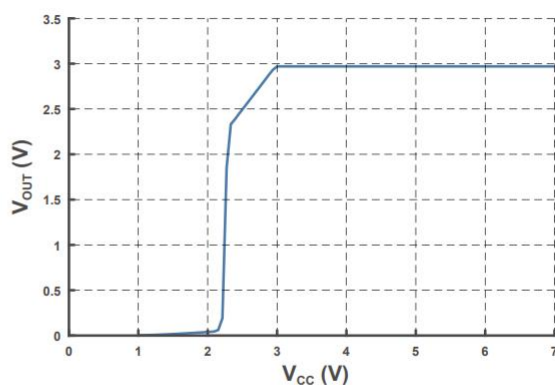


图 3 供电电压与输出电压关系曲线 (@ $I_P = I_{PM(Max)}$)

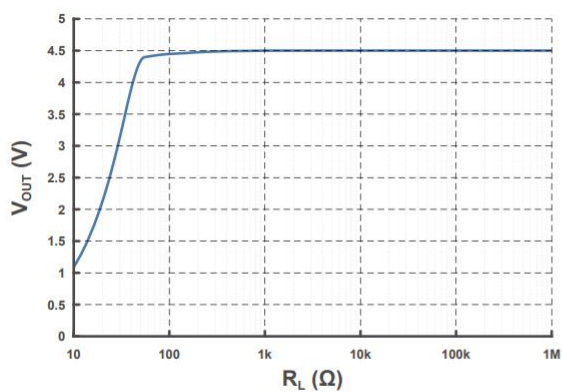


图 4 电阻负载特性曲线 (@ $I_P = I_{PM(Max)}$)

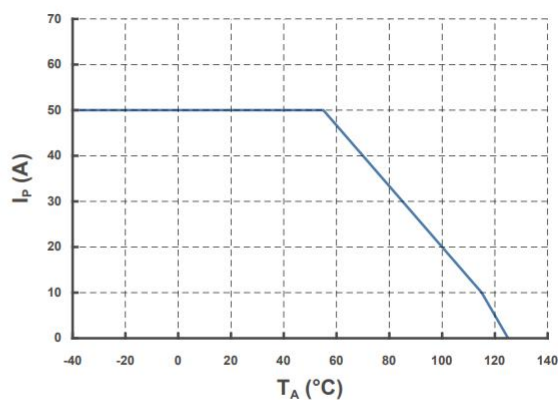


图 5 最大持续电流 (直流)

10. 参数定义及计算公式/Parameter definition and calculation formula

1) 基本误差/Basic error

$$X_G = \max_{I_P \in [I_{PM(min)}, I_{PM(max)}]} \left(\frac{V_{OUT} - (I_P \times S + V_{OFF})}{I_{PM(max)} \times S} \times 100\% \right)$$

式中， I_P 为传感器原边输入待测电流， $I_{PM(max)}$ 、 $I_{PM(min)}$ 为电流测量范围内的最大值、最小值， V_{OUT} 为原边输入电流 I_P 时传感器输出， S 为传感器灵敏度， V_{OFF} 为传感器零点偏置电压。

Where, I_P is the input current to be measured on the primary side of the sensor, $I_{PM(max)}$ and $I_{PM(min)}$ are the maximum and minimum values within the current measurement range, V_{OUT} is the output of the sensor when the input current I_P is on the primary side, S is the sensitivity of the sensor, and V_{OFF} is the zero bias voltage of the sensor.

2) 灵敏度/sensitivity

$$S = \frac{V_{OUT(@I_{PM(max)})} - V_{OUT(@I_{PM(min)})}}{2 \times I_{PM(max)}}$$

式中， $V_{OUT(@I_{PM(max)})}$ 、 $V_{OUT(@I_{PM(min)})}$ 分别为原边输入电流为 $I_{PM(max)}$ 、 $I_{PM(min)}$ 时传感器的输出。

Where, $V_{OUT(@I_{PM(max)})}$ and $V_{OUT(@I_{PM(min)})}$ are the output of the sensor when the input current on the primary side is $I_{PM(max)}$ and $I_{PM(min)}$ respectively.

3) 线性度/linearity

$$\epsilon_L = \max_{I_P \in [I_{PM(min)}, I_{PM(max)}]} \left(\frac{|V_{OUT} - (I_P \times \bar{S} + V_{OFF} + \bar{V}_{OE})|}{I_{PM(max)} \times \bar{S}} \times 100\% \right)$$

式中， $\bar{S}$ 、 $\bar{V}_{OE}$ 分别为传感器实际多次测量的平均灵敏度、零点失调电压的平均值。

Where $\bar{S}$ and $\bar{V}_{OE}$ are respectively the average sensitivity and the mean value of the zero offset voltage measured by the sensor several times.

4) 零点失调电压/Zero offset voltage

$$V_{OE} = V_{OUT(@I_P = 0)} - V_{OFF}$$

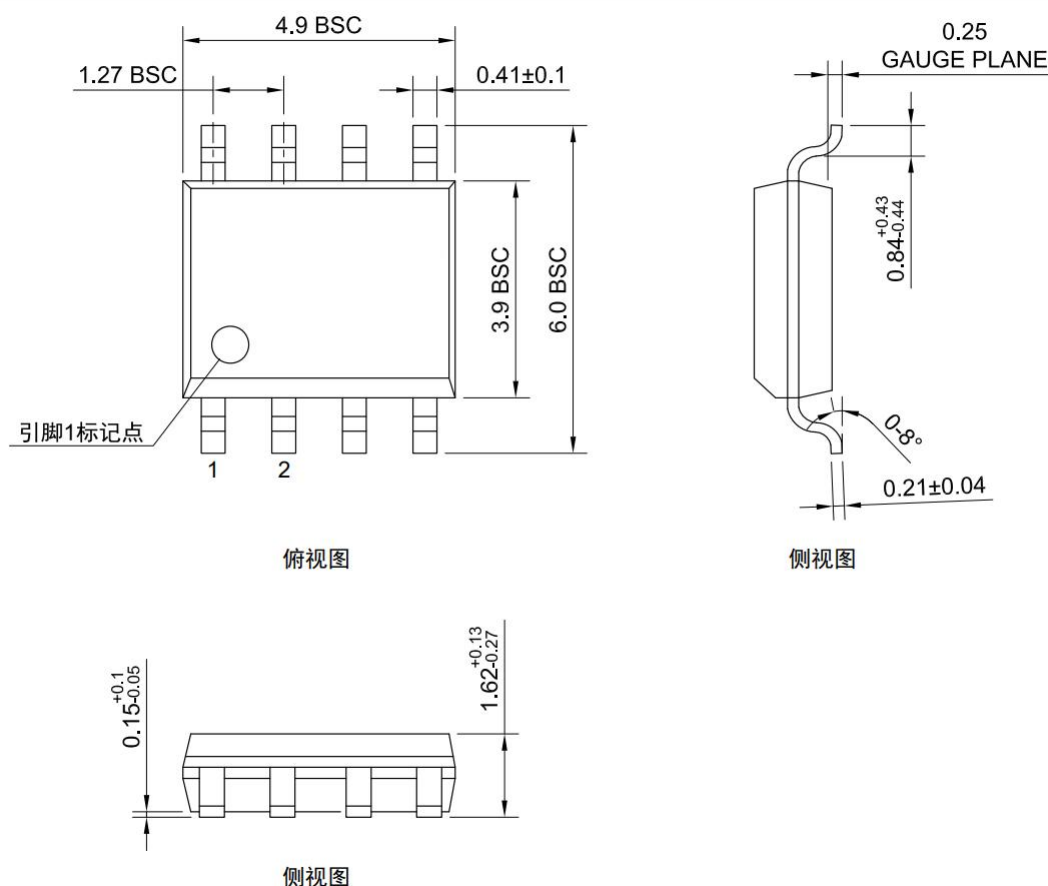
5) 磁滞/hysteresis

$$V_{OH} = \max \Delta H$$

式中， ΔH 为同一输入电流 I_P 时传感器在上、下行程实际输出的差值。

Where ΔH is the difference between the actual output of the sensor in the upper and lower stroke when the same input current I_P is used.

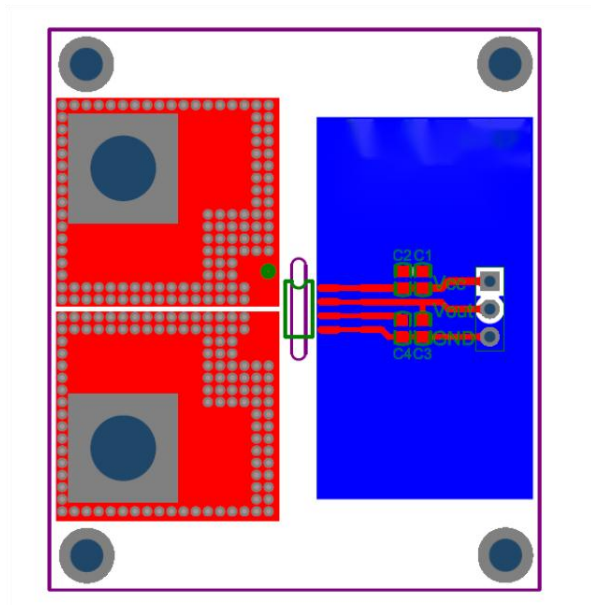
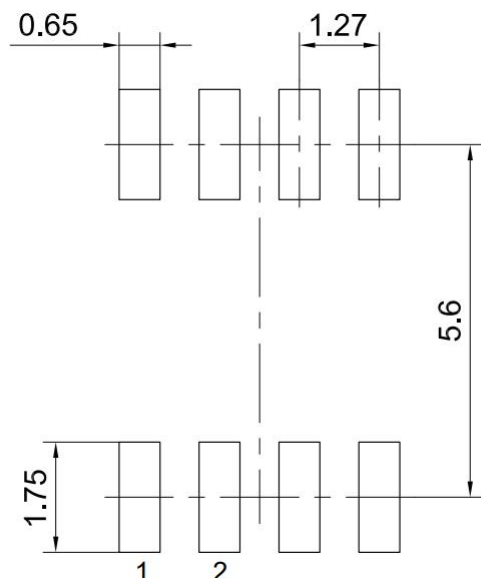
11. 封装/encapsulation



12. 引脚定义及接线图/Pin definition and wiring diagram

序号 Serial number	引脚名 Pin name	功能 Feature
1	Ip+	电流流入，正方向 Current flowing in, positive direction
2		
3	Ip-	电流流出，负方向 Current flowing out, negative direction
4		
5	GND	电源地 electrically
6	FILTER	用于外加电容滤波，降低噪声，不用可空置 Used for external capacitive filtering, reduce noise, do not need to empty
7	VOUT	模拟电压输出 Analog voltage output
8	VCC	供电电源 Power supply

13. PCB 推荐布局/PCB recommended layout



FSD7608-C 在大电流量程应用中，由于电流流经原边路径会产生一定的热量，采用合适的Layout，比如增加铺铜厚度、面积以及 PCB 层数，可以有更好的散热效果。FSD7608-C 芯片底部 PCB 开槽，可以增加爬电距离。

FSD7608-C in the application of large current range, because the current flows through the original side path will produce a certain amount of heat, the use of appropriate Layout, such as increasing the thickness of copper, area and the number of PCB layers, can have a better heat dissipation effect. FSD7608-C chip bottom PCB slot, can increase the creepage distance.

14. 使用说明/Instructions

1) 错误接线可能导致传感器损坏。

Incorrect cables may damage the sensor.

2) 产品供电电压 V_{CC} 需要满足规格要求，过低会导致产品无法准确输出，过高则会导致产品损坏。

The product power supply voltage V_{CC} must meet specifications. If the voltage is too low, the product cannot be accurately output. If the voltage is too high, the product may be damaged.

3) 产品输出 V_{OUT} 与 GND 之间可根据实际需求增设 RC 滤波环节，以调整产品输出频率特性。

The RC filtering link between product output V_{OUT} and GND can be added according to actual requirements to adjust product output frequency characteristics.

4) 可根据客户需求定制传感器，包括供电电压、测量电流范围、引脚定义等。

Sensors can be customized according to customer requirements, including supply voltage, measurement current range, pin definition, and more.