

A=3
±5V供电时，OP4177的输入范围是-3.5V~+3.5V
±5V供电时，AD8222的输入范围是-3.1V~+3.9V

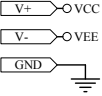
50Hz Fliege Notch Q=50
 $R23=R24=R0$, $C14=C15=C0$, $R21=R22=RQ$,
 $I0=1/(2\pi \cdot R0 \cdot C0)$
 $Q=RQ/(2 \cdot R0)$

LP0=150Hz
LP1=300Hz
EEG (取消)
ECG/LFP
Butterworth filter
 $C20=1/2 \cdot C21$
A0=25
A1=1

EMG频率20~200Hz，幅度100uV~10mV

放大倍率选择

放大倍率选择



Title			
脑电放大器主放大级			
Size	Number	Revision	
A3	1	1	
Date:	2009/6/4	Sheet of	3-2
File:	E:\电子设计\Amplifier.SchDoc	Drawn By:	碧云天书

Comment	Value	Designator	Quantity	Footprint	Description	LibRef
EEG/ECG Input		P1, P2	2	EJ-ST3.5	3-Conductor Jack with 2	Phonejack \$
REG1117-5.0		IC15	1	ZZ311	800mA and 1A Low Dro	REG1117-2
REG1117-Adj		IC11	1	ZZ311	800mA and 1A Low Dro	REG1117-2
TL431-23-3		IC13, IC14	2	SOT-23	Adjustable Shunt Regul	TL430ILP
EEG Output		P3, P4	2	PIN2	BNC Elbow Connector	BNC
0.047uF	0.047uF	C20, C23	2	1608[0603]	Capacitor	Cap
0.1uF	0.1uF	C21, C24	2	1608[0603]	Capacitor	Cap
0.47uF	0.47uF	C6, C7, C8, C9, C10, C11, C14, C15, C16, C17, C18, C19, C26, C27, C47, C48	16	2012[0805]	Capacitor	Cap
10uF/16V	10uF	C1, C2, C3, C4, C22, C25	6	3261	Capacitor	Cap
1nF	1nF	C5	1	1608[0603]	Capacitor	Cap
1pF	1pF	C31, C33, C50, C55	4	1608[0603]	Capacitor	Cap
1uF	1uF	C35, C36, C39, C40, C43, C44, C57, C59	8	2012[0805]	Capacitor	Cap
VA1212S-2W		B1	1	ISO DC-DC	DC-DC 直流隔离变压器	VA0505-1W
悬空		P7	1	HDR1X5	Header, 5-Pin	Header 5
USB附加组件		P6	1	HDR1X7	Header, 7-Pin	Header 7
100uH	100uH	L5	1	AXIAL-0.3L	Inductor	Inductor
10mH	10mH	L1, L2, L3, L4	4	L-2	Inductor	Inductor
TLC2262		IC2, IC9, IC10	3	D008_L	LinCMOS Precision Dug	TLC27L2AC
TLC2264CD		IC5, IC8	2	PW014_M	LinCMOS Precision Quo	TLC274CD
+12V电源		P5	1	Power 3.5	Low Voltage Power Sup	PWR2.5
MC79L05		IC12	1	SOT89	Negative-Voltage Regul	MC79L05AC
9013		BG1, BG2	2	SOT-23T	NPN Bipolar Transistor	QNPN
47uF/10V	47uF	C30, C32, C34, C37, C38, C41, C42, C52, C53	9	C3528	Polarized Capacitor (Ax	Cap Pol2
47uF/25V	47uF	C45, C46, C49, C51, C54, C56, C58, C60	8	C7343H	Polarized Capacitor (Ax	Cap Pol2
频率微调	1K	W1, W2	2	3296W	Potentiometer	RPot
OP4177AR		IC1	1	PW014_M	Quadruple Operational	OP4177AR
0	0	R42, R46	2	1608[0603]	Resistor	Res2
1.2K	1.2K	R79	1	1608[0603]	Resistor	Res2
1.8K	1.8K	R72	1	1608[0603]	Resistor	Res2
100	100	R57, R62	2	1608[0603]	Resistor	Res2
100K	100K	R55, R60, R68, R76	4	1608[0603]	Resistor	Res2
10K	10K	R4, R5, R59, R64, R65, R73	6	1608[0603]	Resistor	Res2
120K	120K	R43, R47	2	1608[0603]	Resistor	Res2
150K	150K	R6, R7, R41, R45	4	1608[0603]	Resistor	Res2
18K	18K	R10	1	1608[0603]	Resistor	Res2
1K	1K	R9, R11, R12	3	1608[0603]	Resistor	Res2
2.7K	2.7K	R54	1	1608[0603]	Resistor	Res2
22K	22K	R25, R26, R31, R32	4	1608[0603]	Resistor	Res2
240	240	R80	1	1608[0603]	Resistor	Res2
250	250	R58, R63	2	1608[0603]	Resistor	Res2
33K	33K	R70, R78	2	1608[0603]	Resistor	Res2
49.9K	49.9K	R56, R61, R66, R74	4	1608[0603]	Resistor	Res2
499	499	R8, R20	2	1608[0603]	Resistor	Res2
5.1K	5.1K	R44, R48, R71	3	1608[0603]	Resistor	Res2
5.1M	5.1M	R16, R17, R18, R19	4	1608[0603]	Resistor	Res2

51	51	R69, R77	2	1608[0603]	Resistor	Res2
510	510	R1, R2, R3	3	1608[0603]	Resistor	Res2
6.8K	6.8K	R23, R24, R29, R30	4	1608[0603]	Resistor	Res2
680K	680K	R21, R22, R27, R28	4	1608[0603]	Resistor	Res2
7.5K	7.5K	R34, R36, R38, R40	4	1608[0603]	Resistor	Res2
50Hz陷波选择		K2, K3	2	3PIN	Single-Pole, Double-Thr	K-SPDT
放大倍率选择		K4, K5	2	3PIN	Single-Pole, Double-Thr	K-SPDT
右腿驱动选择		K1	1	3PIN	Single-Pole, Double-Thr	K-SPDT
2.5V		D5	1	425	Zener Diode	D Zener
HCNR-201		O1, O2	2	DIP8EW	高速模拟光隔离器	HCNR-201
AD8222		IC3	1	LFCSP_VQ 1	双低噪声仪表放大器	AD8222
1N5819		D6	1	SOT-23	肖特基二极管	BAT54