

pmillett Nutube differential amp Bill of Materials - One channel only! You need two for stereo!

<u>Qty</u>	<u>Ref Des</u>	<u>Description</u>	<u>Mfg</u>	<u>Mfg PN</u>	<u>Vendor</u>	<u>Vendor PN</u>	<u>Cost Ea</u>	<u>Cost Ext</u>	<u>Comments</u>
4	C1, C2, C3, C4	Cap film 100nF 50V+ 0.1/0.2LS	Wima	MKS2C031001A00MC00	Mouser	505-MKS2C031001A00MC	\$ 0.15	\$ 0.61	Bypass caps, can use other types
2	C13, C14	Cap PP film 100nF 50V+ 0.3LS	Wima	MKP2C031001F00JSSD	Mouser	505-MKP2C031001F00JS	\$ 0.35	\$ 0.70	Coupling caps
2	C23, C24	Cap electrolytic 100uF 25V 8.5 dia	Nichicon	UFG1E101MPM	Mouser	647-UFG1E101MPM	\$ 0.48	\$ 0.96	
3	C5, C22, C27	Cap electrolytic 470uF 35V 10mm dia	Nichicon	UHW1V471MPD	Mouser	647-UHW1V471MPD	\$ 0.87	\$ 2.61	
2	C6, C7	Cap film 10uF 50V+ 0.2LS	Wima	MKS2B051001N00JSSD	Mouser	505-MKS2B051001N00JS	\$ 2.78	\$ 5.56	
6	C8, C9, C10, C11, C12, C15	Cap electrolytic 10uF 25V 2.5mm dia	Nichicon	UKT1V100MDD1TD	Mouser	647-UKT1V100MDD1TD	\$ 0.34	\$ 2.04	Coupling caps
3	L1, L2, L3	Inductor 330uH 5mm dia	Murata	11R334C	Mouser	580-11R334C	\$ 0.29	\$ 0.87	
2	Q1, Q2	JFET dual LSK389B	Linear Systems	LSK389B TO71	NAC	LSK389B-TO-71	\$ 8.43	\$ 16.86	store.nacsemi.com
4	Q1-1, Q1-2, Q2-1, Q2-2	FFET single LSK170	Linear Systems	LSK170 TO92					Single FET option (25K170)
2	R1, R2	Resistor 10.0k 1/4W 1% MF	Yageo	MFR-25FBF52-10K	Mouser	603-MFR-25FBF52-10K	\$ 0.12	\$ 0.24	
4	R10, R11, R32, R33	Resistor (not installed)					\$ -		Normally not installed
2	R12, R13	Trimpot 1k 1/4"	BI	64WR1KLF	Mouser	858-64WR1KLF	\$ 1.98	\$ 3.96	
1	R14	Resistor 40.2 ohm 1/4W 1% MF	Yageo	MFR-25FBF52-40R2	Mouser	603-MFR-25FBF52-40R2	\$ 0.12	\$ 0.12	
2	R15, R27	Resistor 243 ohm 1/4W 1% MF	Yageo	MFR-25FBF52-243R	Mouser	603-MFR-25FBF52-243R	\$ 0.12	\$ 0.24	
2	R16, R18	Resistor 33.2k 1/4W 1% MF	Yageo	MFR-25FBF52-33K2	Mouser	603-MFR-25FBF52-33K2	\$ 0.12	\$ 0.24	
2	R17, R26	Resistor 732 ohm 1/4W 1% MF	Yageo	MFR-25FBF52-732R	Mouser	603-MFR-25FBF52-732R	\$ 0.12	\$ 0.24	
									May also use 47.5k for lower gain or 475k for higher gain - see
2	R19, R20	Resistor 221k 1/4W 1% MF	Yageo	MFR-25FBF52-221K	Mouser	603-MFR-25FBF52-221K	\$ 0.12	\$ 0.24	
3	R21, R30, R31	Resistor 100 ohm 1/4W 1% MF	Yageo	MFR-25FBF52-100R	Mouser	603-MFR-25FBF52-100R	\$ 0.12	\$ 0.36	
2	R22, R23	Resistor 475k 1/4W 1% MF	Yageo	MFR-25FBF52-475K	Mouser	603-MFR-25FBF52-475K	\$ 0.12	\$ 0.24	
2	R3, R4	Resistor 100k 1/4W 1% MF	Yageo	MFR-25FBF52-100K	Mouser	603-MFR-25FBF52-100K	\$ 0.12	\$ 0.24	
1	R5	Trimpot 20k 1/4"	BI	64WR20KLF	Mouser	858-64WR20KLF	\$ 1.74	\$ 1.74	
4	R6, R7, R8, R9	Resistor 1.00k 1/4W 1% MF	Yageo	MFR-25FBF52-1K	Mouser	603-MFR-25FBF52-1K	\$ 0.12	\$ 0.48	
6	TP1, TP2, TP3, TP4, TP5, TP6	Test point	Keystone Electronics	5006	Mouser	534-5006	\$ 0.32	\$ 1.92	Optional
2	U1, U4	IC Linear Regulator LM317	On Semi	LM317MTG	Mouser	863-LM317MTG	\$ 0.57	\$ 1.14	
1	U2	IC CCS LM334 TO92	Texas Instruments	LM334Z/NOPB	Mouser	926-LM334Z/NOPB	\$ 0.87	\$ 0.87	
1	U3	DC/DC Converter 5V/5V	Recom	RFM-05055	Mouser	919-RFM-05055	\$ 1.41	\$ 1.41	
1	VT1	Tube Korg 6P1 Nutube	Korg	Nutube 6P1	pmillett.com				Included with PCB
1	PCB	PCB, Nutube Balanced Amp	pmillett	Nutube_diffamp	pmillett.com	Nutube_diffamp	\$ 50.00	\$ 50.00	

FET output buffers

2	Q3, Q4	JFET dual LSK389B	Linear Systems	LSK389B TO71	NAC	LSK389B-TO-71	\$ 8.43	\$ 16.86	store.nacsemi.com
4	Q3-1, Q3-2, Q4-1, Q4-2	FFET single LSK170	Linear Systems	LSK170 TO92					Single FET option (25K170)
4	R24, R25, R28, R29	Resistor 1.00k 1/4W 1% MF	Yageo	MFR-25FBF52-1K	Mouser	603-MFR-25FBF52-1K	\$ 0.12	\$ 0.48	
4	C16, C17, C18, C21	Cap film 100nF 50V+ 0.1/0.2LS	Wima	MKS2C031001A00MC00	Mouser	505-MKS2C031001A00MC	\$ 0.15	\$ 0.61	Bypass caps, can use other types
						Total cost (FET)		\$ 111.84	

Opamp output buffers

2	U5, U6	High Current Opamp	Texas Instruments	OPA551PA	Mouser	595-OPA551PA	\$ 5.12	\$ 10.24	
2	At U1, U4	IC Socket 8 pin	Mill-Max	110-41-308-41-001000	Mouser	575-11041308410010	\$ 0.76	\$ 1.52	
4	C19, C20, C25, C26	Cap film 100nF 50V+ 0.1/0.2LS	Wima	MKS2C031001A00MC00	Mouser	505-MKS2C031001A00MC	\$ 0.15	\$ 0.61	Bypass caps, can use other types
						Total cost (opamp)		\$ 106.26	