

ALPHA 20W Class A Amplifier BOM by zman01 and xrk971
Feb. 20, 2018 v1

Position	Specification	Mouser #	Mfg #	Product Description	Unit Price (US \$)	Qty	Total
R101	2k2 1% 1/4W metal thin film (all resistors 1% metal thin film unless otherwise specified)	594-5063JD2K200FT	MBA02040C2201FRP00	Metal Film Resistors - Through Hole .4watt 2.2Kohms 1% 1/8watt body size	0.14	1	0.14
R102	22k	594-MRS16000C2202FRP	MRS16000C2202FRP00	400 mW Thin Film Resistors 22Kohms 1% 50ppm	0.14	1	0.14
R103	3k3	594-MRS25000C3301FCT	MRS25000C3301FCT00	Thin Film Resistors .6watt 3.3Kohms 1%	0.32	1	0.32
R104	6k8	594-MRS16000C6801FCT	MRS16000C6801FCT00	400 mW Thin Film Resistors 6.8Kohm 1% 50ppm	0.14	1	0.14
R105	2k trimpot multiturn "Bourns" style set to 1050ohms	81-PV36Y202C01B00	PV36Y202C01B00	Trimmer Resistors - Through Hole 2.0Kohms 10mm Square 25turn	1.43	1	1.43
R106	220R 1% or better	594-5063JD220R0F	MBA02040C2200FC100	Metal Film Resistors .4watt 220ohms 1% 1/8watt body size	0.11	1	0.11
R108	470R 1% or better	594-5063JD470R0F	MBA02040C4700FC100	Metal Film Resistors .4watt 470ohms 1% 1/8watt body size	0.11	1	0.11
R111	820R (Do not use metal oxide thick film here)	594-5063JD820R0F	MBA02040C8200FC100	Metal Film Resistors - Through Hole .4watt 820ohms 1% 1/8watt body size	0.11	1	0.11
R112	220k	594-5063JD220K0F	MBA02040C2203FC100	Metal Film Resistors .4watt 220Kohms 1% 1/8watt body size	0.11	1	0.11
R113	22k 1% thin film carbon, or 1% metal thin film 50ppm name brand (Do not use metal oxide thick film here)	588-OK2235E-R52	OK2235E-R52	Carbon Film Resistors 22K Ohm 1/4W 5% 250 Volt	0.12	1	0.12
R121	1k	594-5063JD1K400F	MBA02040C1401FC100	Metal Film Resistors .4watt 1.4Kohms 1% 1/8watt body size	0.11	1	0.11
R122	2k2	594-5063JD2K200F	MBA02040C2201FC100	Metal Film Resistors .4watt 2.2Kohms 1% 1/8watt body size	0.11	1	0.11
R123	1k5	594-5063JD1K500FT	MBA02040C1501FRP00	Metal Film Resistors - Through Hole .4watt 1.5Kohms 1% 1/8watt body size	0.14	1	0.14
R124	option 1 - 100k, leave R125 open	594-5063JD100K0FT	MBA02040C1003FRP00	Metal Film Resistors .4watt 100Kohms 1% 1/8watt body size	0.14	1	0.14
R125	option 2 - 200k "Bourns" style multiturn trimpot set to 100k and leave R124 open (allows minor bias trim but affects CCS)	652-3296W-1-204LF	3296W-1-204LF	Trimmer Resistors - Through Hole 3/8" 200Kohms Sealed Vertical Adjust	2.41	1	2.41
R126	220R	594-5063JD220R0F	MBA02040C2200FC100	Metal Film Resistors .4watt 220ohms 1% 1/8watt body size	0.11	1	0.11
R1270	option 2 - 2k multiturn trimpot "Bourns" style, set to 1k, leave R127 open (allows adjustment of Aleph CCS modulation)	81-PV36Y202C01B00	PV36Y202C01B00	Trimmer Resistors - Through Hole 2.0Kohms 10mm Square 25turn	1.43	1	1.43
R127	option 1 - 1k, leave R1270 open	594-5063JD1K400F	MBA02040C1401FC100	Metal Film Resistors .4watt 1.4Kohms 1% 1/8watt body size	0.11	1	0.11
R128	680R	594-5063JD680R0F	MBA02040C6800FC100	Metal Film Resistors .4watt 680ohms 1% 1/8watt body size	0.11	1	0.11
R129	220R	594-5063JD220R0F	MBA02040C2200FC100	Metal Film Resistors .4watt 220ohms 1% 1/8watt body size	0.11	1	0.11
R131	0.33R 3W 5% metal thin film, Panasonic, optionally use 0.47R for 1.3amps (Do not use cheap metal oxide thick film here)	756-W21-R33Jl	W21-R33Jl	Wirewound Resistors - Through Hole 3Watt 0.33 ohm 5% 75ppm	0.63	1	0.63
R132	2 x parallel 0.33R 3W 5% metal thin film, Panasonic, optionally use single 0.22R if R131 is 0.47R (Do not use cheap metal oxide thick film)	756-W21-R33Jl	W21-R33Jl	Wirewound Resistors - Through Hole 3Watt 0.33 ohm 5% 75ppm	0.63	2	1.26
C101	220pF MKS/MKP film 50V to 100V 5mm pitch	505-FKP2D002201D00HA	FKP2D002201D00HA00	FKP - Film Capacitors 220 pF 100 VDC 2.5%	0.18	1	0.18
C102	10uF 35V Elna Silmic II (option 1) 5mm pitch radial (Use high quality audio grade elco here)	555-RFS35V100ME3#5	RFS-35V100ME3#5	Aluminum Electrolytic Capacitors - Leaded 10uF 35V 20% Audio SILMIC II	0.30	1	0.30
C103	47uF 50v electrolytic (doesn't have to be a fancy audio one as it is a smoothing cap to provide bias to the LTP.	598-476CKE050M	476CKE050M	Aluminum Electrolytic Capacitors - Leaded 47uF 50V 20%	0.12	1	0.12
C1020 Bypass	2.2uF MKP bypass 10uF Silmic, 37mm pitch axial	871-B32523Q1225K	B32523Q1225K000	22.5mm LS Film Capacitors 2.2uF 100volts 10%	1.93	1	1.93
C1020 (alternate)	10uF 100V MKP (option 2) or 2.2uF MKP bypass 10uF Silmic, 37mm pitch axial	75-MKP1848610914P2	MKP1848610914P2	Film Capacitors 10uF 1100volt 5% 2pin 37.5mm LS	8.96	1	8.96
C1021	10uF 250V MKP (option 3) 43mm pitch axial	80-PHE426HR8100JR6L2	PHE426HR8100JR6L2	Film Capacitors 250volts 10uF 5% LS 37.5mm	5.85	1	5.85
C1022	1uF 100V MKP or 63V MKS (Wima) bypass (option 4) 12mm pitch	871-B32672P6105K	B32672P6105K	Film Capacitors 1.0uF 10% 630Vdc MKP PFC, LS 15MM	1.26	1	1.26
C105	18pF 1206 NPO or 5mm pitchradial silver mica, NPO has lower distortion (I used 22pF here and it works fine)	581-12061A180FAT2A	12061A180FAT2A	Multilayer Ceramic Capacitors MLCC - SMD/SMT 100V 18pF C0G 1206 1%	0.68	1	0.68
C111	1000uF 50V Elna Silmic II, 7.5mm pitch or Panasonic FC/FM 35V to 50V or Nichicon KA, 17.5mm max (Use high quality low ESR cap)	555-RFS50V102MK9#5	RFS-50V102MK9#5	Aluminum Electrolytic Capacitors - Leaded 1000uF 50V 20% Audio SILMIC II	4.38	1	4.38
C112	10nF MKP or FKP film radial 5mm pitch (I actually used a Milspec MLCC cap here, should be film)	505-MKP2J021001E00MSD	MKP2J021001E00MSD	Film Capacitors 0.01 uF 630 VDC 20%	0.17	1	0.17
C113	18pF 1206 NPO or 5mm pitchradial silver mica, NPO has lower distortion (I used 22pF here and it works fine)	581-12061A180FAT2A	12061A180FAT2A	Multilayer Ceramic Capacitors MLCC - SMD/SMT 100V 18pF C0G 1206 1%	0.68	1	0.68
C115	1uF 63V Wima MKS	505-MKS2C041001FJC00	MKS2C041001FJC00	Film Capacitors 1uF 63 Volts 5%	0.41	1	0.41
C121	1uF 63V Wima MKS 7.5mm pitch	505-MKS4C041002EKSSD	MKS4C041002EKSSD	Film Capacitors 1uF 63 Volts 5%, 7.5mm Lead spacing	0.80	1	0.80
C122	220uF 50V Elna Silmic II, 7.5mm pitch, 16mm max dia, Use high quality audio grade elco here (Elna not in stock - Nichicon quoted)	647-UF62A221MHM	UF62A221MHM	Nichicon Aluminum Electrolytic Capacitors - Leaded 220uF 100 Volts 20% Tol.	1.35	1	1.35
C122 alternate	220uF 35V Elna Simic II 7.5mm pitch	555-RFS35V221MI6#5	RFS-35V221MI6#5	Elna Simic II electrolytic 220uF 35v	1.33	1	1.33
C128	220uF 50V Elna Silmic II, 7.5mm pitch, 16mm max dia, Use high quality audio grade elco here (Elna not in stock - Nichicon quoted)	647-UF62A221MHM	UF62A221MHM	Nichicon Aluminum Electrolytic Capacitors - Leaded 220uF 100 Volts 20% Tol.	1.35	1	1.35
C128 alternate	220uF 35V Elna Simic II 7.5mm pitch	555-RFS35V221MI6#5	RFS-35V221MI6#5	Elna Simic II electrolytic 220uF 35v	1.33	1	1.33
C127	1uF 63V Wima MKS	505-MKS2C041001FJC00	MKS2C041001FJC00	Film Capacitors 1uF 63 Volts 5%	0.41	1	0.41
V101	KA992 TO92 - match Hfe to better than 0.5% for V101/102 to keep DC offset small	512-KSA992FBU	KSA992FBU	Bipolar Transistors - BJT PNP Epitaxial Sil	0.24	1	0.24
V102	KA992 TO92 - match Hfe to better than 0.5% for V101/102 to keep DC offset small	512-KSA992FBU	KSA992FBU	Bipolar Transistors - BJT PNP Epitaxial Sil	0.24	1	0.24
V103	KSC1845 TO92	512-KSC1845FTA	KSC1845FTA	Bipolar Transistors - BJT NPN Epitaxial Sil	0.21	1	0.21
V121	BC547C TO92	512-BC547CUB	BC547CUB	Bipolar Transistors - BJT NPN 45V 100mA HFE/800 - TO-92-3	0.23	1	0.23
V131	IRFP240PBF Vishay	844-IRFP240PBF	IRFP240PBF	MOSFET N-Chan 200V 20 Amp	2.32	1	2.32
V132	IRFP9240PBF Vishay	844-IRFP9240PBF	IRFP9240PBF	MOSFET P-Chan 200V 12 Amp	2.86	1	2.86
D035	1N4148 glass axial package	78-1N4148	1N4148TR	500 mW Diodes - General Purpose, Power, Switching 100V Io/150mA T/R	0.14	1	0.14
X141, 142, 143, 144, 131, 132	spade connectors (2 pin 5mm pitch) your choice of blade width (typical 5mm 0.205in or 6mm 0.250in)	534-1287	1287	Keystone Terminals .250" PCB TERMINAL	0.17	6	1.02
X101	JST 2.5mm pitch 2-pin audio input or similar, or flying leads OK	571-3-641213-2	3-641213-2	TE Connectivity - Headers & Wire Housings POLARIZED HEADER 2P Straight Post gold	0.51	1	0.51