Bill Of Materials (BOM) for Item 28, BOM Rev 1.03.0. Long version with comments and component placements.

AMP11 kit (36V)

Bag 0 AMP11 PCB		Component	Q	Туре	Pos
Spec: Double weight copper Bag 1 Cap 180V Film 0.2uF 3 hmt C25,C36,C28 Comment: Output filter Spec: Film cap, 0.22 uF RMS to RM10 1 hmt C32 Bag 1 Cap 180V Film 0.1uF 1 hmt C32 Comment: Output filter Spec: Output filter Spec: Output filter Spec: John 1 ur 100V RMS to RM10 1 hmt C200 Comment: Input DC blocking cap 2 Spec: Ill film is increased above 22K Reside above 22K Bag 1 Cap 10V Elect 1000uF Low 1 hmt C1 Comment: SV decoupling Spec: Ill film is increased above 22K Res 22K low film Viving ESR 2 hmt C50,C51 Bag 1 Cap 50V Elect 180uF U-Low 2 2 hmt C50,C51 Comment: SV preregulator bulk caps Spec: Spec: Heedback network Spec: All No noise 1% Ray Spec Spec: Heedback network Spec: All No noise 1% Late Spec Spec: Heedback network	Bag 0	AMP11 PCB	1	-	PCB
Bag 1	Comment:	PCB			
Polyprop RIM10	Spec:	Double weight copper			
Spec: Film cap, 0.22 uF RM5 to RM10	Bag 1		3	hmt	C25,C36,C28
Cap 160V Film 0.1 uF Polyprop RM10 5x13mm 1 hmt Polyprop RM10 5x13mm 2 hmt Polyprop RM10 5x13mm 3 hmt Polyprop RM10 5x13mm	Comment:	Output filter			
Polyprop RM10 5x13mm	Spec:	Film cap, 0.22 uF RM5 to RM	110		
Spec: 0.1 uF 100V RM5 to RM10 Bag 1 Cap 50V Elect 3.3uF Low ESR DS 1 hmt C200 Comment: Input DC blocking cap 3.3uF. Size can be decreased if Rin is increased above 22K Filn is increased above 22K Bag 1 Cap 10V Elect 1000uF Low ESR 1 hmt C1 Comment: 5V decoupling 5V decoupling 5V decoupling Spec: 1000uF 10V low ESR 5V decoupling 5V decoupling Spec: 1000uF 10V low ESR 5V decoupling 5V decoupling Spec: 1000uF 10V low ESR 5V decoupling 5V decoupling Spec: 1000uF 10V low ESR 5V decoupling 5V decoupling Spec: 5V decoupling 2 hmt C50.C51 Comment: 5V preregulator bulk caps 5V percegulator bulk caps Spec: 22 Klow noise 1% 7 smt R3,R12,R59,R81,R82,R83,R84 Comment: 5Ped 22 Klow noise 1% 5 separates AGND <=> GND Spec: 4TK cho noise 10 foo hm 5 perculator low 10 feedback Spec: 4TK 1% low noise 5 perculator ref voltage Spec: 120 dpm 1% 5 smt C81,		Polyprop RM10 5x13mm	1	hmt	C32
Bag 1	Comment:	Output filter			
Seg ESR D5	Spec:	0.1 uF 100V RM5 to RM10			
Speci 3.3UF. Size can be decreased if Rin is increased above 22K	Bag 1	Cap 50V Elect 3.3uF Low ESR D5	1	hmt	C200
Bag 1	Comment:				
Second S	Spec:		d if		
Spec: 1000UF 10V low ESR	Bag 1		1	hmt	C1
Bag 1 Cap 50V Elect 180uF U-Low ESR D8 Comment: 5V preregulator bulk caps Spec: SV preregulator bulk caps Spec: Bag 2 Res 2.2Kohm 1/10W 0.5% 0805 7 smt R3,R12,R59,R81,R82,R83,R84 SV preregulator bulk caps Spec: 2.2K low noise 1% Spec: 2.2K low noise 1% Suparates AGND <=> GND Spec: HF choke 100MHz 60 ohm	Comment:	5V decoupling			
Comment: 5V preregulator bulk caps Spec: Bag 2 Res 2.2Kohm 1/10W 0.5% 7 smt R3,R12,R59,R81,R82,R83,R84 Comment: Feedback network Spec: 2.2K low noise 1% Bag 2 Ferrite chip 60 Ohm 3000mA 0805 Comment: Separates AGND <=> GND Spec: HF choke 100MHz 60 ohm Bag 2 Res 47Kohm 1/10W 0.5% 0805 Comment: Alternate input / feedback Spec: 47K 1% low noise Bag 2 Res 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 0805 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NP0/COG 0805 Z smt C40,C41	Spec:				
Spec: Res 2.2Kohm 1/10W 0.5% 0805 7 smt R3,R12,R59,R81,R82,R83,R84 Comment: Feedback network 5pec: 2.2K low noise 1% L5 Bag 2 Ferrite chip 60 Ohm 3000mA 0805 1 smt L5 Comment: Separates AGND <=> GND 5005 2 smt R29,R31,alternate values Comment: Alternate input / feedback 5900 3 smt R57 Comment: Pre-regulator ref voltage 5900 1 smt R57 Comment: Pre-regulator ref voltage 3805 2 smt C81,C82 Comment: Output EMI damping 3805 2 smt C40,C41 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41	Bag 1	Cap 50V Elect 180uF U-Low ESR D8	2	hmt	C50,C51
Bag 2		5V preregulator bulk caps			
Comment: Feedback network Spec: 2.2K low noise 1% Bag 2 Ferrite chip 60 Ohm 3000mA 0805 Comment: Separates AGND <=> GND Spec: HF choke 100MHz 60 ohm Bag 2 Res 47Kohm 1/10W 0.5% 0805 Comment: Alternate input / feedback Spec: 47K 1% low noise Bag 2 Res 120R 1/10W 0.5% 0805 1 smt Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 0805 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 Pre-regulator ref voltage Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 Pre-regulator ref 300 Cer 390pF NPO/COG 0805 Sint NS, N12, N39, N61, N62, N63 AS, N12, N39, N61, N62, N63 R29, R31, alternate values R29, R31, alternate values R29, R31, alternate values Comment: Cap 50V Cer 1000pF X7R 0805 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805	Spec:				
Spec: 2.2K low noise 1% Bag 2 Ferrite chip 60 Ohm 3000mA 0805 1 smt L5 Comment: Separates AGND <=> GND Spec: HF choke 100MHz 60 ohm HF choke 100MHz 60 ohm Bag 2 Res 47Kohm 1/10W 0.5% 0805 2 smt R29,R31,alternate values Comment: Alternate input / feedback Spec: 47K 1% low noise Hes 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Spec: 120 ohm 1% Hes 20 ohm 1%	Bag 2	Res 2.2Kohm 1/10W 0.5% 0805	7	smt	R3,R12,R59,R81,R82,R83,R84
Bag 2 Ferrite chip 60 Ohm 3000mA 0805	Comment:	Feedback network			
Comment: Separates AGND <=> GND	Spec:	2.2K low noise 1%			
Spec: HF choke 100MHz 60 ohm Bag 2 Res 47Kohm 1/10W 0.5% 0805 2 smt R29,R31,alternate values Comment: Alternate input / feedback Spec: 47K 1% low noise 8 smt R57 Bag 2 Res 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Spec: 120 ohm 1% 5 smt C81,C82 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 2 smt C40,C41 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41	Bag 2	Ferrite chip 60 Ohm 3000mA 0805	1	smt	L5
Comment: Alternate input / feedback Spec: 47K 1% low noise Bag 2 Res 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 0805 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41		•			
Spec: 47K 1% low noise Bag 2 Res 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Fre-regulator ref vol	Bag 2	Res 47Kohm 1/10W 0.5% 0805	2	smt	R29,R31,alternate values
Bag 2 Res 120R 1/10W 0.5% 0805 1 smt R57 Comment: Pre-regulator ref voltage Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 2 smt C81,C82 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41	Comment:	Alternate input / feedback			
Comment: Pre-regulator ref voltage Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 0805 2 smt C81,C82 Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41	Spec:	47K 1% low noise			
Spec: 120 ohm 1% Bag 2 Cap 50V Cer 1000pF X7R 0805 2 smt C81,C82 Comment: Output EMI damping 5pec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF NPO/COG 0805 2 smt C40,C41	Bag 2	Res 120R 1/10W 0.5% 0805	1	smt	R57
Bag 2	Comment:	Pre-regulator ref voltage			
Comment: Output EMI damping Spec: 1000 pF 50V NPO 0805 Sec: Cap 50V Cer 390pF 2 smt C40,C41 Sec: C40,C41 C40,C	Spec:	120 ohm 1%			
Spec: 1000 pF 50V NPO 0805 Bag 2 Cap 50V Cer 390pF 2 smt C40,C41	Bag 2	Cap 50V Cer 1000pF X7R 0805	2	smt	C81,C82
Bag 2 Cap 50V Cer 390pF 2 smt C40,C41		, , ,			
	Spec:	1000 pF 50V NPO 0805			
Comment: Feeedback damping, Outpt snubber	Bag 2	Cap 50V Cer 390pF NP0/COG 0805	2	smt	C40,C41
	Comment:	Feeedback damping, Outpt snubber			

Spec: 330pF or 390 pF NPO 5%

Res Ax. Met. Film 1W hmt R2 6.5mm 15ohm Comment: LP filter for pre-regulator Spec: 15 ohm 1W Cap 50V Elect 22uF U-Low hmt C91 ESR D5 RM2 Comment: Regulator adj pin stabilizing Spec: 22 uF 10V Trim pot Cerm 5Kohm hmt POT1 25TRN Top Comment: Trimmer for output offset Spec: 5K multiturn Cermet 5K Res 510Kohm 1/10W 0.5% Bag 3 R4,R26 smt 0805 Comment: Output trimmer limiting Spec: 510K Res 22.0Kohm 1/10W 0.5% Bag 3 R29,R31,alternate values smt 0805 Comment: Input and input feedback Spec: 1% 22K low noise Res 20R 1/4W 5% 1206 Bag 3 smt R51 SMD Comment: Output snubber Spec: 20 ohm 0.25W 1206 Cap 50V Cer 33pF NP0 Bag 3 smt C90 0805 Comment: Input EMI damping Spec: 33pF 0805 NPO Res Ax. Met. Film 2W 10mm 1 hmt Bag 3 R50 Comment: Output zobel filter Spec: 15 ohm 2W axial Res 39.0Kohm 1/10W 0.5% Bag 4 smt R19,R27 + alt for R29, R31 0805 Comment: Blanking for unused channel Spec: 39K 0805 Cap 50V Elect 1000uF U-Bag 4 hmt C101,C102 low ESR D16 Comment: Close-up bulk capacitors Ultra low ESR >=1000uF 50V Spec: rad 16mm, RM7.5 Res 220Kohm 1/10W 0.5% Bag 4 smt R52,R54 0805 Comment: Rail voltage sensing Spec: 220K 1% 0805 Res 8.25Kohm 1/10W 0.5% Bag 4 smt R5,(R103,R114 alt value) Comment: REF voltage and Modulator feedback Spec: Res 1.0Kohm 1/10W 0.5% Bag 4 R22,R30, (R3,R12 alt value) smt 0805

Comment: Feedback network

Spec: 1K 1% low noise

Bag 4 Res 249R 1/10W 0.5% 0805 1 smt R110

Comment: +5V setpoint Spec: 1% 750 ohm

Res 12.0K ohm 1/10W 0.5%

smt R103,R114,alternate values Bag 4 0805

Comment: Alternate feedback

Spec:

Cap 50V Cer 0.1uF X7R Bag 5 15 smt C3,C4,C7,C10,C12,C14,C18,C21,C22,C24,C30,C31,C35,C110,C112

0805

Comment: Decoupling

Spec: 0.1 uF 50V X7R

Cap 100V Cer 330pF NP0 Bag 5 smt C13

0805

Comment: Output snubber

Spec: 330 pF 100V

Res 5.6Kohm 1/10W 0.5% Bag 5 smt R103,R114

0805

Comment: Modulator feedback

Spec: 5.6K 1% low noise

Res 10Kohm 1/10W 0.5% R37,R40,R45,R53,R103,R114 Bag 5 smt 0805

Comment: Feedback and pullup

Spec: 1% low noise for feedback

Bag 5 Res 750R 1/10W 0.5% 0805 2 smt R56,R111

Comment: Voltage regulator setpoints

Spec: 750 ohms 1% low noise

Bag 5 Toroid T80-2 L1,L3 2

Comment: Output filter

Iron powder type 2, diameter 20 Spec:

mm, 15uH

Cap 10V Cer 1.0uF X7R Bag 5 smt C55,C56

0805

Comment: 5V secondary decoupling

Spec: 1 uF 10V X7R

Copper wire 0.6mm x 1.25m L1,L3

x 2

Comment: For winding inductors

Spec: 0.6 mm 1.2 m

Bag 6 Tripath TP2050 smt¤ U2

Comment: Tripath Power stage

Spec: Tripath Power stage

LED 3mm Hi-eff Red Bag 6 hmt¤

Diffused

Comment: Status LEDs Spec: Low power LED

Comment: +5V supervisor

MCP101 Superv. 4.85V Ahmt¤ U10

Bag 6 high D-bond TO-92

Spec: 4.75V Active high TO92

Bag 6 MOSFET P-ch 50V 130mA smt¤ Q4,Q5,Q6 SOT-23 (SP)

Comment: LED drivers

Spec: P-chan SOT23 50V 100mA

Voltage Reg Adj 1.5A TO-Bag 6 1 hmt¤ Q10

Pre-regulator 9V. Metal surface is Comment: conducting. Do NOT ground!

Spec: LM317 TO-220

Voltage Reg Pos Adj 100mA 1 TO-92 hmt¤ Q2

Comment: Regulator for +5V Spec: LM317L, TO92

> Bag 6 Tripath TC2001 1 smt¤ U1

Comment: Tripath signal processor

Spec: No substitute

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Notes: ¤ = ESD sensitive hmt=Hole Mount smt=Surface Mount