

Bill Of Materials (BOM) for Item 45, BOM Rev 1.00.00. Long version with comments and component placements.

AMP7 Kit

Pkg & order	Type	Component	Q	Position
0 -		AMP7 PCB	1	PCB
<i>Comment: Triple weight copper PCB</i>				
<i>Spec:</i>				
0 -		Mounting strip AMP7	1	Mounting for toroids
<i>Comment: For stabilizing toroids from vibration</i>				
<i>Spec: Hole spacing matches PCB</i>				
1 hmt		Cap 50V Elect 3.3uF Low ESR D5	2	C100,C200
<i>Comment: Input DC blocking capacitor</i>				
<i>Spec: 3.3 uF</i>				
1 hmt		Cap 50V Cer 0.1uF X7R 10% RM2.5	3	C19,C21,C26
<i>Comment: Decoupling</i>				
<i>Spec: X7R RM2.5 50V</i>				
1 hmt		Res Ax. Met. Film 0.4W 3.4mm 1Kohm	10	R25,R26,R27,R28, (Alt value for R33,R354,R35,R36), R14,R15
<i>Comment: Feedback network and LED current limit</i>				
<i>Spec:</i>				
1 hmt		Res Ax. Met. Film 0.4W 3.4mm 1Mohm	1	R16-1
<i>Comment: Rail voltage sensing</i>				
<i>Spec: 180K+1M = 1.18M</i>				
1 hmt		Res Ax. Met. Film 1W 6.5mm 15Kohm	4	R43,R44,R45,R46
<i>Comment: Feedback main resistors</i>				
<i>Spec: 15K 1% low noise (Value depends on rail voltage)</i>				
1 hmt		Res Ax. Met. Film 0.25W 3.4mm 1.1Kohm	4	R29,R30,R31,R32
<i>Comment: Modulator feedback network</i>				
<i>Spec: 1.1K 1% low noise</i>				
2 hmt		Res Ax. Met. Film 0.4W 3.4mm 2.2Kohm	4	Alt value for R33,R354,R35,R36
<i>Comment: Feedback network</i>				
<i>Spec: 1% low noise. Value depends on rail voltage</i>				
2 hmt		Res Ax. Met. Film 0.4W 3.4mm 10Kohm	4	R11,R12,R39,R40
<i>Comment: Current sense setting, Offset trimmer range/sensitivity limiter</i>				
<i>Spec: 10K</i>				
2 hmt		Res Ax. Met. Film 0.4W 3.4mm 22Kohm	4	R100, R200, R101,R201,
<i>Comment: Input & Input feedback</i>				
<i>Spec: 1% low noise. Value depends on required input sensitivity</i>				
2 hmt		Res Ax. Met. Film 0.4W 3.4mm 33Kohm	2	R17-2, R18-2
<i>Comment: Rail voltage sensing setpoint</i>				
<i>Spec: 390K+33K = 423K</i>				
2 hmt		Res Ax. Met. Film 1W 6.5mm 10ohm	1	R1
<i>Comment: +5V input filter</i>				
<i>Spec: 10 ohm 0.25W</i>				
2 hmt		Res Ax. Met. Film 0.125W 3.4mm 8.25K	1	R825
<i>Comment: Ref voltage</i>				
<i>Spec: 8.25K1% Axial</i>				

3 hmt	Trim pot Cerm 50Kohm 25TRN Top	2	R37,R38
<i>Comment: Trims output offset</i>			
<i>Spec: 50K cermet</i>			
3 hmt	Cap 50V Cer 33pF NPO/COG 5% RM2.5	2	C101,C201
<i>Comment: Input EMI filter</i>			
<i>Spec: COG/NPO 33 pF RM2.5</i>			
3 hmt	Choke bead core 3.5X5mm Axial	1	L5
<i>Comment: Separates AGND<=>GND</i>			
<i>Spec: 60-120 ohm 100MHz</i>			
3 hmt	Cap 10V Elect 1000uF Low ESR	1	C38
<i>Comment: 5V bulk cap</i>			
<i>Spec: 1000uF low ESR</i>			
3 hmt	Cap 50V Cer 330pF NPO/COG 5% RM2.5	1	C30
<i>Comment: Feedback filer</i>			
<i>Spec: COG/NPO 330 pF RM2.5 Verify output frequency is around 600kHz, channels at least 40 kHz apart</i>			
3 hmt	Res Ax. Met. Film 0.4W 3.4mm 47Kohm	2	(R100,R200,R101,R201)
<i>Comment: Input / feedback resistors, alternative values</i>			
<i>Spec: 1% low noise</i>			
3 hmt	Cap 25V Elect 47uF U-low ESR D5	3	C11,C12,C37
<i>Comment: Bootstrap caps for high side gate drive. V5 Adj pin</i>			
<i>Spec: 47uF 25V D5mm RM2</i>			
4 hmt	Cap 35V Elect 330uF U-low ESR D10	1	C10
<i>Comment: VN10 bulk cap</i>			
<i>Spec: Min 220uF 25V U-low ESR</i>			
4 hmt	Cap 50V Cer 220pF NPO/COG 5% RM2.5	3	C17,C18,C825
<i>Comment: Current sensing and VREF deglitch</i>			
<i>Spec: 220pF NPO 50V</i>			
4 hmt	Cap 50V Cer 390pF NPO/COG 5% RM2.5	1	C31
<i>Comment: Feedback filtering</i>			
<i>Spec: 390pF NPO</i>			
4 hmt	Res Ax. Met. Film 0.4W 3.4mm 220R	2	R9,R10
<i>Comment: Boot cap current limit</i>			
<i>Spec: 150-330ohm</i>			
4 hmt	Res Ax. Met. Film 0.4W 3.4mm 180Kohm	1	R16-2
<i>Comment: Voltage sensing setpoints</i>			
<i>Spec: 180K+1M = 1.18M</i>			
4 hmt	Res Ax. Met. Film 0.4W 3.4mm 390Kohm	3	R17, R18, R19
<i>Comment: Voltage setpoint</i>			
<i>Spec: 390K + 33K = 422K</i>			
4 hmt	Res Ax. Met. Film 0.125W 3.4mm 360R	1	R47
<i>Comment: 5V voltage setpoint</i>			
<i>Spec: 360 ohm 1%</i>			
5 -	Spacer nylon nat 9 mm round #4	4	Mounting
<i>Comment:</i>			
<i>Spec:</i>			
5 -	Screw machine Phil 4-40x1/2 SS	8	Mounting
<i>Comment:</i>			

<i>Spec: Non-magnetic</i>		
5 -	Nut HEX 4-40 SS	8 Mounting
<i>Comment:</i>		
<i>Spec: Non-magnetic</i>		
5 -	Flat Washer SS #4	4 FET mounting
<i>Comment: Between FET and PCB</i>		
<i>Spec: Non-magnetic</i>		
5 hmt	Silica Insulator TO-247	4 MOSFET mounting
<i>Comment: MOSFET mounting</i>		
<i>Spec: 2 mm TO-247</i>		
5 -	Spacer 20mm black nylon	2 Base for mounting strip
<i>Comment: For stabilizing toroids</i>		
<i>Spec: 20mm height</i>		
6 -	Litz wire 1.5m x 2 (27/30)	1
<i>Comment:</i>		
<i>Spec:</i>		
6 -	Toroid T130-2	2
<i>Comment:</i>		
<i>Spec:</i>		
6 hmt	Conn header 16-pole RM5.00 mm	2 Power conn
<i>Comment: Power connector</i>		
<i>Spec: 16-pin header, high current</i>		
7 hmt	Cap 100V Cer 0.1uF X7R 10% RM2.5	7 C9,C15,C16,C50,C60,C70,C80
<i>Comment: Decoupling of main FETs and VN10</i>		
<i>Spec: X7R 100V RM2.5</i>		
7 hmt	Cap 100V Elect 820uF U-low ESR RM7.5 D18	4 C51,C61,C71,C81
<i>Comment: Close-up power bulk caps</i>		
<i>Spec: Min 470uF 80V U-low ESR</i>		
7 hmt	Cap 250V Film 0.22uF Polyprop RM15	4 C22, C23, C24,C25
<i>Comment: Output filter</i>		
<i>Spec: High ripple 0.22uF</i>		
7 hmt	Cap 160V Elect 33uF Low ESR	2 C57,C67
<i>Comment: Rail-Rail decoupling</i>		
<i>Spec: Low ESR 33uF min 150V, max 20 mm tall</i>		
7 hmt	Cap 100V Film 0.22uF Polyester RM7.5	4 C52,C62,C72,C82
<i>Comment: Power rail decoupling</i>		
<i>Spec: 0.22uF min 100V compact film</i>		
8 hmt	Res Ax. Met. Film 0.4W 3.4mm 120R	1 R47
<i>Comment: 5V Setpoint</i>		
<i>Spec: 120 ohm 1%</i>		
8 hmt	Res Ax. Met. Film 1W 6.5mm 3.9ohm	4 R5, R6, R7, R8
<i>Comment: Gate drive current limiting</i>		
<i>Spec:</i>		
8 hmt	Res Ax. Met. Film 1W 6.5mm 10Kohm	4 R43, R44, R45, R56
<i>Comment: Feedback</i>		
<i>Spec: 10K in series with suitable value</i>		
8 hmt	Cap 50V Cer 0.1uF X7R 10% RM5	4 C9,C13,C14,C15
<i>Comment: Decoupling boot pins, VN10</i>		

Spec: 0.1uF X7R 50V		
8 hmt Res Rad 7W 20R Wire W		2 R21,R22
Comment: Output filter		
Spec: 20 ohm min 5W		
8 hmt Bushing insulator TO-220		2 Toroid mounting screw insulation
Comment:		
Spec:		
8 - Nut M3		2 Mounting
Comment: For mounting of toroids		
Spec: M3 nut		
8 - Screw machine M3x30mm		2 Mounting toroids
Comment: For mounting toroids		
Spec: 30 mm long, non-magnetic		
8 hmt Cap 250V Film 0.22uF Polyester Axial		2 C58, C68
Comment: Rail-rail decoupling		
Spec: 0.22uF min 160V		
8 hmt Cap 63V Film 0.68uF Polyester 6x7mm RM5		3 C32,C41,C42
Comment: Decoupling 5V		
Spec: Film cap RM5, min 0.22uF		
9 hmt [⊠] Tripath TA3020		1
Comment: Tripath chip		
Spec: No subst		
9 hmt [⊠] Voltage Reg Pos Adj 100mA TO-92		1 U3
Comment: 5V regulator		
Spec: LM317L TO92		
9 hmt [⊠] Diode U-fast 200V 1A Axial		4 D1, D2, D11, D12
Comment: Boot and gate overshoot protection		
Spec: 1A 200V U-fast		
9 hmt MOSFET N-ch 150V 78A TO-247		4 Main power FETs
Comment:		
Spec:		
9 smt Diode U-fast 4A 200V SMB		4
Comment: Output clamping		
Spec: Ultra-fast 4A		
9 hmt [⊠] Diode Schottky 1A 40V		4 D5,D6,D7,D8
Comment: Gate discharge		
Spec: Schottky or ultra-fast min 30V 1A		
9 hmt [⊠] LED Yellow Diffused		1 D3
Comment: LED		
Spec: LED 3-5mA		
9 hmt Res Current Sense 0.010 ohm 3W OARSXP		4 R50,R60,R70,R80
Comment: Current sensing		
Spec: OARSXP 3W 0.01 ohm		

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Notes:
[⊠] = ESD sensitive
hmt=Hole Mount
smt=Surface Mount