

TGM8v5 Amplifier

Bill of Materials

13 December, 2013

[By Ranchu32]

Reference Name	Qty [1]	Component/Value [2]	Package	Description	Digikey Part No.
Q1, Q2, Q12, Q13, Q15	5	2N5551	TO-92	TRANS NPN SS GP 0.6A 160V TO-92	2N5551TAFSCT-ND
Q3, Q17	2	2N5401	TO-92	TRANS SS PNP 150V 600MA TO-92	2N5401GOS-ND
Q4, Q7	2	Low power - BD140 High power - MJE350 (or MJE15035 in TO-220, note: must be inserted backwards since pin-out is reversed)	TO-126	TRANSISTOR PNP	BD14016STU-ND MJE350STU-ND (MJE15035GOS-ND)
Q5, Q6	2	Low power - BD139 High power - MJE340 (or MJE15034 in TO-220, note: must be inserted backwards since pin-out is reversed)	TO-126	TRANSISTOR NPN	BD13916STU-ND MJE340STU-ND (MJE15034GOS-ND)
Q8	1	Low power - not reqd. High power - IRFP9240	TO-247	MOSFET P-CH 200V 12A TO-247AC	IRFP9240PBF-ND
Q9	1	Low power - not reqd. High power - IRFP240	TO-247	MOSFET N-CH 200V 20A TO-247AC	IRFP240PBF-ND
Q10	1	2SA1943 (alternatives: MJL4302, MJL1302 or MJL21193)	TO-247	TRANS PNP -230V -15A TO-3PL	2SA1943-OQ-ND
Q11	1	2SC5200 (alternatives: MJL4281, MJL21194 or MJL3281)	TO-247	TRANS NPN 230V 15A TO-3PL	2SC5200-OQ-ND
Q14, Q16	2	NMOS-TO220, low Rds on	TO-220	MOSFET N-Channel, Metal Oxide	785-1239-5-ND
D1, D2, D3, D4	4	12V Zener (Low power D2&3 - not reqd.)	SOD-123	DIODE ZENER 12V 500MW SOD123	BZT52C1213-FDICT-ND
D5	1	Low Power - 30V Zener High Power - 43V Zener (choose roughly 5V below power rail voltage when loaded)	SOD-123	DIODE ZENER xxV 410MW SOD123	BZT52C30-FDICT-ND BZT52C43-FDICT-ND
D6, D7	2	>200V	SOD-123	DIODE SWITCHING 200V 0.2A SOD12	BAV21W-FDICT-ND

LD1	1	LED Dual, common cathode	Radial - 3 Leads	LED 3MM BI-COL RED/GRN DIFF TH	160-1939-ND
OPTO	1	TLP190B	4-MFSOP6	OPTOCOUPLER PHOTOVO 6SOIC	TLP190BF-ND
C1 (input cap)	1	>10uF bipolar 6.3V or more, audio grade Or size compatible film	Radial, Can (2mm & 5mm grids)	CAP ALUM 10UF 25V 20% RADIAL CAP FILM 4.7UF 50VDC RADIAL	493-10824-1-ND (Nichicon Muse audio grade) 399-6028-ND
C2	1	330p	C1206	Kemet 50V NP0 5%	399-8186-1-ND
C6	1	330p NP0 (may need to try other values)	C1206	Kemet 50V NP0 5%	399-8186-1-ND
C13, C14	2	330p (Low power not reqd.)	C1206	Kemet 100V NP0 5%	399-9346-1-ND
C3	1	470u 16V Audio	Radial, Can	Nichicon HE 16V	493-1522-ND
C4, C5	2	33p NP0 (may need to try other values)	C1206	Kemet 50V NP0 5%	399-1199-1-ND
C7, C20	2	10-47u 16V	Radial, Can	Nichicon HE 25V	493-1547-ND
C8, C9	2	>100u 63V (or for C9 bootstrap use fine grade audio)	Radial, Can	Nichicon HE 100u 100V (CAP ALUM 100UF 50V 20% RADIAL)	493-1668-ND (493-3195-ND)
C10, C11	2	100p NP0 (get extra to try for C6 with simple VAS)	C1206	Kemet 50V NP0 5%	399-1205-1-ND
C12	1	100n NP0	C1812	Kemet 100V NP0 5%	399-5371-1-ND
C15, C18	2	>47u 63V (or Audio grade)	Radial, Can	Nichicon HE 100u 100V (CAP ALUM 220UF 63V 20% RADIAL)	493-1668-ND (493-10876-1-ND)
C16	1	47uF bipolar	Radial, Can	Nichicon VP 16V	493-6080-ND
C17, C19	3	100n X7R	C1812	Samsung 100V X7R 10%	1276-2923-1-ND
C21, C22, C23, C24	4	4700uF Low power – 50V High power – 63V	Radial, Can E10-22, snap-in	Nichicon LS	493-6161-ND (50V) 493-7290-ND (63V)
R1	1	750R (adj. to suit source Z)	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD750RCT-ND
R2, R34	2	27k	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD27K4CT-ND
R3, R19	1	10R 1W	2.5x6.5mm	RES 10 OHM 1W 5% AXIAL	10WCT-ND
R4, R7, R13, R33, R35, R39	7	1k (with simple VAS, replace R4 with zero ohm)	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD1K00CT-ND (RMCF1206ZT0R00CT-ND)
R5	1	56R	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD56R2CT-ND
R6	1	1k5	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD1K50CT-ND
R8	1	470k	R1206	Stackpole RMCF 1/4W 1%	RMCF1206FT470KCT-ND
R9	1	560R	R1206	Stackpole RNCP	RNCP1206FTD562RCT-ND

				1/2W 1%	
R10	1	Low power - 1k5 1W Optional higher gain: High power - 1k8 2W	2.5x6.5mm		1.5KWCT-ND 1.8KZCT-ND
R11	1	8k2	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD8K25CT-ND
R12	1	4k7	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD4K75CT-ND
R14	1	3k9	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD3K92CT-ND
R15	1	3k9 1W	2.5x6.5mm	Vishay BC 1W 5%	PPC3.9KW-1CT-ND
R16, R17, R18	3	100R	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD100RCT-ND
R20, R23	1	220R	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD200RCT-ND
R21	1	Low power - use zero High power - 150R	R1206	Stackpole RNCP 1/2W 1%	RMCF1206ZT0R00CT-ND RNCP1206FTD150RCT-ND
R22	1	Low power - use zero High power - 180R	R1206	Stackpole RNCP 1/2W 1%	RMCF1206ZT0R00CT-ND RNCP1206FTD180RCT-ND
R24, R27	2	10R	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD10R0CT-ND
R25, R26, R28, R29	2	Low power - not reqd. High power - 47R	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD47R5CT-ND
R30, R31, R48, R49	4	0R33 3-5W	4.6x11.5mm	Yageo 3W 5% Wirewound	0.33AECT-ND
R32	1	3k3	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD3K32CT-ND
R36	1	100k	R1206	Stackpole RMCF 1/4W 1%	RMCF1206FT100KCT-ND
R37	1	560k	R1206	Stackpole RMCF 1/4W 1%	RMCF1206JT560KCT-ND
R38	1	5k1 1W	2.5x6.5mm	Vishay BC 1W 5%	PPC5.1KW-1CT-ND
R40	1	68k	R1206	Stackpole RNCP 1/2W 1%	RNCP1206FTD68K1CT-ND
VR1	1	25k	9.5x4.8mm	Bourns Trimpot 3296 series, 10%, 25 turn	3296X-253LF-ND
VR2	1	2k	9.5x4.8mm	Bourns Trimpot 3296 series, 10%, 25 turn	3296X-202LF-ND
+V, -V, GND, SPKR	4	QUICKFIT PIN (plus you may want plenty of matching connectors)	0.187"	TERM QUICKFIT MALE .052"DIA.187"	1212-STK-ND (e.g. A27811-ND)
F1, F2	2	5A fast blow (or slow blow to avoid nuisance: Low power - 3A High power - 5A)	2AG, 5x15mm	Littelfuse 2AG	F4589-ND (F4674-ND F1693-ND)
F1_holder, F2_holder	4	Fuse clip	2AG	Littelfuse clip	F4189-ND
SIGNAL	1	Terminal Block (or header)	0.100"	2 pin	WM4200-ND (WM4200-ND)
MISC	2-4	Thermal Pads	TO-247	Thermal Pad	BER169-ND

[1] qty per channel. Recommended increase in purchase qty to get price-break and stock your parts bin ☺
Consider buying qty 50 for each of the Stackpole 1206 resistor line items. Extra fuses for when things go wrong.

[2] Low power is same as P3a, best limited to +/-36V (stretch to +/-42V max.); High power is +/- 50V

Change History:

13-Dec-13	C16 updated to bipolar part. Previous recommendation was incorrectly specified polarized cap.
-----------	---