

PMP20176 Reference Design

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
IPC500	1		Printed Circuit Board		PMP20176	Any	-	-
BodeTP	1		Test Point, Miniature, White, TH	White Miniature Testpoint	5002	Keystone		
C1, C5	2	2.2uF	CAP, CERM, 2.2 µF, 16 V, +/- 10%, X7R, 0603	0603	GRM188Z71C225KE43	MuRata		
C2	1	1000pF	CAP, CERM, 1000 pF, 50 V, +/- 10%, X7R, 0402	0402	GRM155R71H102KA01D	MuRata		
C3, C4, C9	3	22pF	CAP, CERM, 22 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402	GRM1555C1H220JA01D	MuRata		
C6, C8	2	1uF	CAP, CERM, 1 µF, 25 V, +/- 10%, X5R, 0402	0402	GRM155R61E105KA12D	MuRata		
C7	1	100pF	CAP, CERM, 100 pF, 25 V, +/- 5%, C0G/NP0, 0402	0402	C0402C101J3GACTU	Kemet		
C10	1	3300pF	CAP, CERM, 3300 pF, 50 V, +/- 10%, X7R, 0402	0402	GRM155R71H332KA01D	MuRata		
C11	1	560pF	CAP, CERM, 560 pF, 25 V, +/- 5%, C0G/NP0, 0402	0402	GRM1555C1E561JA01D	MuRata		
C101, C102, C103, C104, C201, C202, C203, C204, C301, C302, C303, C304, C401, C402, C403, C404	16	22uF	CAP, CERM, 22 µF, 25 V, +/- 10%, X7R, 1210	1210	GRM32ER71E226KE15L	MuRata		
C105, C205, C305, C405	4	3300pF	CAP, CERM, 3300pF, 50V, +/-10%, X7R, 0402	0402	C1005X7R1H332K	TDK		
C106, C206, C306, C406	4	10uF	CAP, CERM, 10uF, 6.3V, +/-20%, X5R, 0603	0603	C0603C106M9PACTU	Kemet		
C107, C207, C307, C407	4	1000pF	CAP, CERM, 1000pF, 25V, +/-5%, C0G/NP0, 0402	0402	C1005C0G1E102J	TDK		
C108, C208, C308, C408	4	0.1uF	CAP, CERM, 0.1uF, 16V, +/-10%, X5R, 0402	0402	GRM155R61C104KA88D	MuRata		
C109, C209, C309, C409	4	0.1uF	CAP, CERM, 0.1 µF, 16 V, +/- 10%, X7R, 0402	0402	GRM155R71C104KA88D	MuRata		
C110, C210, C310, C410	4	1500pF	CAP, CERM, 1500pF, 100V, +/-10%, X7R, 0805	0805	08051C152KAT2A	AVX		
C112, C113, C115, C116, C120, C124, C127, C128, C129, C901, C902, C903, C904	13	220uF	CAP, CERM, 220 µF, 4 V, +/- 10%, X6S, 1210	1210	AMK325AC6227MM-P	Taiyo Yuden		
C500, C501, C503, C504	4	0.1uF	CAP, CERM, 0.1 µF, 50 V, +/- 20%, X7R, 0402	0402	C1005X7R1H104M	TDK		
C502	1	10uF	CAP, CERM, 10 µF, 25 V, +/- 10%, X7R, 1206	1206	GRM31CR71E106KA12L	MuRata		
C505	1	22uF	CAP, CERM, 22 µF, 10 V, +/- 20%, X7R, 1206	1206	GRM31CR71A226ME15L	MuRata		
C506	1	1uF	CAP, CERM, 1 µF, 10 V, +/- 10%, X5R, 0402	0402	GRM155R61A105KE15D	MuRata		
C507	1	0.1uF	CAP, CERM, 0.1 µF, 25 V, +/- 10%, X5R, 0402	0402	GRM155R61E104KA87D	MuRata		
C511, C513, C514	3	270uF	CAP, Aluminum Polymer, 270 µF, 16 V, +/- 20%, 0.01 ohm, TH	8.0x9.0mm	16SEPC270MX	Panasonic		
C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713	14	0.01uF	CAP, CERM, 0.01 µF, 16 V, +/- 10%, X7R, 0402	0402	GRM155R71C103KA01D	MuRata		

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C714, C715, C716, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753	30	0.1uF	CAP, CERM, 0.1 µF, 16 V, +/- 10%, X7R, 0402	0402	GCM155R71C104KA55 D	MuRata		
C717, C718, C719, C720, C721, C722, C723, C724, C725, C726	10	1uF	CAP, CERM, 1 µF, 6.3 V, +/- 20%, X7R, 0402	0402	GRM155R70J105MA12 D	MuRata		
C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785,	60	4.7uF	CAP, CERM, 4.7 µF, 6.3 V, +/- 20%, X5R, 0402	0402	GRM155R60J475ME87 D	MuRata		
D500	1	30V	Diode, Schottky, 30 V, 0.2 A, SOD-323	SOD-323	BAT54WS-7-F	Diodes Inc.		
D501	1	Red	LED, Red, SMD	LED_0805	LTST-C170KRKT	Lite-On		
D502, D503, D504, D505	4	30V	Diode, Schottky, 30 V, 0.5 A, SOD-123	SOD-123	MBR0530T1G	ON Semiconductor		
exc_rtn, GndTP, TP502, TP504	4	Black	Test Point, Miniature, Black, TH	Black Miniature Testpoint	5001	Keystone		
ext_clk, TP501, TP503, TP506, VoutTP	5	Red	Test Point, Miniature, Red, TH	Red Miniature Testpoint	5000	Keystone		
Fault, Hot, RDY	3		Test Point, Miniature, SMT	Testpoint_Keystone_ Miniature	5015	Keystone		
H500, H502, H504, H506	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone	-	-
H501, H503, H505, H507	4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply		
int_clk_EN, int_clk_sel	2		Header, 100mil, 2x1, Gold, TH	Sullins 100mil, 1x2, 230 mil above insulator	PBC02SAAN	Sullins Connector Solutions		
J502	1		Connector, Ultra-Mini Coaxial, SMD	Ultra small CO-AX SMD	U.FL-R-SMT-1	Hirose Electric Co. Ltd.		
J503, J504, J505, J506	4	90A	Terminal 90A Lug	CB70-14-CY	CB70-14-CY	Panduit		
J507	1		Terminal Block, 5.08 mm, 4x1, Brass, TH	4x1 5.08 mm Terminal Block	ED120/4DS	On-Shore Technology		
J600	1		Terminal Block, 6A, 3.5mm Pitch, 2-Pos, TH	7.0x8.2x6.5mm	ED555/2DS	On-Shore Technology		
J610	1		Header (shrouded), 100mil, 5x2, Gold, TH	5x2 Shrouded header	5103308-1	TE Connectivity		
J611	1		Header, 100mil, 2x1, Tin, TH	Header, 2 PIN, 100mil, Tin	PEC02SAAN	Sullins Connector Solutions		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
JS500, JS501, JS502, JS503	4		Card Edge Socket, 0.8mm, 10x2, SMT	Card Edge Socket, 0.8mm, 10x2, SMT	HSEC8-110-01-S-DV-A	Samtec		
L101, L201, L301, L401	4	150nH	Inductor, Ferrite, 150 nH, 41 A, 0.00029 ohm, SMD	10.31x7.65mm	PA2607.151NLT	Pulse Engineering		
L500	1	2.2uH	Inductor, Shielded, Ferrite, 2.2 µH, 1.26 A, 0.066 ohm, SMD	IND_3x1.2x3mm	VLF302512MT-2R2M	TDK		
Q500, Q501, Q502, Q503	4	25V	MOSFET, N-CH, 25 V, 113 A, DualCool SON 5x6mm	DualCool SON 5x6mm	CSD16408Q5C	Texas Instruments		None
R1, R2	2	51	RES, 51, 5%, 0.063 W, 0402	0402	CRCW040251R0JNED	Vishay-Dale		
R3, R5	2	2.2	RES, 2.2, 5%, 0.063 W, 0402	0402	CRCW04022R20JNED	Vishay-Dale		
R4	1	121k	RES, 121 k, 1%, 0.063 W, 0402	0402	CRCW0402121KFKE	Vishay-Dale		
R6, R7, R9, R502	4	10.0k	RES, 10.0 k, 1%, 0.063 W, 0402	0402	CRCW040210K0FKED	Vishay-Dale		
R8	1	2.43k	RES, 2.43 k, 1%, 0.063 W, 0402	0402	CRCW04022K43FKED	Vishay-Dale		
R10	1	48.7k	RES, 48.7 k, 1%, 0.063 W, 0402	0402	CRCW040248K7FKED	Vishay-Dale		
R101, R201, R301, R401	4	2.2	RES, 2.2 ohm, 5%, 0.063W, 0402	0402	CRCW04022R20JNED	Vishay-Dale		
R102, R202, R302, R402	4	1.0	RES, 1.0 ohm, 5%, 0.5W, 1206	1206	CRM1206-JW-1R0ELF	Bourns		
R500, R503	2	8.06k	RES, 8.06 k, 1%, 0.063 W, 0402	0402	CRCW04028K06FKED	Vishay-Dale		
R501	1	200k	RES, 200 k, 1%, 0.063 W, 0402	0402	CRCW0402200KFKE	Vishay-Dale		
R504	1	330	RES, 330, 5%, 0.063 W, 0402	0402	CRCW0402330RJNED	Vishay-Dale		
R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541,	44	0.3	RES, 0.3, 1%, 2 W, 2512	2512	CSRN2512FKR300	Stackpole Electronics Inc		
R527	1	49.9	RES, 49.9, 1%, 0.063 W, 0402	0402	CRCW040249R9FKED	Vishay-Dale		
R528, R530, R543	3	20	RES, 20, 5%, 0.1 W, 0603	0603	CRCW060320R0JNEA	Vishay-Dale		
R529, R531, R544	3	249	RES, 249, 1%, 0.1 W, 0603	0603	CRCW0603249RFKEA	Vishay-Dale		
R567, R568	2	10	RES, 10, 5%, 0.1 W, 0603	0603	CRCW060310R0JNEA	Vishay-Dale		
R570, R571, R572, R573	4	10.0k	RES, 10.0 k, 1%, 0.1 W, 0603	0603	CRCW060310K0FKEA	Vishay-Dale		
R610, R611, R612	3	10.0k	RES, 10.0k ohm, 1%, 0.063W, 0402	0402	CRCW040210K0FKED	Vishay-Dale		
TP500	1		Test Point, Compact, SMT	Testpoint_Keystone_ Compact	5016	Keystone		
U1	1		4-Phase, D-CAP+TM Step-Down Buck Controller with NVM and PMBus Interface for ASIC, RTA0040B (WQFN-40)	RTA0040B	TPS53647RTAR	Texas Instruments	TPS53647RTAT	Texas Instruments
U101, U201, U301, U401	4		Synchronous Buck NexFET Power Stage, DQP0012A	DQP0012A	CSD95472Q5MC	Texas Instruments		Texas Instruments
U500	1		Buck Step Down Regulator with 3 to 17 V Input and 5 V Output, -40 to 85 degC, 8-Pin WSON (DSG), Green (RoHS & no Sb/Br)	DSG0008A	TPS62163DSGR	Texas Instruments	Equivalent	Texas Instruments
U501	1		LinCMOS Timer, D0008A	D0008A	TLC555CD	Texas Instruments		Texas Instruments
U502	1		DUAL 4-A PEAK HIGH SPEED LOW- SIDE POWER MOSFET DRIVERS, D0008A	D0008A	UCC27324D	Texas Instruments		Texas Instruments
C111, C114, C117, C118, C119, C121, C122, C123, C125, C126, C130	0	220uF	CAP, CERM, 220 µF, 4 V, +/- 10%, X6S, 1210	1210	AMK325AC6227MM-P	Taiyo Yuden		
C508, C509, C510, C515	0	100uF	CAP, CERM, 100 µF, 6.3 V, +/- 20%, X5R, 1210	1210	GRM32ER60J107ME20 L	MuRata		
FID500, FID501, FID502	0		Fiducial mark. There is nothing to buy or mount.	Fiducial	N/A	N/A		

Notes:

Unless otherwise noted in the Alternate PartNumber and/or Alternate Manufacturer columns, all parts may be substituted with equivalents.

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