Texas Instruments

Bill of Materials

TI DESIGNS

Automotive 60W Brushless DC Motor Drive

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate Part Number	Alternate Manufacturer
!PCB1	1		Printed Circuit Board		SAT0042	Any	-	-
C1, C3	2	220uF	CAP, AL, 220uF, 50V, +/-20%, 0.23 ohm, SMD	KE0	EMVH500ARA221MKE0S	Nippon Chemi-Con		
C2, C4, C6	3	10uF	CAP, CERM, 10uF, 50V, +/-10%, X7R, 1210	1210	GRM32ER71H106KA12L	MuRata		
C5	1	680pF	CAP, CERM, 680pF, 50V, +/-5%, C0G/NP0, 0805	0805	08055A681JAT2A	AVX		
C7	1	0.01uF	CAP, CERM, 0.01uF, 100V, +/-5%, X7R, 0603	0603	06031C103JAT2A	AVX		
C8, C9, C10	3	4.7uF	CAP, CERM, 4.7uF, 100V, +/-20%, X7R, 2220	2220	C5750X7R2A475M	TDK		
C11, C12, C13, C20, C21, C22	6	22pF	CAP, CERM, 22pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A220JAT2A	AVX		
C14, C15, C16, C23, C24, C25	6	0.047uF	CAP, CERM, 0.047uF, 50V, +/-10%, X7R, 0603	0603	C1608X7R1H473K	TDK		
C17, C18, C19, C33, C38	5	0.1uF	CAP, CERM, 0.1uF, 16V, +/-10%, X7R, 0805	0805	C0805C104K4RACTU	Kemet		
C26, C27, C30, C31, C32	5	10uF	CAP, CERM, 10uF, 6.3V, +/-20%, X5R, 0603	0603	GRM188R60J106ME47D	MuRata		
C28	1	2.2uF	CAP, CERM, 2.2uF, 10V, +/-10%, X7R, 0603	0603	GRM188R71A225KE15D	MuRata		
C29, C53, C56	3	1uF	CAP, CERM, 1uF, 16V, +/-10%, X7R, 0603	0603	C1608X7R1C105K	TDK		
C34, C35	2	12pF	CAP, CERM, 12pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A120JAT2A	AVX		
C36	1	0.1uF	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	0603	GCM188R71H104KA57B	MuRata		
C37	1	2200pF	CAP CER 2200PF 50V 10% X7R 0402	0402 (1005 Metric)	UMK105B7222KV-F	Taiyo Yuden	-	-
C39	1	0.01uF	CAP, CERM, 0.01uF, 50V, +/-5%, X7R, 0805	0805	08055C103JAT2A	AVX		
C40, C45	2	4.7uF	CAP, CERM, 4.7uF, 50V, +/-10%, X7R, 1206	1206	GRM31CR71H475KA12L	MuRata		
C41, C43, C47, C49, C51, C52, C54, C55, C58, C61, C63	11	0.1uF	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	0603	06035C104KAT2A	AVX		
C42	1	75pF	CAP, CERM, 75pF, 50V, +/-5%, C0G/NP0, 0402	0402	GRM1555C1H750JA01D	MuRata		
C44	1	0.039uF	CAP, CERM, 0.039uF, 10V, +/-10%, X5R, 0402	0402	GRM155R61A393KA01D	MuRata		
C46	1	47uF	CAP, CERM, 47uF, 10V, +/-10%, X7R, 1210	1210	GRM32ER71A476KE15L	MuRata		
C48, C57	2	2.2uF	CAP, CERM, 2.2uF, 10V, +/-10%, X7R, 1206	1206	GRM31MR71A225KA01L	MuRata		
C50	1	0.022uF	CAP, CERM, 0.022uF, 50V, +/-10%, X7R, 0603	0603	C0603C223K5RACTU	Kemet		
C59, C60, C62	3	0.027uF	CAP, CERM, 0.027uF, 16V, +/-10%, X7R, 0603	0603	GRM188R71C273KA01D	MuRata		
C64, C65, C66	3	1000pF	CAP, CERM, 1000pF, 50V, +/-10%, X7R, 0402	0402	GRM155R71H102KA01D	MuRata		
D1	1	15V	Diode, Zener, 15V, 200mW, SOD-323	SOD-323	MMSZ5245BS-7-F	Diodes Inc.		
D2, D3, D4, D5	4	0.44V	Diode, Schottky, 35V, 0.1A, 0603 Diode	0603 Diode	CD0603-B0130L	Bourns		
D6	1	Green	LED, Green, SMD	1.6x0.8x0.8mm	LTST-C190GKT	Lite-On		
D7	1	30V	Diode, Schottky, 30V, 2A, M-FLAT	M-FLAT	CMS06	Toshiba		
D8	1	Orange	LED, Orange, SMD	1.6x0.8x0.8mm	LTST-C190KFKT	Lite-On		
F1	1		FUSE BLOK CARTRIDGE 300V 10A PCB		05200101Z	Littelfuse Inc		
FID1, FID2, FID3	3		Fiducial mark. There is nothing to buy or mount.	Fiducial	N/A	N/A		
H1, H2, H5, H6	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone	-	-
H3, H4, H7, H8	4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply	-	-
J1	1	1-1318300-4	Connector, Vertical, 0.156 mil	0.335x0.465 inch	1-1318300-4	Tyco		
J2	1		CONN HEADER 3POS .100 VERT TIN	7.62x11.7x5.8 mm	22-27-2031	Molex		
J3	1	1-1318300-3	Connector, Vertical, 0.156 mil	0.335x0.465 inch	1-1318300-3	Tyco		
J4	1		Header (shrouded), 100 mil, 7x2, Gold plated, TH	7x2 Shrouded Header	SBH11-PBPC-D07-ST-BK	Sullins Connector Solutions		
J5	1		Header, 100mil, 4x1, White, TH	Header 4x1 keyed	0022112042	Molex		
L1	1		INDUCTOR POWER 4.7UH 12A SMD		SRP1250-4R7M	Bourns Inc.		
L2, L3, L4, L5, L6	5	120 ohm	3A Ferrite Bead, 120 ohm @ 100MHz, SMD	0603	BLM18SG121TN1D	MuRata		
L7	1	100uH	SMD	DR74	DR74-101-R	Coiltronics		
LBL1	1		roll	PCB Label 0.650"H x 0.200"W	THT-14-423-10	Brady	-	-
PTH-A, PTH-B, PTH-C	3	3233-x-0x-xx-00-00-0x-0	Plated Through Hole, Dia. 0.094	0.150 x 0.150 inch	3233-x-0x-xx-00-00-0x-0	Mill-Max		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate Part Number	Alternate Manufacturer
Q1, Q2, Q3, Q4, Q5, Q6, Q7	7	40V	MOSFET, N-CH, 40V, 22A, SON 5x6mm	SON 5x6mm	CSD18501Q5A	Texas Instruments		None
R1	1	52.3k	RES, 52.3k ohm, 1%, 0.1W, 0603	0603	CRCW060352K3FKEA	Vishay-Dale		
R2, R4, R11, R12, R13	5	10k	RES, 10k ohm, 5%, 0.1W, 0603	0603	CRCW060310K0JNEA	Vishay-Dale		
R5, R8	2	1.5k	RES, 1.5k ohm, 5%, 0.1W, 0603	0603	CRCW06031K50JNEA	Vishay-Dale		
R6, R52, R54, R59, R60, R61	6	10k	RES, 10k ohm, 5%, 0.063W, 0402	0402	CRCW040210K0JNED	Vishay-Dale		
R7, R10	2	2.7k	RES, 2.7k ohm, 5%, 0.1W, 0603	0603	CRCW06032K70JNEA	Vishay-Dale		
R9	1	20k	RES, 20k ohm, 5%, 0.1W, 0603	0603	CRCW060320K0JNEA	Vishay-Dale		
R15, R16, R17, R27, R28, R29	6	2.21	RES, 2.21 ohm, 1%, 0.1W, 0603	0603	CRCW06032R21FKEA	Vishay-Dale		
R18, R19, R20, R30, R31, R32	6	1.00	RES, 1.00 ohm, 1%, 0.063W, 0402	0402	CRCW04021R00FKED	Vishay-Dale		
R21, R22, R23, R39	4	34.8k	RES, 34.8k ohm, 1%, 0.1W, 0603	0603	CRCW060334K8FKEA	Vishay-Dale		
R24, R25, R26, R40	4	4.99k	RES, 4.99k ohm, 1%, 0.1W, 0603	0603	CRCW06034K99FKEA	Vishay-Dale		
R33, R34, R35	3	0.01	RES, 0.01 ohm, 1%, 2W, 2512 WIDE	2512 WIDE	FCSL64R010FER	Ohmite		
R37, R53	2	31.6k	RES, 31.6k ohm, 1%, 0.1W, 0603	0603	CRCW060331K6FKEA	Vishay-Dale		
R38, R41, R42	3	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	ERJ-3GEY0R00V	Panasonic		
R43, R56, R69, R70	4	1.0k	RES, 1.0k ohm, 5%, 0.1W, 0603	0603	CRCW06031K00JNEA	Vishay-Dale		
R45, R46	2	2.2k	RES, 2.2k ohm, 5%, 0.1W, 0603	0603	CRCW06032K20JNEA	Vishay-Dale		
R47	1	47k	RES, 47k ohm, 5%, 0.063W, 0402	0402	CRCW040247K0JNED	Vishay-Dale		
R48	1	300k	RES, 300k ohm, 5%, 0.063W, 0402	0402	CRCW0402300KJNED	Vishay-Dale		
R49	1	249k	RES, 249k ohm, 1%, 0.1W, 0603	0603	CRCW0603249KFKEA	Vishay-Dale		
R50	1	8.87k	RES, 8.87k ohm, 1%, 0.063W, 0402	0402	CRCW04028K87FKED	Vishay-Dale		
R51	1	75k	RES, 75k ohm, 5%, 0.063W, 0402	0402	CRCW040275K0JNED	Vishay-Dale		
R55, R65, R67	3	10.0k	RES, 10.0k ohm, 1%, 0.1W, 0603	0603	CRCW060310K0FKEA	Vishay-Dale		
R58	1	1.0k	RES, 1.0k ohm, 5%, 0.063W, 0402	0402	CRCW04021K00JNED	Vishay-Dale		
R62, R63, R64	3	56.2	RES, 56.2 ohm, 1%, 0.1W, 0603	0603	CRCW060356R2FKEA	Vishay-Dale		
R66, R68	2	20.0k	RES, 20.0k ohm, 1%, 0.1W, 0603	0603	CRCW060320K0FKEA	Vishay-Dale		
S1	1		Switch, Push Button, SMD	2.9x2x3.9mm SMD	SKRKAEE010	Alps	Equivalent	Any
TP1	1	Brown	Test Point, Multipurpose, Brown, TH	Brown Multipurpose Testpoint	5125	Keystone		
TP2, TP3, TP4	3	Black	Test Point, Multipurpose, Black, TH	Black Multipurpose Testpoint	5011	Keystone		
TP5	1	White	Test Point, Multipurpose, White, TH	White Multipurpose Testpoint	5012	Keystone		
TP6	1	Grey	Test Point, Multipurpose, Grey, TH	Grey Multipurpose Testpoint	5128	Keystone		
TP7	1	Yellow	Test Point, Multipurpose, Yellow, TH	Yellow Multipurpose Testpoint	5014	Keystone		
TP8	1	Green	Test Point, Multipurpose, Green, TH	Green Multipurpose Testpoint	5126	Keystone		
TP9	1	Red	Test Point, Multipurpose, Red, TH	Red Multipurpose Testpoint	5010	Keystone		
TP10	1	Orange	Test Point, Multipurpose, Orange, TH	Orange Multipurpose Testpoint	5013	Keystone		
TP11	1	Blue	Test Point, Multipurpose, Blue, TH	Blue Multipurpose Testpoint	5127	Keystone		
TP12	1	Purple	Test Point, Multipurpose, Purple, TH	Purple Multipurpose Testpoint	5129	Keystone		
U1	1		ESD Protection Array for AC Signal Data Interface, 2 Channels, -40 to +85 degC, 3-pin SC70 (DCK), Green (RoHS & no Sb/Br)	DCK0003A	TPD2E007DCKR	Texas Instruments	Equivalent	None
U2	1		Precision Micropower Shunt Voltage Reference, 3-pin SOT-23	MF03A	LM4040DEM3-3.0	National Semiconductor		
U3	1	TMS320F2802xPTA	IC, 32-Bit Piccolo Microcontrollers, xx MHz	LQFP	TMS320F28027FPTQ	TI		None
U4	1		Processor Supervisory Circuit, DBV0005A	DBV0005A	TPS3828-33DBV	Texas Instruments		None
U5	1		Analog Temperature Sensors with Class-AB Output, DCK0005A	DCK0005A	LMT86DCKT	Texas Instruments		None
U6	1	DRV8301	Converter	HTSSOP	DRV8301	TI		None
U7	1		IC OPAMP GP RRIO 50MHZ LN 8SOIC		OPA2365AQDRQ1	Texas Instruments		
U8	1		DUAL DIFFERENTIAL COMPARATORS, PW0008A	PW0008A	LM2903VQPWRQ1	Texas Instruments		None
Y1	1		Crystal, 12Mhz, 8pF, SMD	3.2x0.55x2.5mm	NX3225GA20MHZSTDCRA1	NDK		
R3, R14, R36, R71	0	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	ERJ-3GEY0R00V	Panasonic		

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

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
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