

WEBENCH® Power Architect

Project Report

Project : 4109962/2 : PA_Project_302 (modified from 301)

Created: 2015-02-06 01:51:22.554 Optimize project optFactor=3

Project Summary

Total System Efficiency
 Total System BOM Count
 Total System BOM Count
 Total System Footprint
 Total System BOM Cost
 Total System BOM Cost
 Total System Power Dissipation
 Total System Power Dissipation

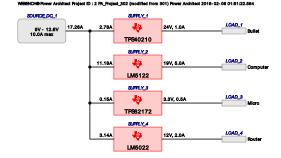
--> Launch WEBENCH Power Architect.

Power Supplies

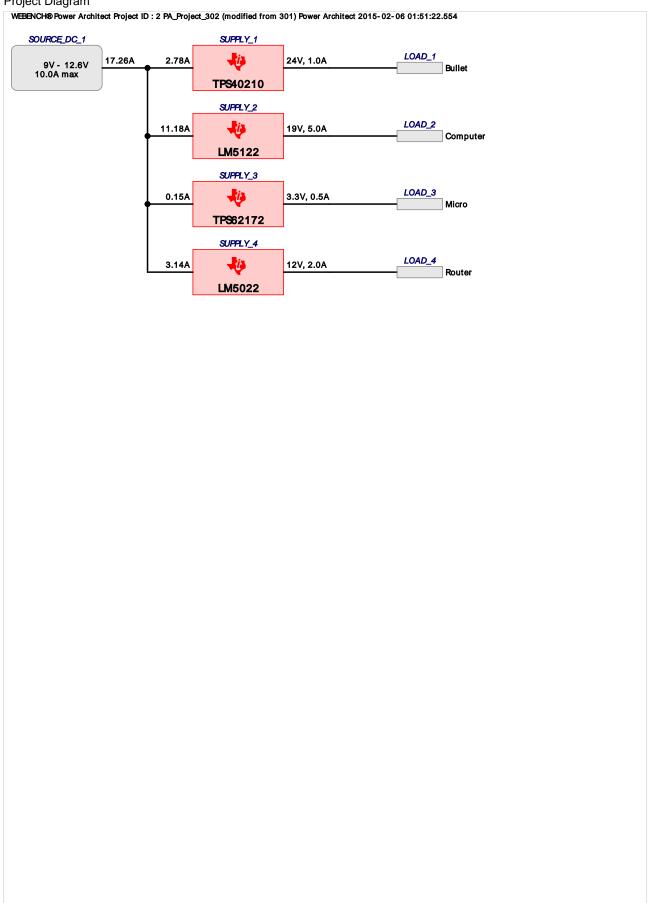
#	Name	NSID	Description	Vout	lout	Efficiency	Foot- print	Cost	Design F	Page
1.	SUPPLY_1	TPS40210	Switcher: Current Mode Boost Controller,10pin DCQ-PowerPAD	24 V	1.0 A	95.8%	513	\$2.67	5	4
2.	SUPPLY_2	LM5122	Switcher: 100V Synchronous Boost Controller	19 V	5.0 A	94.4%	696	\$7.39	6	13
3.	SUPPLY_3	TPS62172	Switcher: 17V,3.3Vout,0.5A,Buck Converter with Power Good	3.3 V	0.5 A	86.6%	42	\$1.41	7	22
4.	SUPPLY_4	LM5022	Switcher : Coupled inductors SEPIC	12 V	2.0 A	84.8%	410	\$3.67	8	27

Power Loads

#	Name	VLoad	ILoad	Description
1.	Bullet	24 V	1 A	VoutRipple=5%
2.	Computer	19 V	5 A	VoutRipple=5%
3.	Micro	3.3 V	0.5 A	VoutRipple=10%
4.	Router	12 V	2 A	VoutRipple=10%



Project Diagram



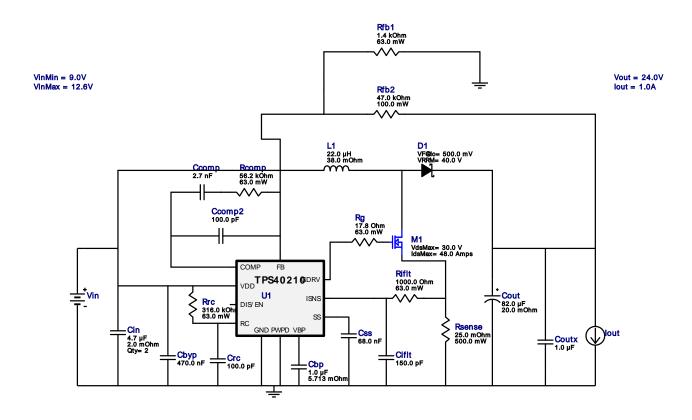
Electrical Procurement BOM

Panasonic 20SVPF180M	Manufacturer	Part Number	Description	Quantity Budg	jetary Price	Footprint (mm²)
Panasonic 25NPF160M CAPSMT_62_E12 2 S0.61 106 Panasonic 35NPF82M CAPSMT_62_E12 1 S0.61 106 Diodes Inc. B440A-13-F SMA 1 S0.09 37 TOK CO00000E18110C 2011 1 S0.01 22 TOK CO00000E18110C 2011 1 S0.01 22 TOK CO00000E18110C 2011 1 S0.01 22 TOK C16083CR1510KC 0803 1 S0.01 27 TOK C16083CR1510KC 0803 1 S0.01 35 TOK C16083CR1510KC 0803 1 S0.01 35 TOK C16083CR1510KC 0803 1 S0.01 35 TOK C16083KR1C10KC 0803 1 S0.01 37 TOK 0805 1 S0.01 37 TOK 080	Panasonic	20SVPF390M	CAPSMT 62 E12	1	\$0.63	
Panasonic S5SVPR2M						
Diodes Inc. B2404-13-F SMA						
TOK Kemet C0805C224K5RACTU 0805 1 \$0.01 2 7 TOK C1608K5RC105K 0603 1 \$0.02 7 TOK C1608K5RC105K 0603 1 \$0.01 5 7 TOK C1608K5RC105K 0603 1 \$0.01 5 7 TOK C216JB1F476M 1206 1 \$0.35 11 Yageo America CC0805JRNPO9BN101 0805 2 \$0.01 14 Yageo America CC0805JRNPO9BN101 0805 1 \$0.01 7 Yaseo America CC0805JRNPO9BN101 0805 1 \$0.01 7 Yaseo America CC0805JRNPO9BN101 0805 1 \$0.01 7 Yaseo America CC0805JRNPO9BN101 0805 1 \$0.01 3 Yashay-Dale CRCW04021JRNPOFKED 0402 1 \$0.01 3 Yashay-Dale CRCW04022JRNPOFKED 0402 1 \$0.01 3 Yashay-Dale CRCW04023JRNPOFKED 0402 1 \$0.01 3 Yashay-	Diodes Inc.	B240A-13-F	SMA	1	\$0.09	37
Kemet C0805/C224KSRACTU 0805 1 \$0.02 7 TDK C1608XSR1C106K 6633 1 \$0.01 5 TDK C1608XSR1C106K 1206 1 \$0.35 11 Yageo America CC0805LRNPO9BN101 0805 2 \$0.01 14 Yageo America CC0805LRNPO9BN151 0805 1 \$0.01 7 Yageo America CC0805LRNPO9BR151 0805 1 \$0.01 7 Yageo America CC0805LRNPO9BR161 0805 1 \$0.01 7 Yageo America CC0805LRNPO9BRSTR9BBS61 0805 1 \$0.01 7 Yageo America CC0805LRNPO9BRSCE 0805 1 \$0.01 7 Yageo America CC0805LRNPO9BRSCE 0805 1 \$0.01 7 Yashay-Dale CRCW04021CROKPGED 0402 1 \$0.01 3 Yashay-Dale CRCW04021SKGKRED 0402 1 \$0.01 3 Yashay-Dale CRCW04021	Infineon Technologies	BSZ035N03MS G	PG-TSDSON-8	1	\$0.39	19
TDK	TDK	C0603C0G1E110G	0201	1	\$0.01	2
TDK C3216JBTE476M 1206 1 \$0.35 11 Yageo America CC0805JRNPO9BN161 0805 2 2 0.01 14 Yageo America CC0805JRNPO9BN161 0805 1 \$0.01 7 Yaseo CC0805JRNPO9BN161 0805 1 \$0.01 7 Yaseo CC0805JRNPO9BN161 0805 1 \$0.01 3 Yashay-Dale CRCW040210KPKED 0402 1 \$0.01 3 Yashay-Dale CRCW04021JRNPKED 0402 1 \$0.01 3 Yashay-Dale CRCW04021JRNPKED 0402 1 \$0.01 3 Yashay-Dale CRCW04021JRNFKED 0402 1 \$0.01 3 Yashay-Dale CRCW04023JRNFKED 0402 1 \$0.01 3 Yashay-D	Kemet	C0805C224K5RACTU	0805	1	\$0.02	7
Yagoo America CC0805/IRNPO9BN151 0805 2 \$0.01 7. Yagoo America CC0805/IRNPO9BN151 0805 1 \$0.01 7. Yagoo America CC0805/KRXPR9BB272 0805 1 \$0.01 7. Yagoo America CC0805/KRXPR9BB272 0805 1 \$0.01 7. Yagoo America CC0805/KRXPR9BB261 0805 1 \$0.01 7. Samsung Electro-Mechanics CL21C431JBANNNC 0805 1 \$0.01 3 Vishay-Dale CRCW040210KRFED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022KB6KED 0402 1 \$0.01 3 Vishay-Dale CRCW04022SWC2FKED 0402 1 \$0.01 3 Visha		C1608X5R1C105K	0603	=		5
Yageo America CC0805KRXPR9BB272 0805 1 \$0.01 7 Yageo America CC0805KRXPR9BB272 0805 1 \$0.01 7 Yageo America CC0805KRXPR9BB561 0805 1 \$0.01 7 Vishay-Dale CC004042100KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402100KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040210KFKED 0402 2 \$0.01 3 Vishay-Dale CRCW040213KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402SR		C3216JB1E476M	1206		\$0.35	11
Yageo America CC0805KRX/R9BB272 0805 1 \$0.01 7 Yageo America CC0805KRX/R9BB261 0805 1 \$0.01 7 Samsung Electro-Mechanics CL21C431JBANNNC 0805 1 \$0.01 3 Vishay-Dale CRCW0402100KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040210K0KFED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K96KED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K14GFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022S4GKFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023S6KFKEFKED 0402 1 \$0.01 3 Vishay-Dale	o a constant of the constant o					
Yageo America CC080SKKX/R9BBS61 0805 1 \$0.01 7 Samsung Electro-Mechanics CL21C431JapANNO 0805 1 \$0.01 7 Vishay-Dale CRCWW0402100FREED 0402 1 \$0.01 3 Vishay-Dale CRCWW0402100FREED 0402 2 \$0.01 6 Vishay-Dale CRCWW040213K3FRED 0402 1 \$0.01 3 Vishay-Dale CRCWW040215K0FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K40FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040221K1FEED 0402 1 \$0.01 3 Vishay-Dale CRCW040221K1FEED 0402 1 \$0.01 3 Vishay-Dale CRCW040231KFFEED 0402 1 \$0.01 3 Vishay-Dale				· · · · · · · · · · · · · · · · · · ·		
Samsung Electro-Mechanics CL21C431JBANNINC 0805 1 \$0.01 7 3 7 7 7 7 7 7 7 7	o a constant of the constant o			· ·		
Vishay-Dale CRCW0402100FRED 0402 1 \$0.01 3 Vishay-Dale CRCW0402100FRED 0402 2 \$0.01 6 Vishay-Dale CRCW04021303FRED 0402 1 \$0.01 6 Vishay-Dale CRCW0402150FRED 0402 1 \$0.01 3 Vishay-Dale CRCW0402150FRED 0402 1 \$0.01 3 Vishay-Dale CRCW0402196FRED 0402 1 \$0.01 3 Vishay-Dale CRCW0402196FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04021440FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04022437FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04023416FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04023416FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04023416FRED 0402 1 \$0.01 3 Vishay-Dale CRCW04023416FRED <td></td> <td></td> <td></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td></td>				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW0402100RFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040213K3FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040213K3FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217R8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217R8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K6PKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K40FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K21FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K4FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K4FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K4FKED <td></td> <td></td> <td></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td></td>				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040210KGFKED 0402 2 \$0.01 \$6 Vishay-Dale CRCW040215KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040215KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K21FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K3FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402278K2FK				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040213KGFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217KBFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K0FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K0FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K1FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K3FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022X3FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K1FKED						
Vishay-Dale CRCW040215K0FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040217K8FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040219K6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021K40FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K21FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022X37FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022X37FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K15FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K15FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040224K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040225K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FK						
Vishay-Dale CRCW040217R6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04021906FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040211406FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022121FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022437FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022318FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022316FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022316FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022816FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040227KEFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040228K6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273KEF				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW0402/180FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402/1K00FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402/2K2/FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022/2S/FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022/S/FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/RFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/RFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/RFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04025/RFKED 0402 1 \$0.01 7 Texas Instruments CSD1634003 </td <td>•</td> <td></td> <td></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td></td>	•			· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW0402/1K00FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402/1K40FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022/K37FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040239K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040239K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040239K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040249K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040249K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040278K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040278K2FKED 0402 2 \$0.01 6 Vishay-Dale CRCW040278K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04028K6				· ·		
Vishay-Dale CRCW0402/E4TFKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402/E4TFKED 0402 1 \$0.01 6 Vishay-Dale CRCW0402/E4TFKED 0402 2 \$0.01 6 Vishay-Dale CRCW0402/E4TFKED 0402 1 \$0.01 7 Texas Instruments CSD163/E				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW04022K2/FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04022K3/FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238/EKFED 0402 1 \$0.01 3 Vishay-Dale CRCW040238/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K16FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023K16FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 2 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023M2K2F				· ·		
Vishay-Dale CRCW040223/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040249/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040256/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040266/KFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040266/KFKED 0402 2 \$0.01 6 Vishay-Dale CRCW080653R01FKEA 0805 1 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NEXFET_Q3 1 \$0.44 19 Texas Instruments CSD16340Q3 TRANS_NEXFET_Q5A 1 \$0.10 11 Stackpole Electronics Inc CSR1206FK25L0 100 1 \$0.10 11 Stackpole				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW0402318/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040238/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 2 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 2 \$0.01 3 Vishay-Dale CRCW040238/EFKED 0402 2 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040233/EFKED 0402 1 \$0.01 3 Vishay-Dale CRCW04023 <td>•</td> <td></td> <td></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td></td>	•			· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040239K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0400234K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040249K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040258K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040286K6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 7 Texas Instruments CSD1634003 TRANS_NexFET_Q3 1 \$0.01 7 Texas Instruments CSD1634003 TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.32 56 Stackpole Electronics Inc CSR12016FK55L0 2010 1 \$0.15 32	· · · · · · · · · · · · · · · · · · ·			· ·		3
Vishay-Dale CRCW04023K16FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402256K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040256K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402286K6FKED 0402 1 \$0.01 3 Vishay-Dale CRCW0402286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW0402286K6FKED 0402 2 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NexFET_Q5A 1 \$0.01 7 Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.10 11 Texas Instruments CSR1206FK25L0 1206 1 \$0.01 11 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.01 11 Texas Instruments CSR1206FK25L0 2010 1 \$0.01 31				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040249K9FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040225K2FKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273K2FKED 0402 2 \$0.01 3 Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW08053R01FKEA 0805 1 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NexFET_Q3 1 \$0.44 19 Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.15 32 20 Colltronics CSRN2010FK50L0 2010 1 \$0.15 32 20 Colltronics DRQ127-3R3-R DRQ127 1 \$0.93 21 Taiyo Yuden EMK212B7105KG-T 0805 1 \$0.02 7 Taiyo Yuden GMK212B7105KG-T 0805 1 \$0.01 3				•		
Vishay-Dale CRCW040256KZFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040273KZFKED 0402 1 \$0.01 3 Vishay-Dale CRCW08053R01FKEA 0805 1 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NexFET_Q3 1 \$0.04 19 Texas Instruments CSD1755105A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR12010FK50L0 200 1 \$0.10 11 Stackpole Electronics Inc CSRN2010FK50L0 2010 1 \$0.15 32 Colltronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 Mu				· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040273KZFKED 0402 1 \$0.01 3 Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW08053R01FKEA 0805 1 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NexFET_Q3 1 \$0.44 19 Texas Instruments CSD16340Q3 TRANS_NexFET_Q5A 1 \$0.01 11 Exas Instruments CSD16340Q3 TRANS_NexFET_Q5A 1 \$0.02 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.10 11 Stackpole Electronics Inc CSR12010FK50L0 2010 1 \$0.15 32 Collitronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK21287474KD-T 0805 1 \$0.02 7 Taiyo Yuden GMK21287105KG-T 0805 1 \$0.01 3 MuRata GRM1557613A154KE19D 0402 1 \$0.01 3 <	•			· · · · · · · · · · · · · · · · · · ·		
Vishay-Dale CRCW040286K6FKED 0402 2 \$0.01 6 Vishay-Dale CRCW08053801FKEA 0805 1 \$0.01 7 Texas Instruments CSD16340Q3 TRANS_NexFET_Q3 1 \$0.04 19 Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206Fk25L0 1206 1 \$0.15 32 Colitronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.05 7 MuRata GRM155861A683KA01D 0402 1 \$0.01 3 MuRata GRM155871C224KA12D 0402 1 \$0.01 3 MuRata GRM158771C224KA12D 0402 1 \$0.01 3 MuRata GRM219861E106KA12 0805 1 \$0.01 3 MuRata <t< td=""><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td></td><td></td><td></td></t<>	· · · · · · · · · · · · · · · · · · ·					
Vishay-Dale CRCW08053R01FKEA 0805 1 \$0.01 7 Texas Instruments CSD163A0Q3 TRANS_NexFET_Q5A 1 \$0.44 19 Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.42 15 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.10 11 Stackpole Electronics Inc CSRN2010FK50L0 2010 1 \$0.15 32 Colitronics DRQ127-3R3-R DRQ127 1 \$0.03 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.02 7 MuRata GRM1558C1-E301JA01D 0402 1 \$0.05 7 MuRata GRM1558C14683KA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata						
Texas Instruments CSD16340Q3 TRANS_NexFET_Q3 1 \$0.44 19 Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.15 32 Coiltronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.02 7 Taiyo Yuden GMK212B7105KG-T 0805 1 \$0.05 7 MuRata GRM555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM158771C224KA12D 0402 1 \$0.01 3 MuRata GRM158771C224KA12D 0402 1 \$0.01 3 MuRata GR						
Texas Instruments CSD17551Q5A TRANS_NexFET_Q5A 1 \$0.32 55 Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.15 32 Stackpole Electronics Inc CSRN2010FK50L0 2010 1 \$0.015 32 Colitrorics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM158R71C274KA88D 0603 1 \$0.01 7 MuRata GRM216R71H103KA01D 0805 1 \$0.01 7 MuRata G	•			· · · · · · · · · · · · · · · · · · ·		
Stackpole Electronics Inc CSR1206FK25L0 1206 1 \$0.10 11 Stackpole Electronics Inc CSRN2010FK50L0 2010 1 \$0.15 32 Colitronics DR0127-383-R DR0127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.02 7 Taiyo Yuden GMK212B7105KG-T 0805 1 \$0.05 7 MuRata GRM155SC1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM158R71C474KA88D 0603 1 \$0.01 7 MuRata GRM21BR61E106KA12 0805 1 \$0.01 7 MuRata GRM219R61E475MA12L						
Stackpole Electronics Inc CSRN2010FK50L0 2010 1 \$0.15 32 Coiltronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KN-T 0805 1 \$0.02 7 MuRata GRM155SC1E301JA01D 0402 1 \$0.01 3 MuRata GRM155SC1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA8BD 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM16R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.01 7 MuRata GRM219R61E475MA12L				· ·		
Coiltronics DRQ127-3R3-R DRQ127 1 \$0.93 210 Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155SC1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM188R71C424KA88D 0603 1 \$0.01 3 MuRata GRM218R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.06 14 MuRata GRM31CR70J226KE19L 1206	•			· ·		
Taiyo Yuden EMK212B7474KD-T 0805 1 \$0.02 7 Taiyo Yuden GMK212B7105KG-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61C104KA8BD 0402 1 \$0.01 3 MuRata GRM155R61C104KA8BD 0402 1 \$0.01 3 MuRata GRM155R61C104KA8BD 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM158R71C474KA8BD 0603 1 \$0.02 5 MuRata GRM218F61E76T474KA8BD 0603 1 \$0.05 7 MuRata GRM219R61E76T474KA8BD 0603 1 \$0.01 7 MuRata GRM21BC8T475KA12L 0805 1 \$0.01 7 MuRata GRM21BC8T4F5KA12L 0805	•			· ·		
Taiyo Yuden GMK212B7105KG-T 0805 1 \$0.05 7 MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM156R71H103KA01D 805 1 \$0.01 7 MuRata GRM219R61E106KA12 805 1 \$0.05 7 MuRata GRM219R61E475KA12L 805 1 \$0.05 7 MuRata GRM21BR61E475MA12L 805 4 \$0.06 14 MuRata GRM21BR61E475MA12L 805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 <th< td=""><td></td><td></td><td></td><td>· ·</td><td></td><td></td></th<>				· ·		
MuRata GRM1555C1E301JA01D 0402 1 \$0.01 3 MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM188R71C474KA88D 0603 1 \$0.02 5 MuRata GRM218R71H103KA01D 0805 1 \$0.02 5 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BR61E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 1 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.06 14 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A				· · · · · · · · · · · · · · · · · · ·		
MuRata GRM155R61A154KE19D 0402 1 \$0.01 3 MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM188R71C474KA88D 0603 1 \$0.02 5 MuRata GRM216R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM219R61E406KA12 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 1 \$0.04 7 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE2DL 1210 1 \$0.35 15 Texas Instruments LM5122MH/NOPB MUB10A 1 \$0.05 15 Texas Instruments LM5122MH/NOPB MVA2	,			· ·		
MuRata GRM155R61A683KA01D 0402 1 \$0.01 3 MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM158R71C474KA88D 0603 1 \$0.02 5 MuRata GRM216R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM219R61E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475KA12L 0805 4 \$0.06 14 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A <td></td> <td></td> <td></td> <td>•</td> <td></td> <td></td>				•		
MuRata GRM155R61C104KA88D 0402 1 \$0.01 3 MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM188R71C474KA88D 0603 1 \$0.02 5 MuRata GRM219R61E106KA01D 0805 1 \$0.05 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM31CR70J226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.30 11 Maria GRM322R61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MVA20A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB				· ·		
MuRata GRM155R71C224KA12D 0402 1 \$0.01 3 MuRata GRM188R71C474KA8BD 0603 1 \$0.02 5 MuRata GRM218R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BR61E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.30 11 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.35 15 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 13 Diodes Inc. PDS760-13 POWED15 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1				· · · · · · · · · · · · · · · · · · ·		
MuRata GRM188R71C474KA88D 0603 1 \$0.02 5 MuRata GRM216R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.35 15 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.09 24 ON Semiconductor MBR130T1G SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D </td <td></td> <td></td> <td></td> <td>•</td> <td></td> <td></td>				•		
MuRata GRM216R71H103KA01D 0805 1 \$0.01 7 MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.09 13 Diodes Inc. MBR130T1G \$0D-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E						
MuRata GRM219R61E106KA12 0805 1 \$0.05 7 MuRata GRM21BC81E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.09 13 ON Semiconductor MBR130T1G SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerD15 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1209-473-D 0805 2 \$0.01 14 Vishay-Siliconix S						
MuRata GRM21BC81E475KA12L 0805 1 \$0.04 7 MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.09 13 Diodes Inc. PDS760-13 SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1				· ·		
MuRata GRM21BR61E475MA12L 0805 4 \$0.06 14 MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 24 Texas Instruments MBR130T1G \$0D-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix \$12316BDS-T1-E3 \$0T-23 1 \$0.22 14 Bourns \$RR1210-220M \$RR1210 1 \$0.44 196 Taiyo Yuden				· ·		
MuRata GRM31CR70J226KE19L 1206 1 \$0.30 11 MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$0.90 24 ON Semiconductor MBR130T1G \$0D-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 \$0T-23 1 \$0.22 14 Bourns SRR1210-220M \$RR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.44 196 Texas Instruments TPS62172DSGR \$-PWSON-N8 1 \$0.80 24 Texas Instruments<						
MuRata GRM32ER61C226KE20L 1210 1 \$0.35 15 Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$2.16 71 ON Semiconductor MBR130T1G \$0D-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 \$0T-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR \$-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR \$-PWSON-N8 1 \$0.60 10 AVX						
Texas Instruments LM5022MM/NOPB MUB10A 1 \$0.90 24 Texas Instruments LM5122MH/NOPB MXA20A 1 \$2.16 71 ON Semiconductor MBR130T1G SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK				1		
Texas Instruments LM5122MH/NOPB MXA20A 1 \$2.16 71 ON Semiconductor MBR130T1G SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.45 12 TOK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft				1		
ON Semiconductor MBR130T1G SOD-123 1 \$0.09 13 Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Texas Instruments			1		
Diodes Inc. PDS760-13 PowerDI5 1 \$0.60 50 Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160				1		
Susumu Co Ltd PRL1632-R005-F-T1 1206 1 \$0.19 11 Susumu Co Ltd RR1220P-473-D 0805 2 \$0.01 14 Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Diodes Inc.			1	\$0.60	
Vishay-Siliconix SI2316BDS-T1-E3 SOT-23 1 \$0.22 14 Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Susumu Co Ltd	PRL1632-R005-F-T1	1206	1	\$0.19	11
Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Susumu Co Ltd	RR1220P-473-D	0805	2	\$0.01	14
Bourns SRR1210-220M SRR1210 1 \$0.44 196 Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Vishay-Siliconix		SOT-23	1		14
Taiyo Yuden TMK212BJ474KD-T 0805 1 \$0.02 7 Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	•			1		
Texas Instruments TPS40210DGQR S-PDSO-G10 1 \$0.80 24 Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160				1		
Texas Instruments TPS62172DSGR S-PWSON-N8 1 \$0.60 10 AVX TPSB226K020R0400 3528-21 1 \$0.33 17 TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160			S-PDSO-G10	1		24
TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	Texas Instruments	TPS62172DSGR	S-PWSON-N8	1		10
TDK VLF252015MT-2R2M VLF252015MT 1 \$0.45 12 Coilcraft XAL1010-682MEB XAL1010 1 \$1.71 160	AVX	TPSB226K020R0400		1		17
		VLF252015MT-2R2M	VLF252015MT	1	\$0.45	12
Total 73 \$15.14 1,548	Coilcraft	XAL1010-682MEB	XAL1010	1	\$1.71	
	Total			73	\$15.14	1,548



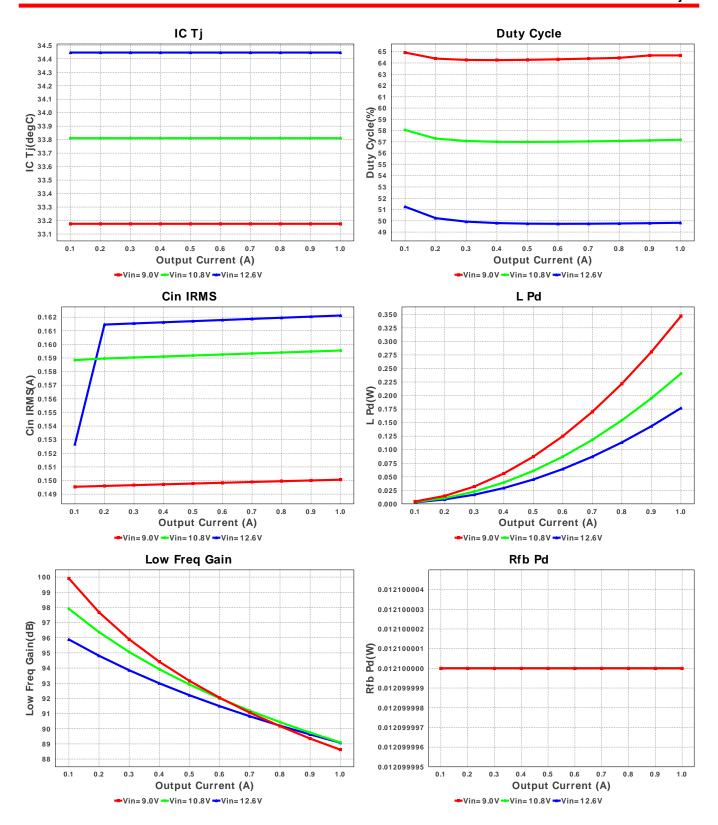
Design: 4109962/5 TPS40210DGQR TPS40210DGQR 9.0V-12.6V to 24.20V @ 1.0A

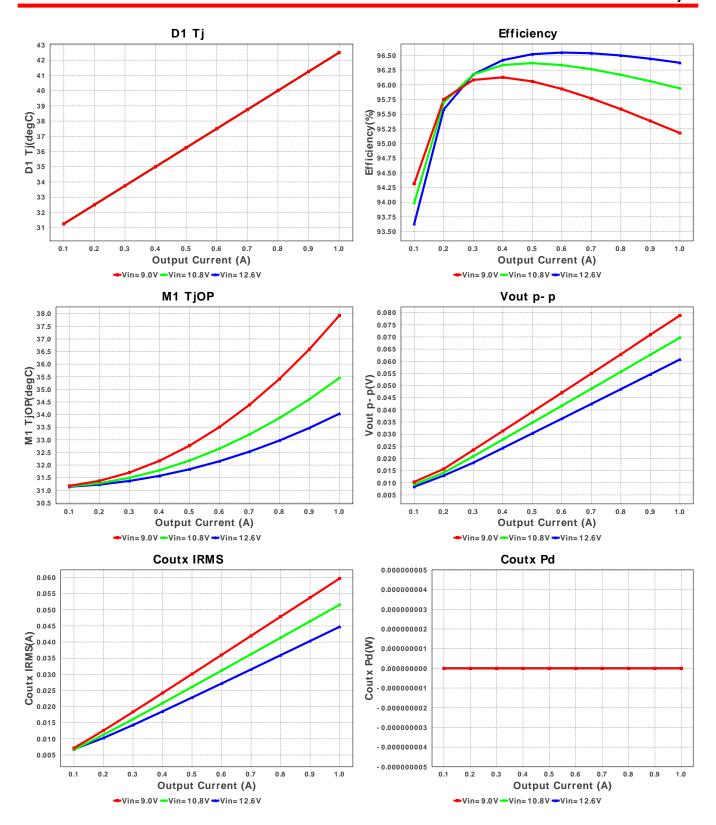
VinMin = 9.0V VinMax = 12.6V Vout = 24.0V Iout = 1.0A Device = TPS40210DGQR Topology = Boost Created = 2/6/15 1:51:09 AM BOM Cost = \$2.67 Footprint = 513.0 mm² BOM Count = 22 Total Pd = 1.06W

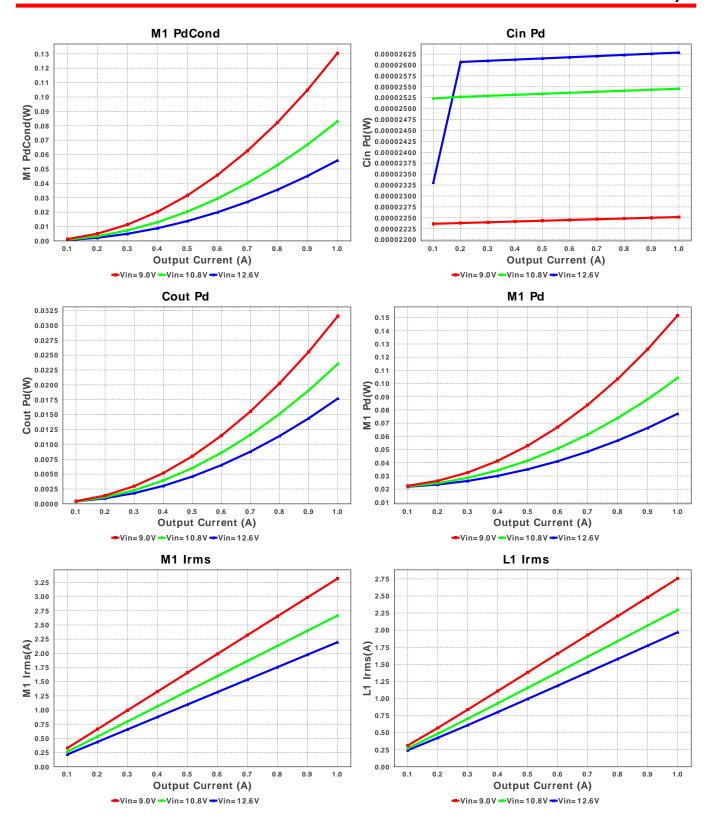


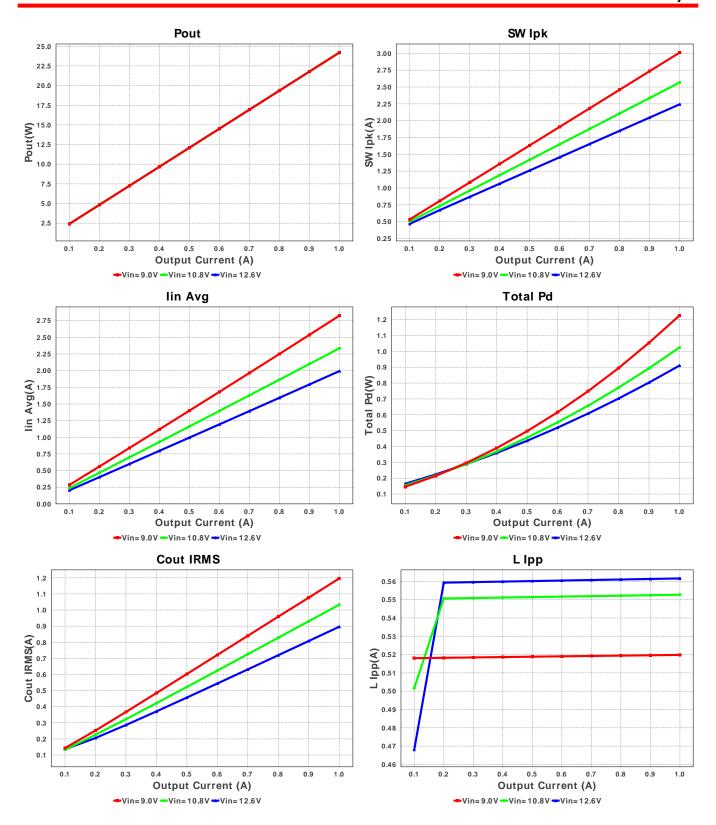
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbp	TDK	C1608X5R1C105K Series= 285	Cap= 1.0 uF ESR= 5.713 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
2.	Cbyp	Taiyo Yuden	EMK212B7474KD-T Series= X7R	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	0805 7 mm ²
3.	Ccomp	Yageo America	CC0805KRX7R9BB272 Series= X7R	Cap= 2.7 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Ccomp2	Yageo America	CC0805JRNPO9BN101 Series= C0G	Cap= 100.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
5.	Ciflt	Yageo America	CC0805JRNPO9BN151 Series= C0G	Cap= 150.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	2	\$0.06	0805 7 mm ²

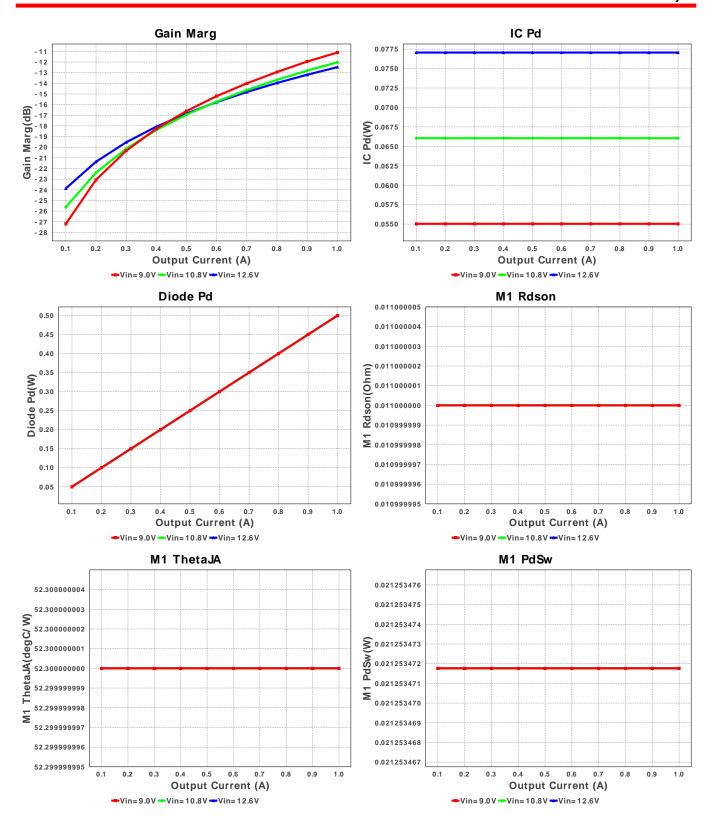
<u>#</u> <u>N</u>	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7. (Cout	Panasonic	35SVPF82M Series= 1273	Cap= 82.0 uF ESR= 20.0 mOhm VDC= 35.0 V IRMS= 4.0 A	1	\$0.61	CAPSMT_62_E12 106 mm ²
8. (Coutx	Taiyo Yuden	GMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 35.0 V IRMS= 0.0 A	1	\$0.05	0805 7 mm ²
9. (Crc	Yageo America	CC0805JRNPO9BN101 Series= C0G	Cap= 100.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
10. (Css	MuRata	GRM155R61A683KA01D Series= X5R	Cap= 68.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
11. [D1	Diodes Inc.	B240A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.09	SMA 37 mm ²
12. L	L1	Bourns	SRR1210-220M	L= 22.0 μH DCR= 38.0 mOhm	1	\$0.44	SRR1210 196 mm ²
13. N	M1	Texas Instruments	CSD17551Q5A	VdsMax= 30.0 V IdsMax= 48.0 Amps	1	\$0.32	TRANS_NexFET_Q5A 55 mm²
14. F	Rcomp	Vishay-Dale	CRCW040256K2FKED Series= CRCWe3	Res= 56.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
15. F	Rfb1	Vishay-Dale	CRCW04021K40FKED Series= CRCWe3	Res= 1.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
16. F	Rfb2	Susumu Co Ltd	RR1220P-473-D Series= 264	Res= 47.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	0805 7 mm ²
17. F	Rg	Vishay-Dale	CRCW040217R8FKED Series= CRCWe3	Res= 17.8 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
18. F	Riflt	Vishay-Dale	CRCW04021K00FKED Series= CRCWe3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
19. F	Rrc	Vishay-Dale	CRCW0402316KFKED Series= CRCWe3	Res= 316.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
20. F	Rsense	Stackpole Electronics Inc	CSR1206FK25L0 Series= ?	Res= 25.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.10	1206 11 mm ²
21. l	U1	Texas Instruments	TPS40210DGQR	Switcher	1	\$0.80	
							S-PDSO-G10 24 mm ²

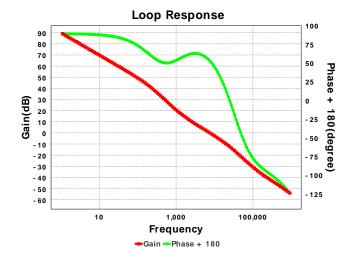












Ope	rating values			
#	Name	Value	Category	Description
1.	Cin IRMS	149.776 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	1.187 A	Current	Output capacitor RMS ripple current
3.	Coutx IRMS	59.482 mA	Current	Output capacitor_x RMS ripple current
4.	lin Avg	2.785 A	Current	Average input current
5.	L lpp	518.84 mA	Current	Peak-to-peak inductor ripple current
6.	L1 Irms	2.726 A	Current	Inductor ripple current
7.	M1 Irms	3.277 A	Current	M1 MOSFET Irms
8.	SW lpk	2.982 A	Current	Peak switch current
9.	BOM Count	22	General	Total Design BOM count
10.	FootPrint	513.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	502.159 kHz	General	Switching frequency
12.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
13.	M1 Rdson	11.0 mOhm	General	Drain-Source On-resistance
14.	M1 ThetaJA	52.3 degC/W	General	MOSFET junction-to-ambient thermal resistance
15.	Pout	24.0 W	General	Total output power
16.	Total BOM	\$2.67	General	Total BOM Cost
17.	D1 Tj	42.5 degC	Op_Point	D1 junction temperature
18.	Vout OP	24.2 V	Op_Point	Operational Output Voltage
19.	Cross Freq	5.669 kHz	Op_point	Bode plot crossover frequency
	Duty Cycle	64.091 %	Op_point	Duty cycle
21.	Efficiency	95.766 %	Op_point	Steady state efficiency
22.	Gain Marg	-11.234 dB	Op_point	Bode Plot Gain Margin
	IC Tj	33.172 degC	Op_point	IC junction temperature
	ICThetaJA	57.7 degC/W	Op_point	IC junction-to-ambient thermal resistance
	IOUT_OP	1.0 A	Op_point	lout operating point
26.	M1 TjOP	37.751 degC	Op_point	M1 MOSFET junction temperature
	Phase Marg	54.532 deg	Op_point	Bode Plot Phase Margin
28.	VIN_OP	9.0 V	Op_point	Vin operating point
	Vout p-p	78.116 mV	Op_point	Peak-to-peak output ripple voltage
	Cin Pd	22.433 μW	Power	Input capacitor power dissipation
	Cout Pd	31.078 mW	Power	Output capacitor power dissipation
32.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
33.		500.0 mW	Power	Diode power dissipation
	IC Pd	54.972 mW	Power	IC power dissipation
	L Pd	338.941 mW	Power	Inductor power dissipation
	M1 Pd	148.204 mW	Power	M1 MOSFET total power dissipation
	M1 PdCond	127.162 mW	Power	M1 MOSFET conduction losses
38.	M1 PdSw	21.042 mW	Power	M1 MOSFET switching losses
	Rfb Pd	11.901 mW	Power	Rfb Power Dissipation
40.	Total Pd	1.061 W	Power	Total Power Dissipation
41.	Low Freq Gain	88.676 dB	Unknown	Gain at 10Hz

Design Inputs

	.gp a.to		
#	Name	Value	Description
1.	lout	1.0	Maximum Output Current
2.	lout1	1.0	Output Current #1
3.	VinMax	12.6	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	24.0	Output Voltage
6.	Vout1	24.0	Output Voltage #1
7.	base_pn	TPS40210	Base Product Number

#	Name	Value	Description
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

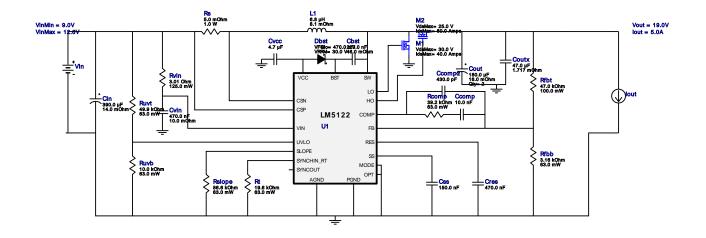
Design Assistance

1. **TPS40210** Product Folder: http://www.ti.com/product/tps40210: contains the data sheet and other resources.



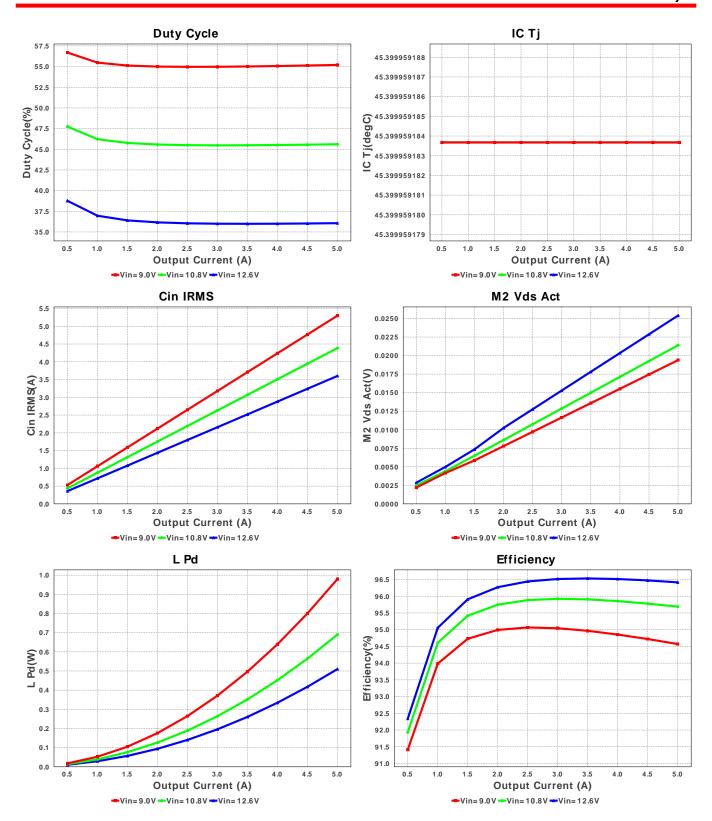
Design: 4109962/6 LM5122MH/NOPB LM5122MH/NOPB 9.0V-12.6V to 19.00V @ 5.0A

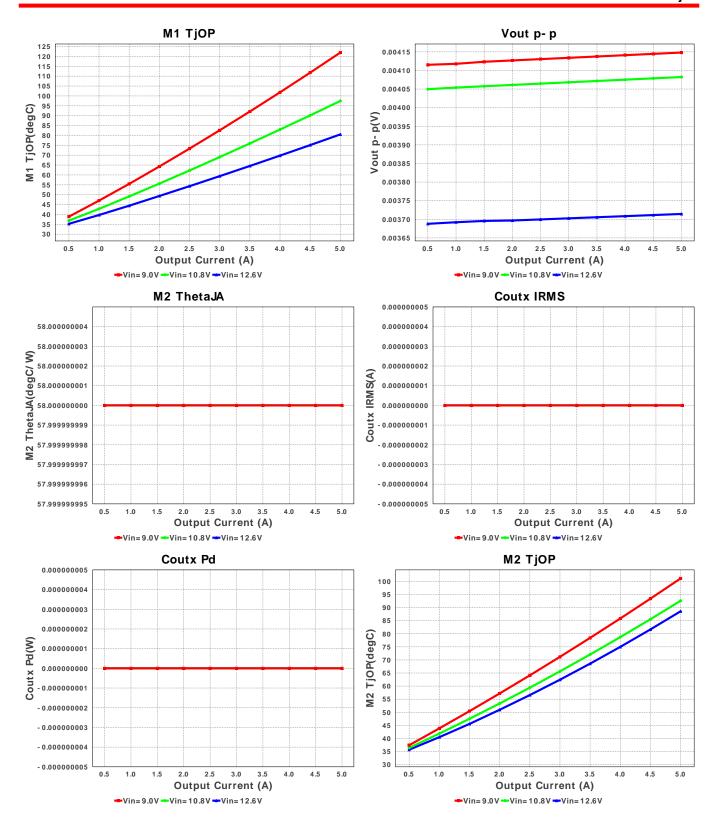
VinMin = 9.0V VinMax = 12.6V Vout = 19.0V Iout = 5.0A Device = LM5122MH/NOPB Topology = Boost Created = 2/6/15 1:51:09 AM BOM Cost = \$7.39 Footprint = 696.0 mm² BOM Count = 25 Total Pd = 5.61W

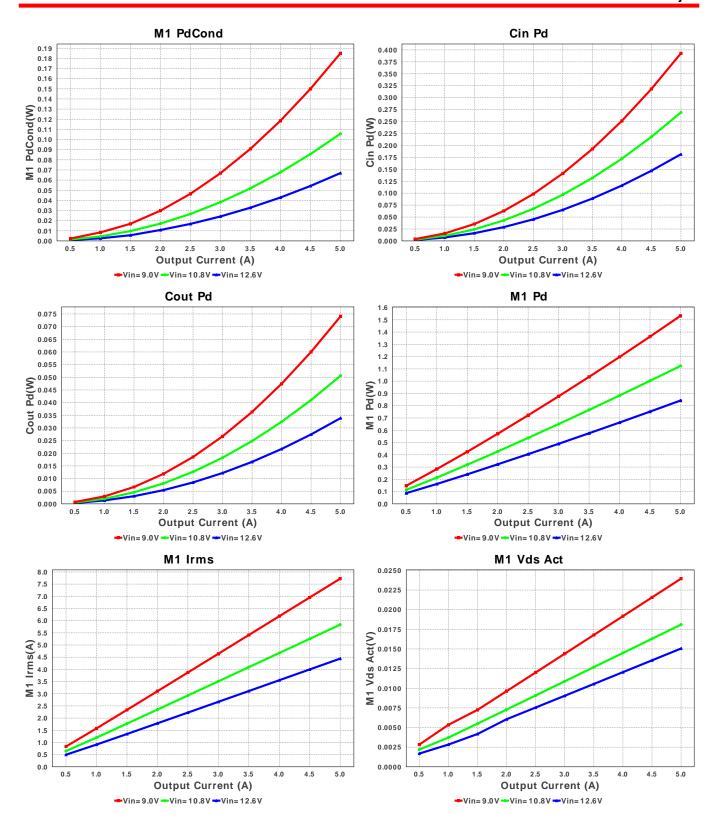


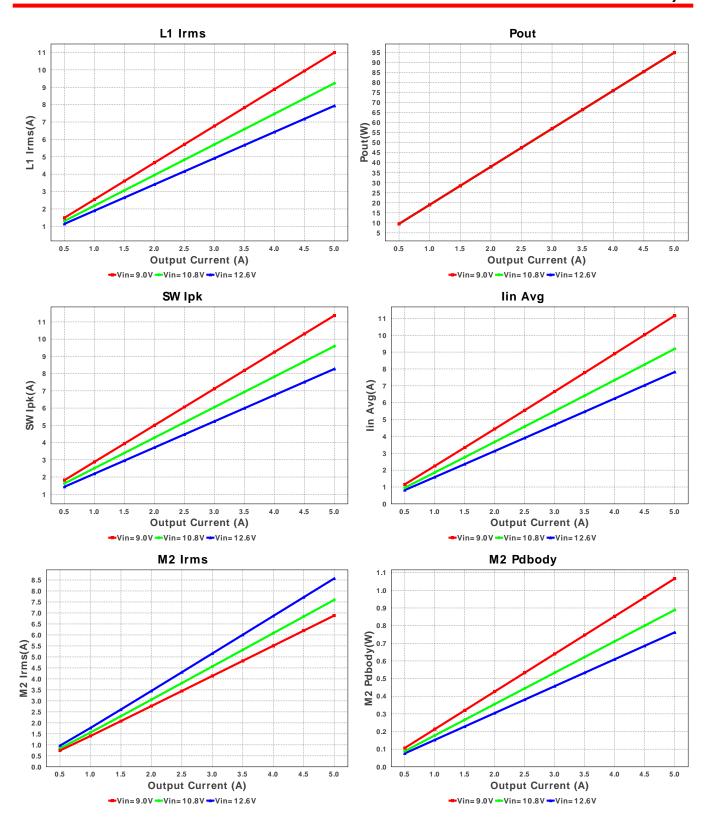
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	Kemet	C0805C224K5RACTU Series= X7R	Cap= 220.0 nF ESR= 46.0 mOhm VDC= 50.0 V IRMS= 2.65 A	1	\$0.02	0805 7 mm ²
2.	Ccomp	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Samsung Electro- Mechanics	CL21C431JBANNNC Series= C0G	Cap= 430.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	Panasonic	20SVPF390M Series= 1273	Cap= 390.0 uF ESR= 14.0 mOhm VDC= 20.0 V IRMS= 4.95 A	1	\$0.63	CAPSMT_62_E12 106 mm²
5.	Cout	Panasonic	25SVPF180M Series= 1273	Cap= 180.0 uF ESR= 16.0 mOhm VDC= 25.0 V IRMS= 4.65 A	2	\$0.61	CAPSMT_62_E12 106 mm²
6.	Coutx	TDK	C3216JB1E476M Series= 285	Cap= 47.0 uF ESR= 1.717 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.35	1206 11 mm ²
7.	Cres	Taiyo Yuden	TMK212BJ474KD-T Series= X5R	Cap= 470.0 nF VDC= 20.0 V IRMS= 0.0 A	1	\$0.02	0805 7 mm ²
8.	Css	MuRata	GRM155R61A154KE19D Series= X5R	Cap= 150.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
9.	Cvcc	MuRata	GRM21BC81E475KA12L Series= 379	Cap= 4.7 uF VDC= 25.0 V IRMS= 0.0 A	1	\$0.04	0805 7 mm ²

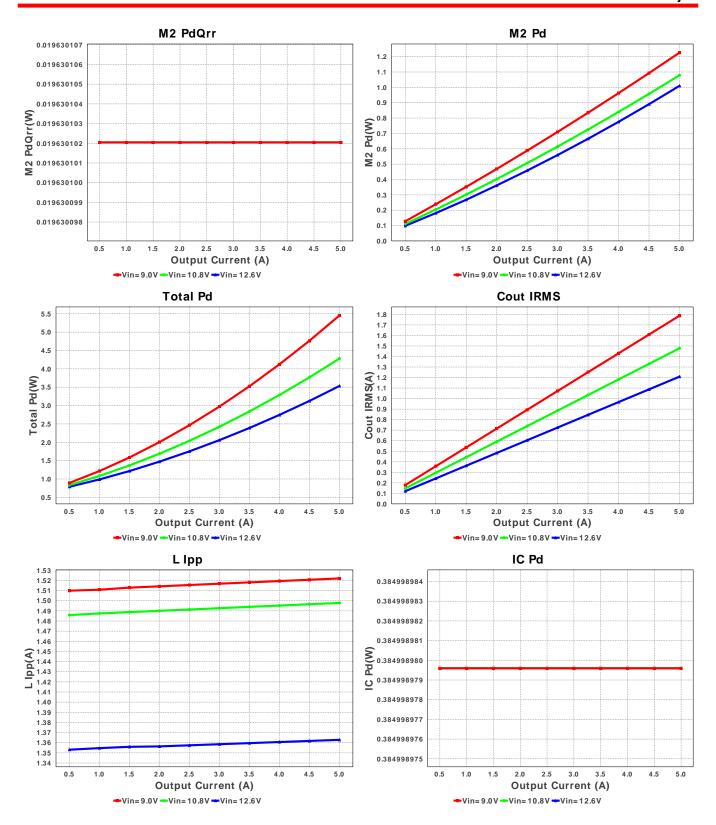
# Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10. Cvin	MuRata	GRM188R71C474KA88D Series= X7R	Cap= 470.0 nF ESR= 10.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	0603 5 mm ²
11. Dbst	ON Semiconductor	MBR130T1G	VF@Io= 470.0 mV VRRM= 30.0 V	1	\$0.09	SOD-123 13 mm ²
12. L1	Coilcraft	XAL1010-682MEB	L= 6.8 μH DCR= 8.1 mOhm	1	\$1.71	XAL1010 160 mm ²
13. M1	Infineon Technologies	BSZ035N03MS G	VdsMax= 30.0 V IdsMax= 40.0 Amps	1	\$0.39	PG-TSDSON-8 19 mm ²
14. M2	Texas Instruments	CSD16340Q3	VdsMax= 25.0 V IdsMax= 60.0 Amps	1	\$0.44	TRANS_NexFET_Q3 19 mm²
15. Rcomp	Vishay-Dale	CRCW040239K2FKED Series= CRCWe3	Res= 39.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
16. Rfbb	Vishay-Dale	CRCW04023K16FKED Series= CRCWe3	Res= 3.16 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
17. Rfbt	Susumu Co Ltd	RR1220P-473-D Series= 264	Res= 47.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	0805 7 mm ²
18. Rs	Susumu Co Ltd	PRL1632-R005-F-T1 Series= 237	Res= 5.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.19	1206 11 mm ²
19. Rslope	Vishay-Dale	CRCW040286K6FKED Series= CRCWe3	Res= 86.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
20. Rt	Vishay-Dale	CRCW040219K6FKED Series= CRCWe3	Res= 19.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
21. Ruvb	Vishay-Dale	CRCW040210K0FKED Series= CRCWe3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
22. Ruvt	Vishay-Dale	CRCW040249K9FKED Series= CRCWe3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
23. Rvin	Vishay-Dale	CRCW08053R01FKEA Series= CRCWe3	Res= 3.01 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
24. U1	Texas Instruments	LM5122MH/NOPB	Switcher	1	\$2.16	0
						MXA20A 71 mm ²

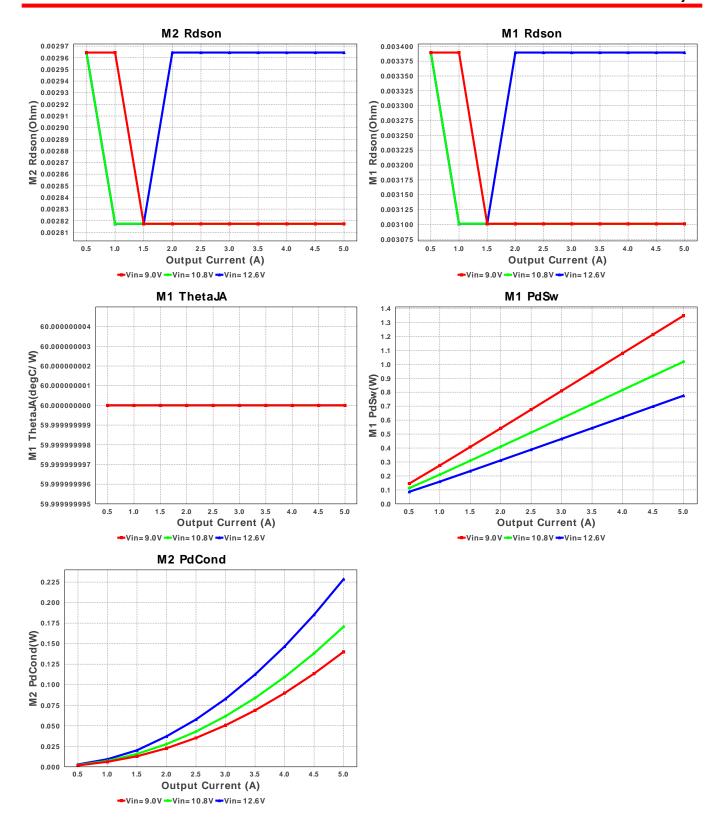












#	Name	Value	Category	Description
1.	Cin IRMS	5.31 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	2.756 A	Current	Output capacitor RMS ripple current
3.	lin Avg	11.178 A	Current	Average input current
4.	L lpp	1.518 A	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	10.994 A	Current	Inductor ripple current
6.	M1 Irms	7.753 A	Current	MOSFET RMS ripple current
7.	M2 Irms	6.873 A	Current	MOSFET RMS ripple current
8.	SW lpk	11.399 A	Current	Peak switch current
9.	BOM Count	25	General	Total Design BOM count
10.	FootPrint	696.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	459.184 kHz	General	Switching frequency

#	Name	Value	Category	Description
12.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
13.	M1 Rdson	3.101 mOhm	General	Drain-Source On-resistance
14.	M1 ThetaJA	60.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
15.	M2 Rdson	2.817 mOhm	General	Drain-Source On-resistance
16.	M2 ThetaJA	58.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
17.	M2 Vds Act	19.365 mV	General	M Vds
18.	Pout	95.0 W	General	Total output power
19.	Total BOM	\$7.39	General	Total BOM Cost
20.	Vout OP	19.0 V	Op_Point	Operational Output Voltage
21.	Duty Cycle	55.271 %	Op_point	Duty cycle
22.	Efficiency	94.428 %	Op_point	Steady state efficiency
23.	IC Tj	51.285 degC	Op_point	IC junction temperature
24.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	5.0 A	Op_point	lout operating point
26.	M1 TjOP	122.357 degC	Op_point	M1 MOSFET junction temperature
27.	M2 TjOP	101.091 degC	Op_point	MOSFET junction temperature
28.	VIN_OP	9.0 V	Op_point	Vin operating point
29.	Vout p-p	6.379 mV	Op_point	Peak-to-peak output ripple voltage
30.	Cin Pd	394.809 mW	Power	Input capacitor power dissipation
31.	Cout Pd	71.63 mW	Power	Output capacitor power dissipation
32.	IC Pd	532.119 mW	Power	IC power dissipation
33.	L Pd	978.986 mW	Power	Inductor power dissipation
34.	M1 Pd	1.539 W	Power	MOSFET power dissipation
35.	M1 Pd	1.539 W	Power	MOSFET power dissipation
36.	M1 PdCond	186.412 mW	Power	M1 MOSFET conduction losses
37.	M1 PdSw	1.353 W	Power	M1 MOSFET switching losses
38.	M2 Pd	1.226 W	Power	MOSFET power dissipation
39.	M2 PdCond	139.754 mW	Power	M2 MOSFET conduction losses
40.	M2 PdQrr	19.63 mW	Power	Synchronous Boost High Side Reverse Recovery
41.	M2 Pdbody	1.066 W	Power	Power dissipation through lower FET
42.	Total Pd	5.606 W	Power	Total Power Dissipation
43.	M1 Vds Act	24.043 mV	Unknown	M Vds

Design Inputs

#	Name	Value	Description
1.	lout	5.0	Maximum Output Current
2.	lout1	5.0	Output Current #1
3.	VinMax	12.6	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	19.0	Output Voltage
6.	Vout1	19.0	Output Voltage #1
7.	base_pn	LM5122	Base Product Number
8.	source	DC	Input Source Type
9.	Та	30.0	Ambient temperature

Design Assistance

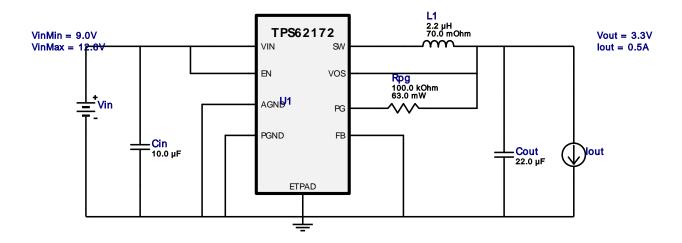
^{1.} The LM5122 is a wide range boost controller which is operable in an ultra wide input range of 4.5 to 65V. A boost regulator can maintain regulation for input voltages lower than the output voltage.

 $^{2. \ \}textbf{LM5122} \ Product \ Folder: http://www.ti.com/product/lm5122: contains the \ data \ sheet \ and \ other \ resources.$

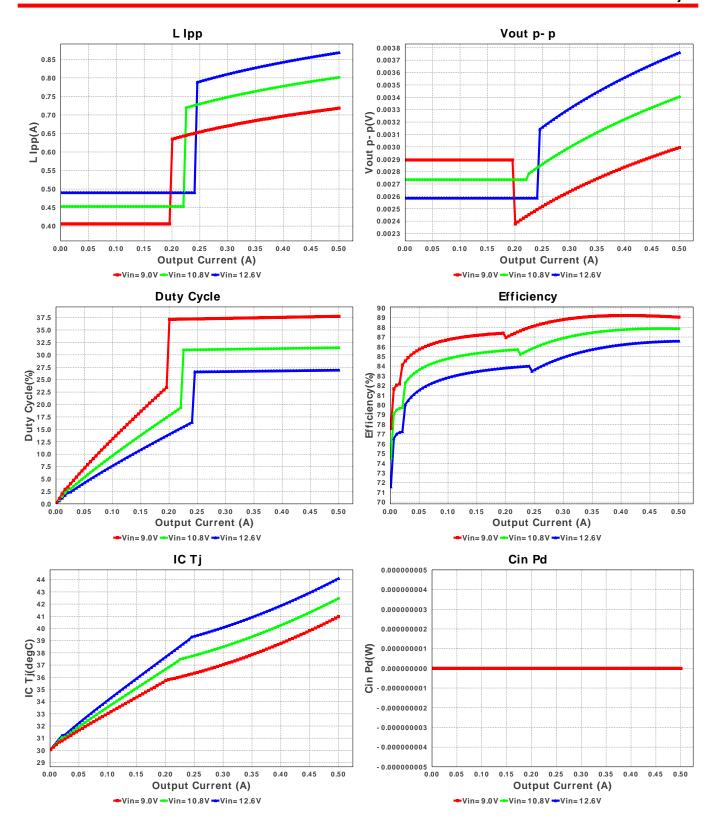


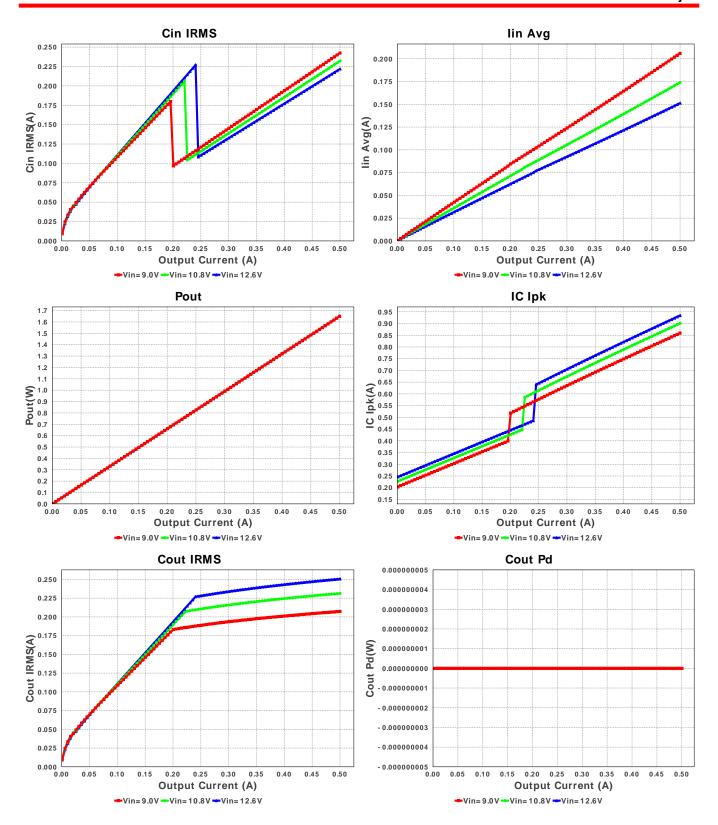
Design: 4109962/7 TPS62172DSGR TPS62172DSGR 9.0V-12.6V to 3.30V @ 0.5A

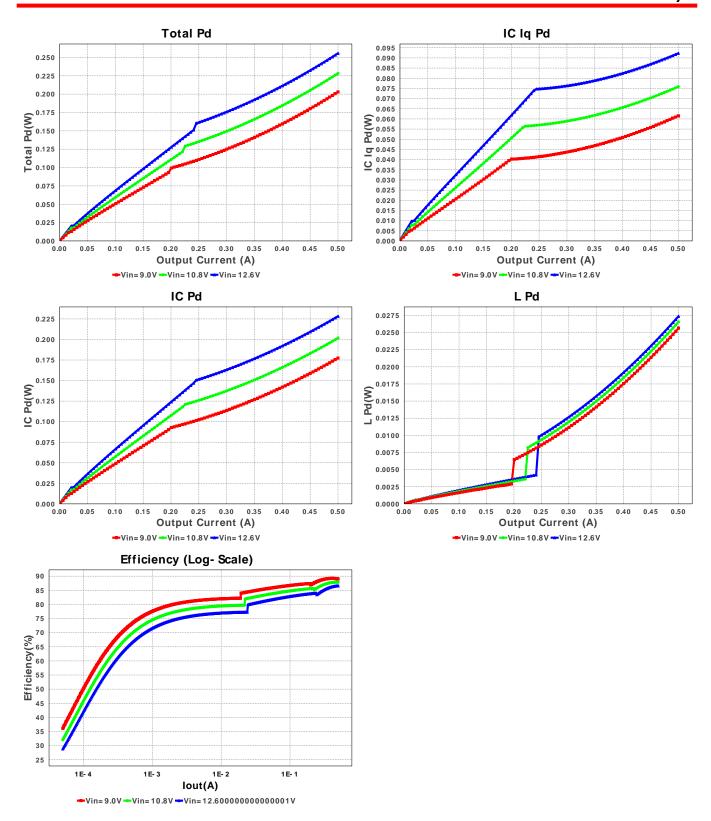
VinMin = 9.0V VinMax = 12.6V Vout = 3.3V Iout = 0.5A Device = TPS62172DSGR Topology = Buck Created = 2/6/15 1:51:10 AM BOM Cost = \$1.41 Footprint = 42.0 mm² BOM Count = 5 Total Pd = 0.26W



#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM219R61E106KA12 Series= ?	Cap= 10.0 uF VDC= 25.0 V IRMS= 0.0 A	1	\$0.05	0805 7 mm ²
2.	Cout	MuRata	GRM31CR70J226KE19L Series= X7R	Cap= 22.0 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.30	1206 11 mm ²
3.	L1	TDK	VLF252015MT-2R2M	L= 2.2 μH DCR= 70.0 mOhm	1	\$0.45	VLF252015MT 12 mm ²
4.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCWe3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	U1	Texas Instruments	TPS62172DSGR	Switcher	1	\$0.60	S-PWSON-N8 10 mm ²







#	Name	Value	Category	Description
1.	Cin IRMS	221.829 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	250.662 mA	Current	Output capacitor RMS ripple current
3.	IC lpk	934.159 mA	Current	Peak switch current in IC
4.	lin Avg	151.24 mA	Current	Average input current
5.	L lpp	868.32 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	5	General	Total Design BOM count
7.	FootPrint	42.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	2.327 MHz	General	Switching frequency
9.	Pout	1.65 W	General	Total output power
10.	Total BOM	\$1.41	General	Total BOM Cost
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage

#	Name	Value	Category	Description
12.	Duty Cycle	26.942 %	Op_point	Duty cycle
13.	Efficiency	86.587 %	Op_point	Steady state efficiency
14.	IC Tj	44.104 degC	Op_point	IC junction temperature
15.	ICThetaJA	61.8 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	500.0 mA	Op_point	lout operating point
17.	VIN_OP	12.6 V	Op_point	Vin operating point
18.	Vout p-p	3.761 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
20.	Cout Pd	0.0 W	Power	Output capacitor power dissipation
21.	IC Iq Pd	92.257 mW	Power	IC lq Pd
22.	IC Pd	228.216 mW	Power	IC power dissipation
23.	L Pd	27.373 mW	Power	Inductor power dissipation
24.	Total Pd	255.601 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	lout	500.0 m	Maximum Output Current
2.	lout1	500.0 m	Output Current #1
3.	VinMax	12.6	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	TPS62172	Base Product Number
8.	source	DC	Input Source Type
9.	Та	30.0	Ambient temperature

Design Assistance

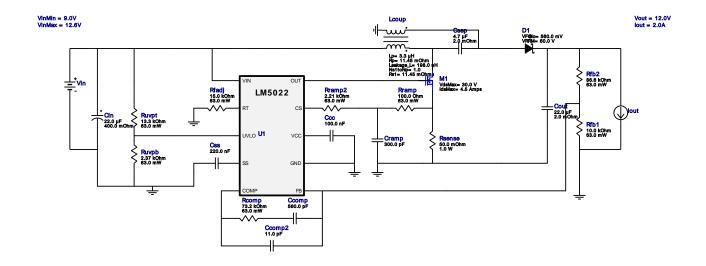
^{1.} Feature Highlights: DCS-Control(TM) Architecture with upto 0.5A output current, 3V to 17V Input Voltage Range, 3.3V Fixed Output voltage, Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

^{2.} TPS62172 Product Folder: http://www.ti.com/product/tps62172: contains the data sheet and other resources.



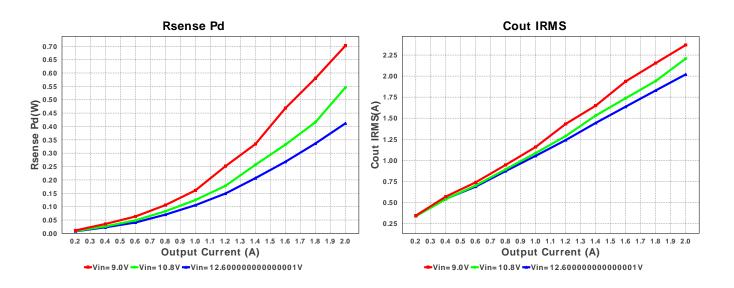
Design: 4109962/8 LM5022MM/NOPB LM5022MM/NOPB 9.0V-12.6V to 12.00V @ 2.0A

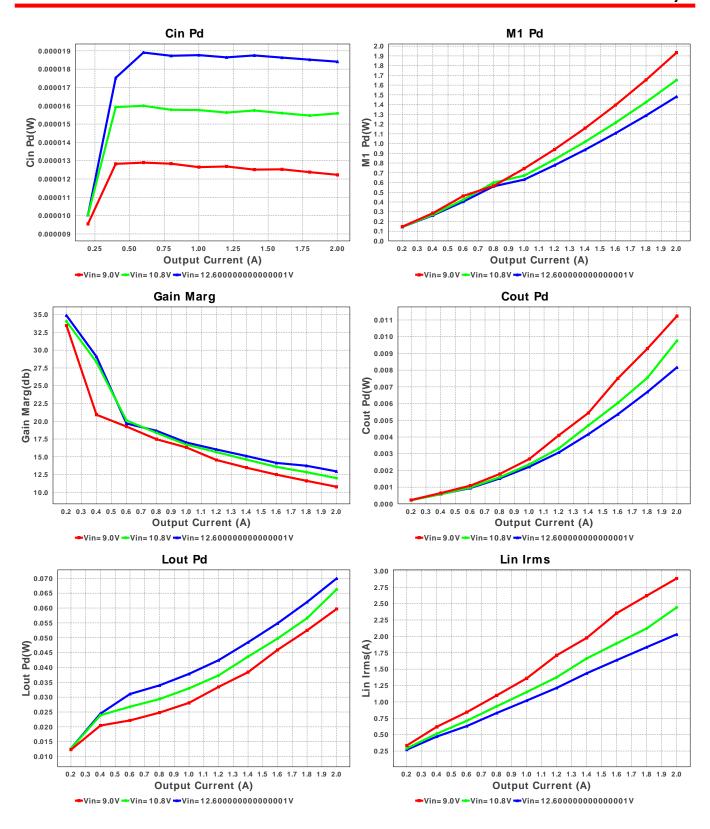
VinMin = 9.0V VinMax = 12.6V Vout = 12.0V lout = 2.0A Device = LM5022MM/NOPB Topology = SEPIC Created = 2/6/15 1:51:12 AM BOM Cost = \$3.67 Footprint = 410.0 mm² BOM Count = 21 Total Pd = 4.29W

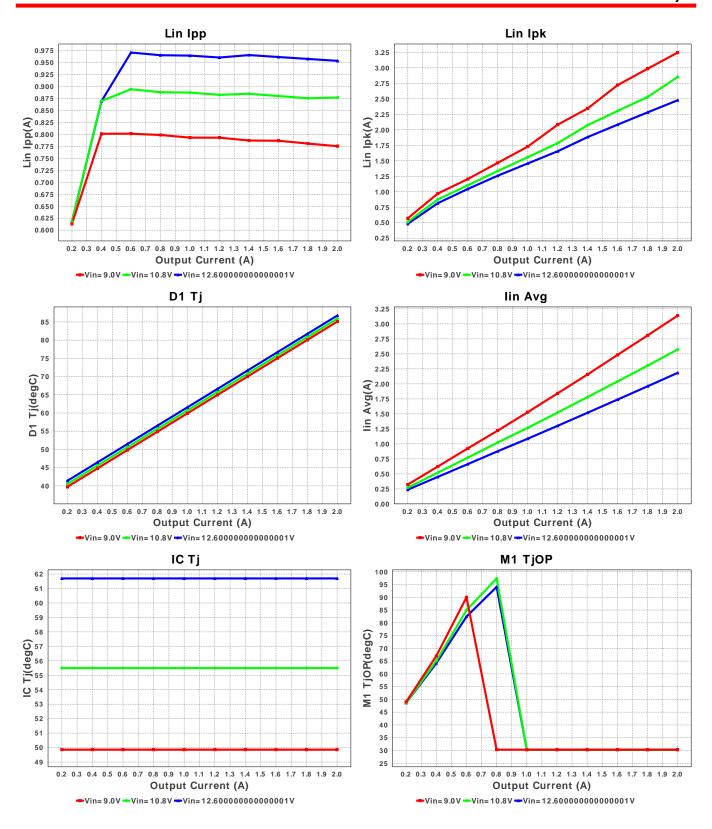


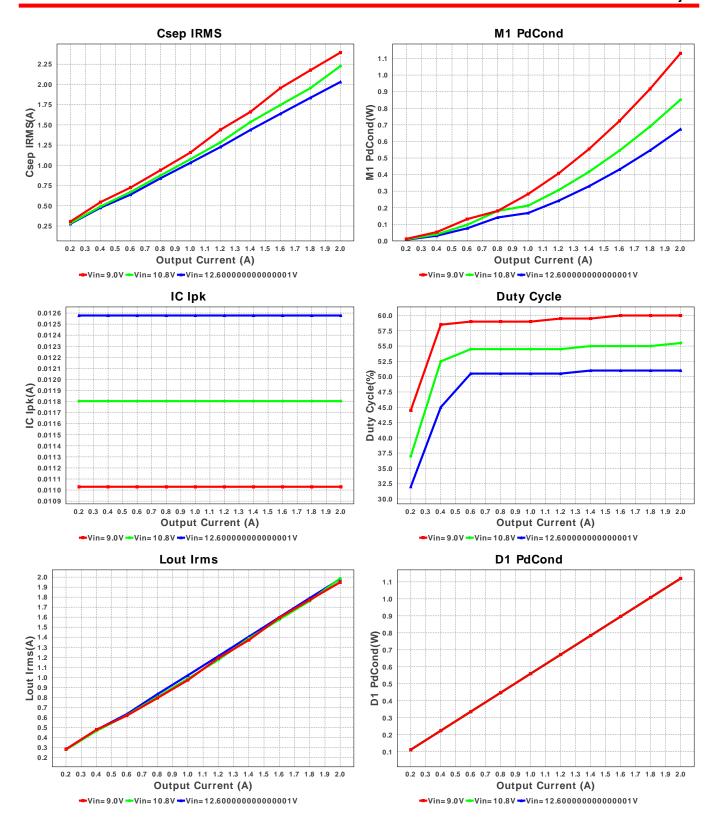
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccc	MuRata	GRM155R61C104KA88D Series= X5R	Cap= 100.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB561 Series= X7R	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	TDK	C0603C0G1E110G Series= C0G	Cap= 11.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
4.	Cin	AVX	TPSB226K020R0400 Series= TPS	Cap= 22.0 uF ESR= 400.0 mOhm VDC= 20.0 V IRMS= 415.0 mA	1	\$0.33	3528-21 17 mm ²
5.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	1	\$0.35	1210 15 mm ²
6.	Cramp	MuRata	GRM1555C1E301JA01D Series= C0G/NP0	Cap= 300.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
7.	Csep	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.06	0805 7 mm ²
8.	Css	MuRata	GRM155R71C224KA12D Series= X7R	Cap= 220.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
9.	D1	Diodes Inc.	PDS760-13	VF@Io= 560.0 mV VRRM= 60.0 V	1	\$0.60	PowerDI5 50 mm ²

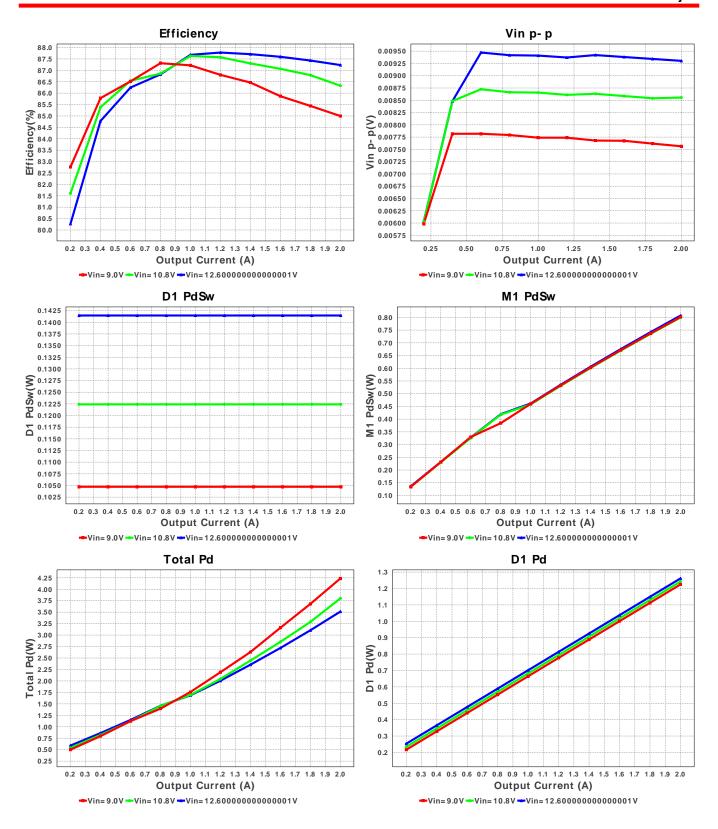
# Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10. Lcoup	Coiltronics	DRQ127-3R3-R	Lp= 3.3 µH Rp= 11.45 mOhm Leakage_L= 198.0 nH Ns1toNp= 1.0 Rs1= 11.45 mOhms	1	\$0.93	DRQ127 210 mm ²
11. M1	Vishay-Siliconix	SI2316BDS-T1-E3	VdsMax= 30.0 V IdsMax= 4.5 Amps	1	\$0.22	S OT-23 14 mm ²
12. Rcomp	Vishay-Dale	CRCW040273K2FKED Series= CRCWe3	Res= 73.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
13. Rfadj	Vishay-Dale	CRCW040215K0FKED Series= CRCWe3	Res= 15.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
14. Rfb1	Vishay-Dale	CRCW040210K0FKED Series= CRCWe3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
15. Rfb2	Vishay-Dale	CRCW040286K6FKED Series= CRCWe3	Res= 86.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
16. Rramp	Vishay-Dale	CRCW0402100RFKED Series= CRCWe3	Res= 100.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
17. Rramp2	Vishay-Dale	CRCW04022K21FKED Series= CRCWe3	Res= 2.21 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
18. Rsense	Stackpole Electronics Inc	CSRN2010FK50L0 Series= ?	Res= 50.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.15	2010 32 mm ²
19. Ruvpb	Vishay-Dale	CRCW04022K37FKED Series= CRCWe3	Res= 2.37 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
20. Ruvpt	Vishay-Dale	CRCW040213K3FKED Series= CRCWe3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
21. U1	Texas Instruments	LM5022MM/NOPB	Switcher	1	\$0.90	MUB10A 24 mm ²

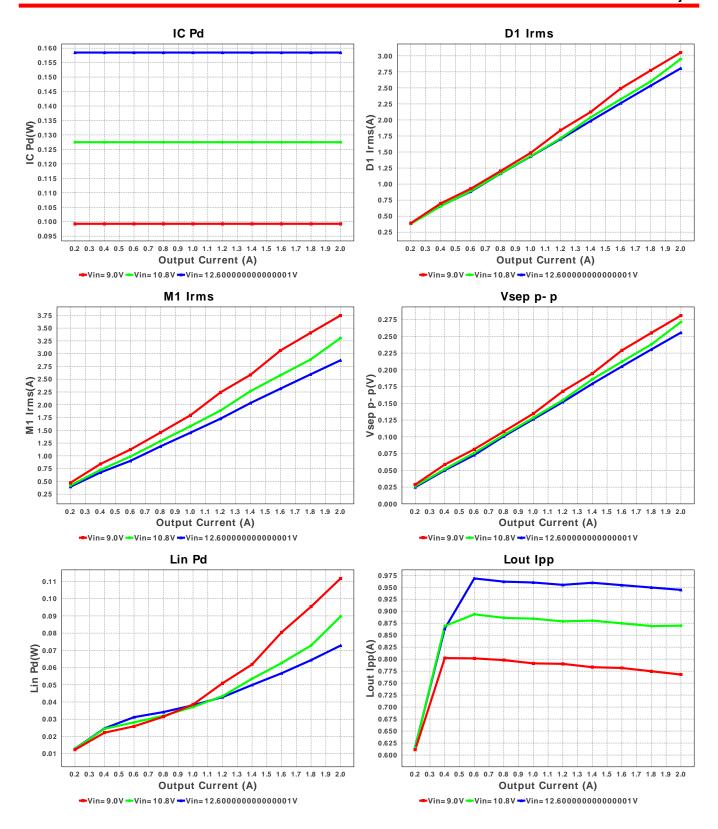


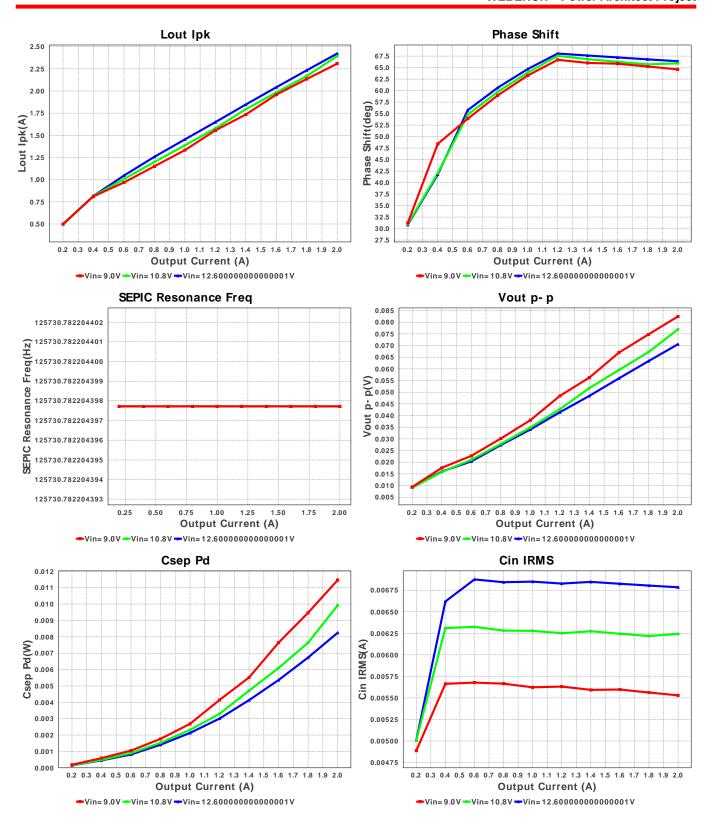












#	Name	Value	Category	Description
1.	Cin IRMS	5.248 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	2.37 A	Current	Output capacitor RMS ripple current
3.	Csep IRMS	2.393 A	Current	SEPIC capacitor RMS ripple current
4.	D1 Irms	3.053 A	Current	D1 Irms
5.	IC lpk	12.752 mA	Current	Peak switch current in IC
6.	lin Avg	3.143 A	Current	Average input current
7.	Lin lpk	3.23 A	Current	Lin peak current
8.	Lin Ipp	735.47 mA	Current	Peak-to-peak input inductor ripple current
9.	Lin Irms	2.887 A	Current	Lin ripple current
10.	Lout lpk	2.29 A	Current	Lout peak current
11.	Lout Ipp	728.16 mA	Current	Peak-to-peak output inductor ripple current

#	Name	Value	Category	Description
12.	Lout Irms	1.949 A	Current	Lout ripple current
13.	M1 Irms	3.749 A	Current	M1 MOSFET Irms
14.	BOM Count	21	General	Total Design BOM count
15.	FootPrint	410.0 mm ²	General	Total Foot Print Area of BOM components
16.	Frequency	1.055 MHz	General	Switching frequency
17.	IC Tolerance	25.0 mV	General	IC Feedback Tolerance
18.	Total BOM	\$3.67	General	Total BOM Cost
19.	D1 Tj	85.372 degC	Op_Point	D1 junction temperature
20.	SEPIC Resonance	125.731 kHz	Op_Point	SEPIC Resonance Frequency
	Freq			
21.	Vin p-p	7.175 mV	Op_Point	Peak-to-peak input voltage
22.	Vsep p-p	266.892 mV	Op_Point	Peak-to-peak sepic voltage
23.	Cross Freq	20.729 kHz	Op_point	Bode plot crossover frequency
24.	Duty Cycle	60.0 %	Op_point	Duty cycle
25.	Efficiency	84.844 %	Op_point	Steady state efficiency
26.	Gain Marg	10.075 db	Op_point	Bode Plot Gain Margin
27.	IC Tj	62.135 degC	Op_point	IC junction temperature
28.	IOUT_OP	2.0 A	Op_point	lout operating point
29.	M1 TjOP	30.3 degC	Op_point	M1 MOSFET junction temperature
30.	Phase Marg	61.517 deg	Op_point	Bode Plot Phase Margin
31.	Phase Shift	63.1 deg	Op_point	Bode Plot Phase Shift
32.	VIN_OP	9.0 V	Op_point	Vin operating point
33.	Vout p-p	78.729 mV	Op_point	Peak-to-peak output ripple voltage
34.	Cin Pd	11.015 μW	Power	Input capacitor power dissipation
35.	Cout Pd	11.237 mW	Power	Output capacitor power dissipation
36.	Csep Pd	11.448 mW	Power	SEPIC capacitor power dissipation
37.	D1 Pd	1.23 W	Power	Diode power dissipation
38.	D1 PdCond	1.12 W	Power	Diode conduction losses
39.	D1 PdSw	110.489 mW	Power	Diode switching losses
40.	IC Pd	160.673 mW	Power	IC power dissipation
41.	Lin Pd	111.169 mW	Power	Lin power dissipation
42.	Lout Pd	58.947 mW	Power	Lout power dissipation
43.	M1 Pd	1.977 W	Power	M1 MOSFET total power dissipation
44.	M1 PdCond	1.131 W	Power	M1 MOSFET conduction losses
45.	M1 PdSw	845.589 mW	Power	M1 MOSFET switching losses
46.	Rsense Pd	702.758 mW	Power	LED Current Rsns Power Dissipation
47.	Total Pd	4.287 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	lout	2.0	Maximum Output Current
2.	lout1	2.0	Output Current #1
3.	VinMax	12.6	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	12.0	Output Voltage
6.	Vout1	12.0	Output Voltage #1
7.	base_pn	LM5022	Base Product Number
8.	source	DC	Input Source Type
9.	Та	30.0	Ambient temperature

Design Assistance

1. LM5022 Product Folder: http://www.ti.com/product/lm5022: contains the data sheet and other resources.

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

Use of Texas Instruments' WEBENCH simulation tools is subject to Texas Instruments' Site Terms and Conditions of Use. Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the Evaluation License Agreement.