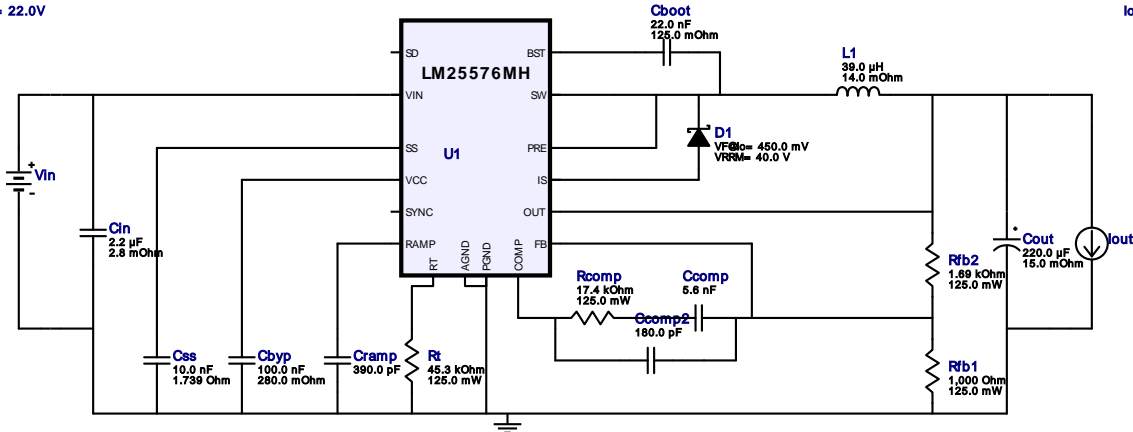


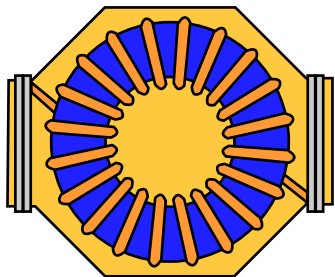





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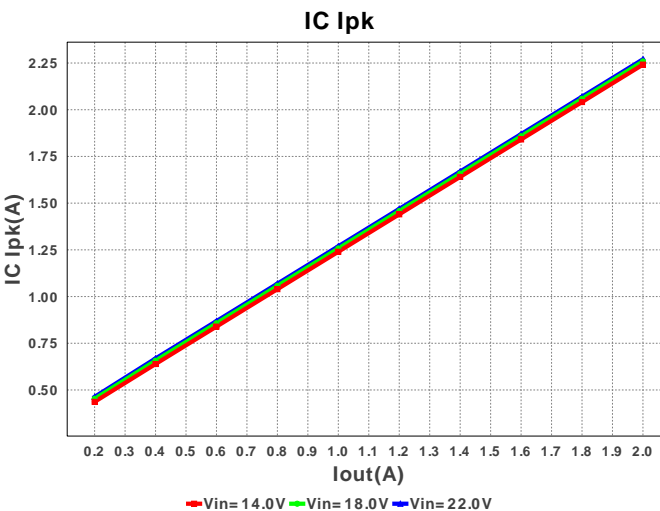
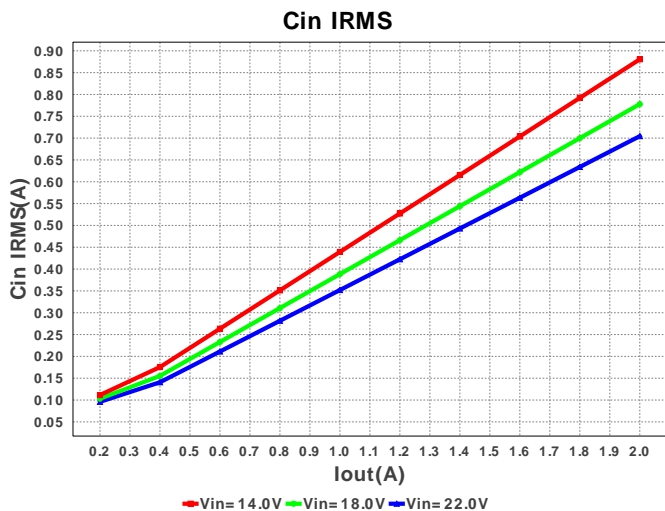
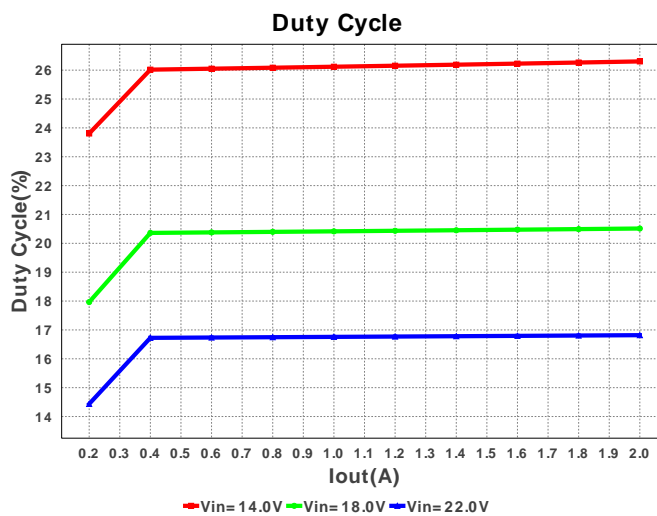
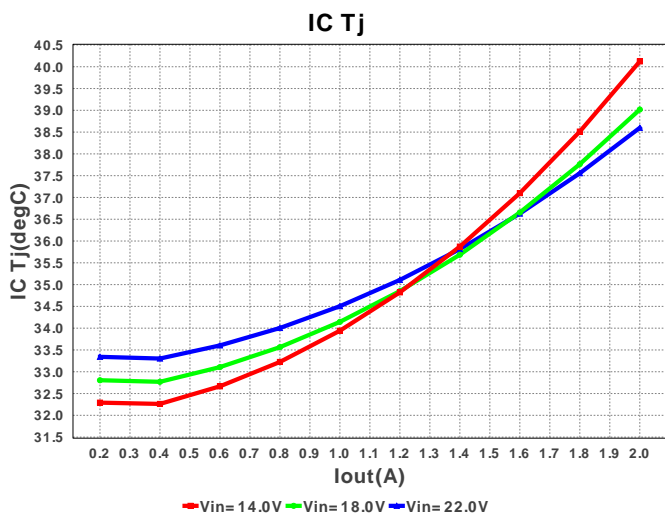
 Design : 4046158/5 LM25576MHX/NOPB
 LM25576MHX/NOPB 14.0V-22.0V to 3.3V @ 2.0A

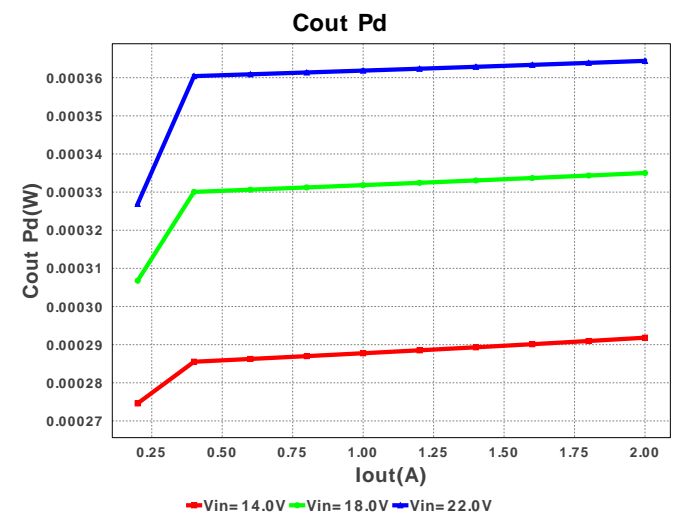
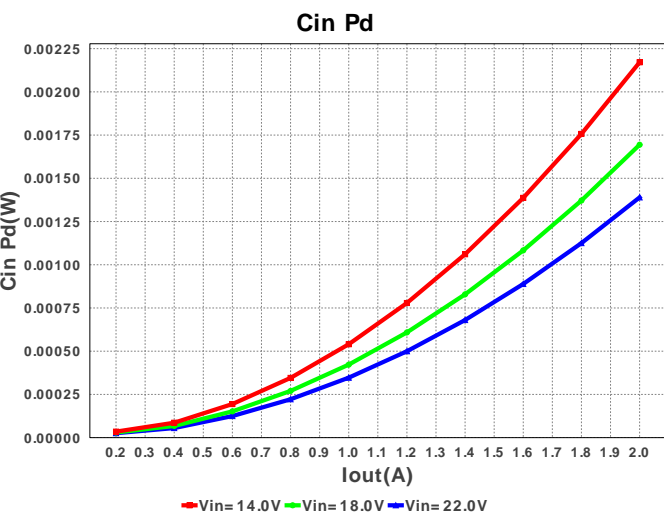
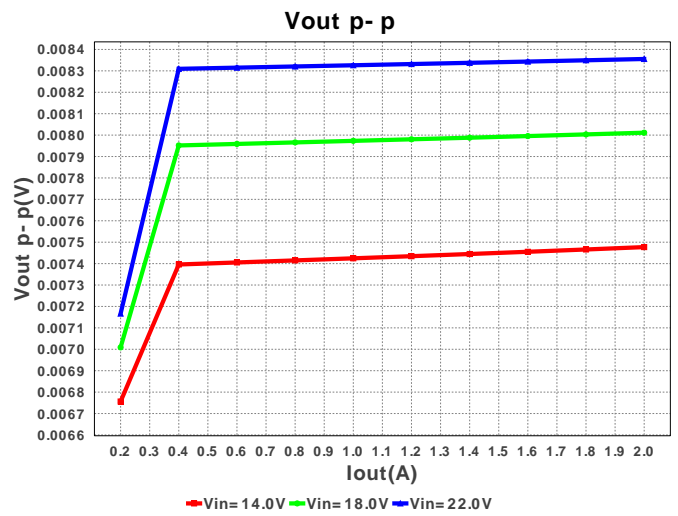
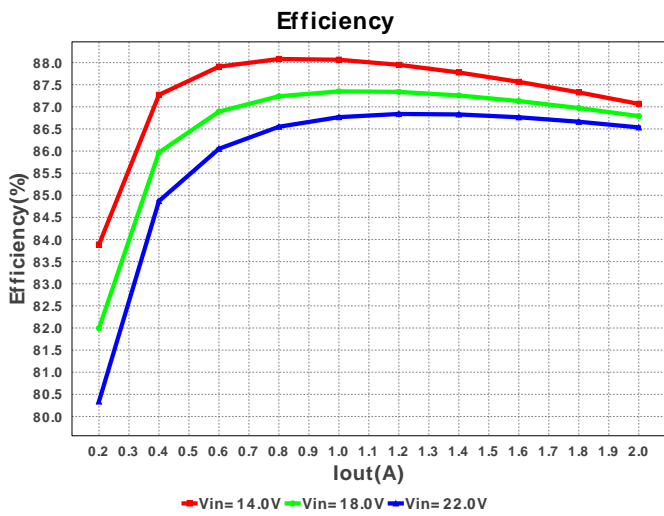
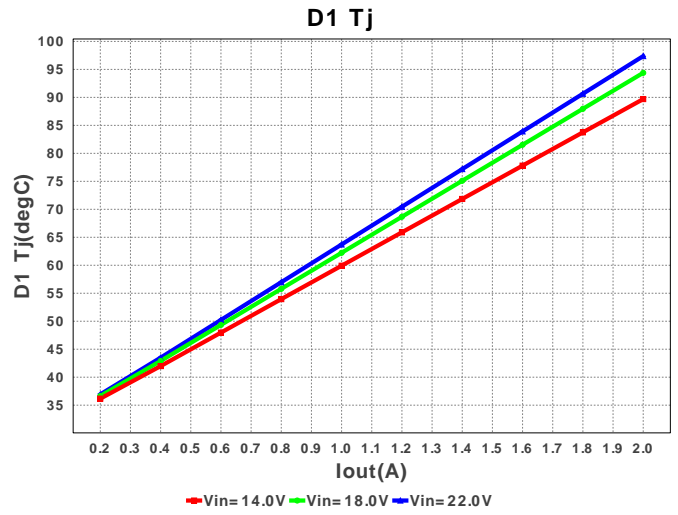
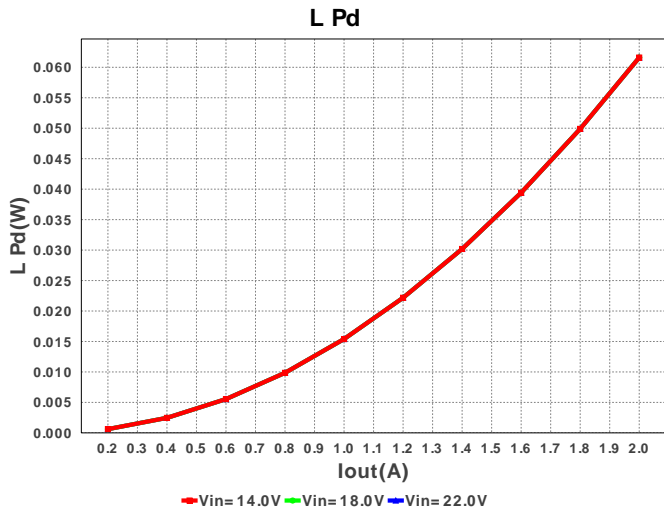
 VinMin = 14.0V
 VinMax = 22.0V

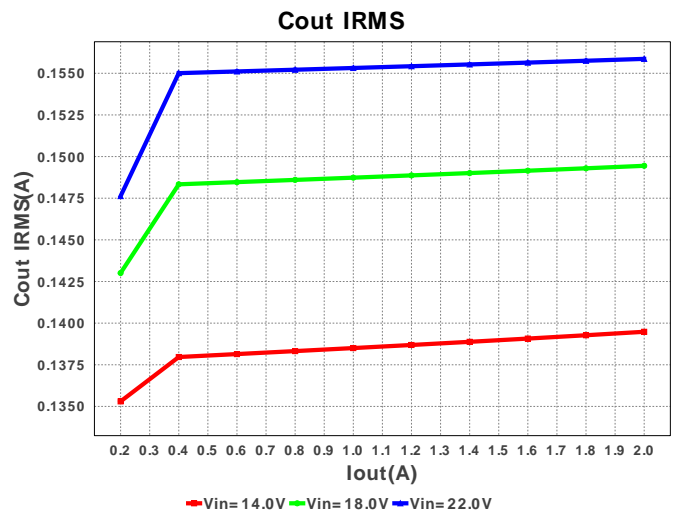
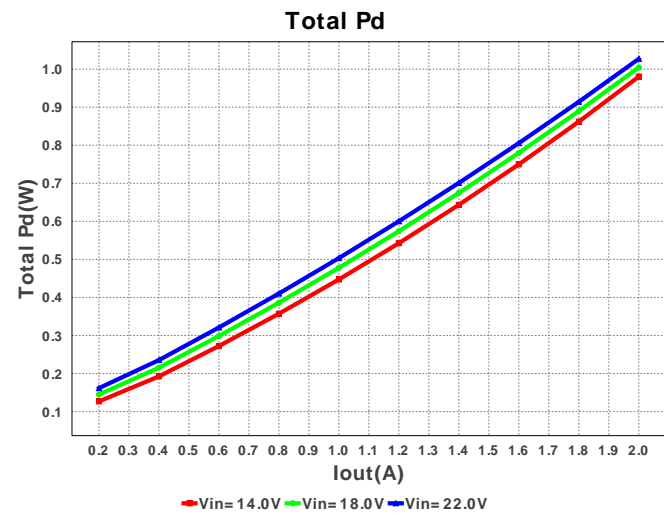
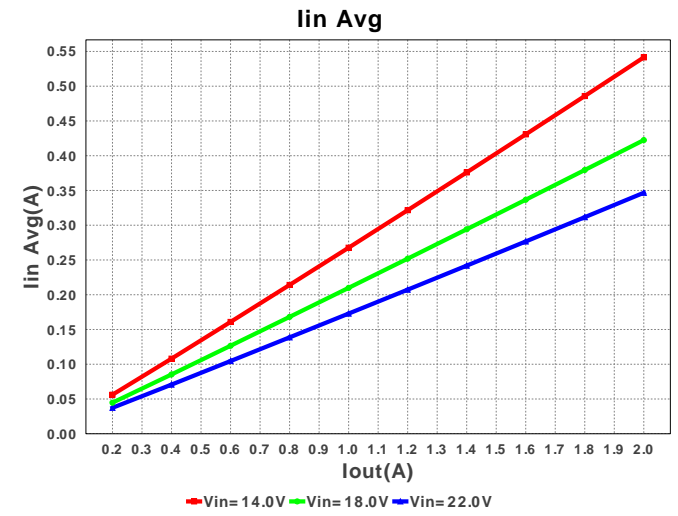
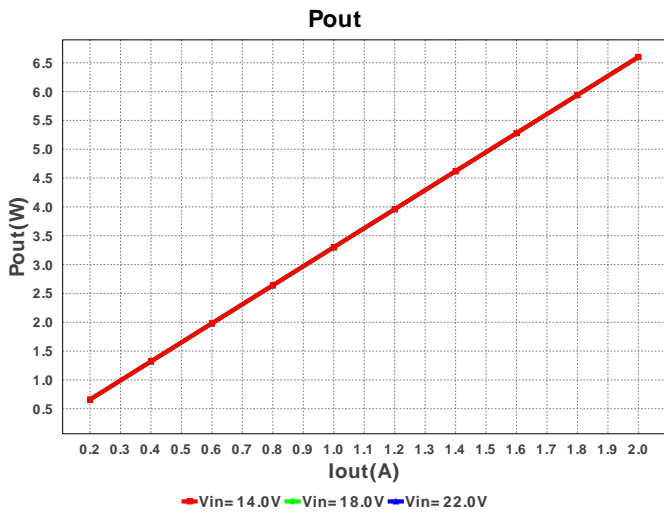
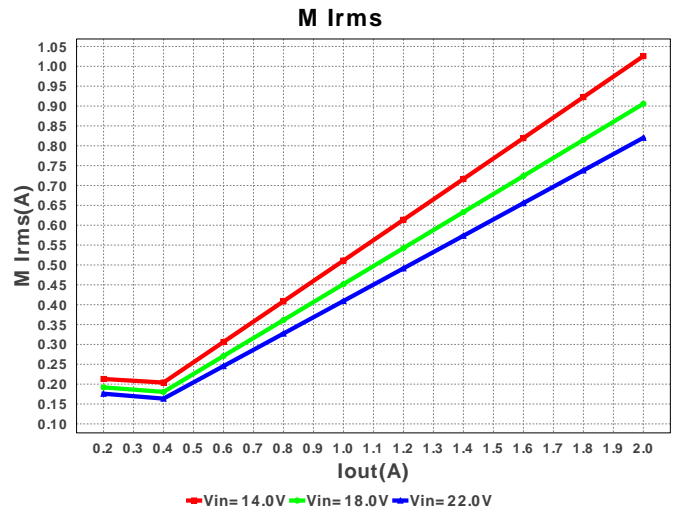
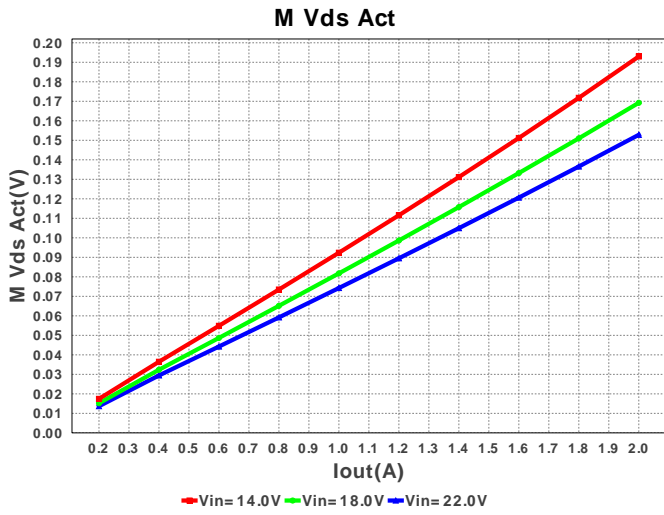
 Vout = 3.3V
 Iout = 2.0A

Electrical BOM

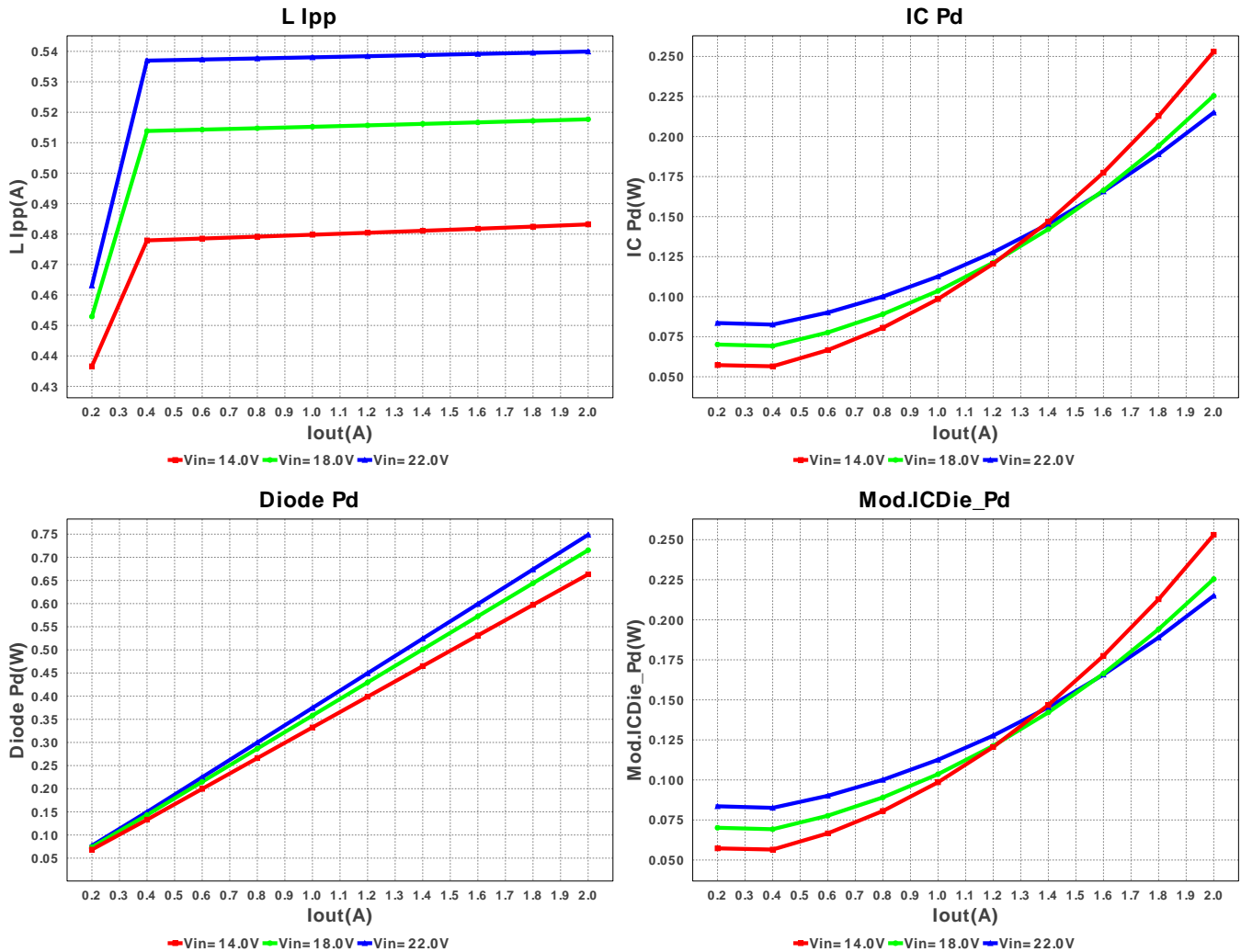
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C223K5RACTU Series= X7R	Cap= 22.0 nF ESR= 125.0 mOhm VDC= 50.0 V IRMS= 645.0 mA	1	\$0.01	0805 7mm2
2.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
3.	Ccomp	Yageo America	CC0805KRX7R9BB562 Series= X7R	Cap= 5.6 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
4.	Ccomp2	Yageo America	CC0805JRNP09BN181 Series= C0G/NP0	Cap= 180.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
5.	Cin	TDK	C3225X7R2A225K230AB Series= X7R	Cap= 2.2 µF ESR= 2.8 mOhm VDC= 100.0 V IRMS= 9.825 A	1	\$0.19	1210 15mm2
6.	Cout	Panasonic	6SVPE220MW Series= 259	Cap= 220.0 µF ESR= 15.0 mOhm VDC= 6.3 V IRMS= 3.15 A	1	\$0.14	CAPSMT_62_E61 53mm2
7.	Cramp	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
8.	Css	Kemet	C0805C103K5RACTU Series= X7R	Cap= 10.0 nF ESR= 1.739 Ohm VDC= 50.0 V IRMS= 411.0 mA	1	\$0.01	0805 7mm2
9.	D1	Diodes Inc.	B340LB-13-F	VF@Io= 450.0 mV VRRM= 40.0 V	1	\$0.14	SMB 44mm2

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	L1	Bourns	PM2120-390K-RC	L= 39.0 μ H DCR= 14.0 mOhm	1	\$1.33	 PM2120 890mm2
11.	Rcomp	Panasonic	ERJ-6ENF1742V Series= 225	Res= 17.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
12.	Rfb1	Panasonic	ERJ-6ENF1001V Series= 225	Res= 1,000 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
13.	Rfb2	Panasonic	ERJ-6ENF1691V Series= 225	Res= 1.69 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
14.	Rt	Panasonic	ERJ-6ENF4532V Series= 225	Res= 45.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
15.	U1	Texas Instruments	LM25576MHX/NOPB	Switcher	1	\$2.00	 MXA20A 71mm2









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	704.472 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	155.866 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.269 A	Current	Peak switch current in IC
4.	Iin Avg	346.68 mA	Current	Average input current
5.	L Ipp	539.935 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	820.202 mA	Current	MOSFET RMS current
7.	BOM Count	15	General	Total Design BOM count
8.	FootPrint	1.142 kmm2	General	Total Foot Print Area of BOM components
9.	Frequency	149.354 kHz	General	Switching frequency
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	152.819 mV	General	Voltage drop across the MosFET
12.	Pout	6.6 W	General	Total output power
13.	Total BOM	\$3.9	General	Total BOM Cost
14.	D1 Tj	97.377 degC	Op_Point	D1 junction temperature
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	16.818 %	Op_point	Duty cycle
17.	Efficiency	86.535 %	Op_point	Steady state efficiency
18.	IC Tj	38.599 degC	Op_point	IC junction temperature
19.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	2.0 A	Op_point	Iout operating point
21.	VIN_OP	22.0 V	Op_point	Vin operating point
22.	Vout p-p	8.355 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	1.39 mW	Power	Input capacitor power dissipation
24.	Cout Pd	364.412 μW	Power	Output capacitor power dissipation
25.	Diode Pd	748.636 mW	Power	Diode power dissipation
26.	IC Pd	214.965 mW	Power	IC power dissipation
27.	L Pd	61.6 mW	Power	Inductor power dissipation
28.	Total Pd	1.027 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0 A	Maximum Output Current
2.	Iout1	2.0 Amps	Output Current #1
3.	SoftStart	1.0 ms	Soft Start Time (ms)
4.	VinMax	22.0 V	Maximum input voltage
5.	VinMin	14.0 V	Minimum input voltage
6.	Vout	3.3 V	Output Voltage
7.	Vout1	3.3 Volt	Output Voltage #1
8.	base_pn	LM25576	Texas Instruments Base Part Number
9.	source	DC	Input Source Type
10.	ta	30.0 degC	Ambient temperature
11.	userfs	571.723 kHz	Customer Selected Frequency

Design Assistance

1. LM25576 Product Folder : <http://www.ti.com/product/lm25576> : contains the data sheet and other resources.

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