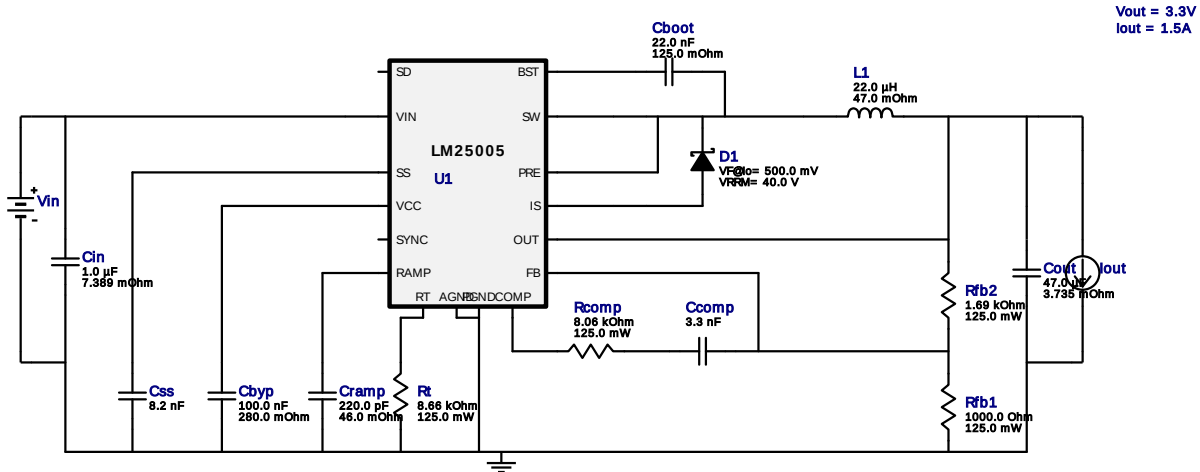


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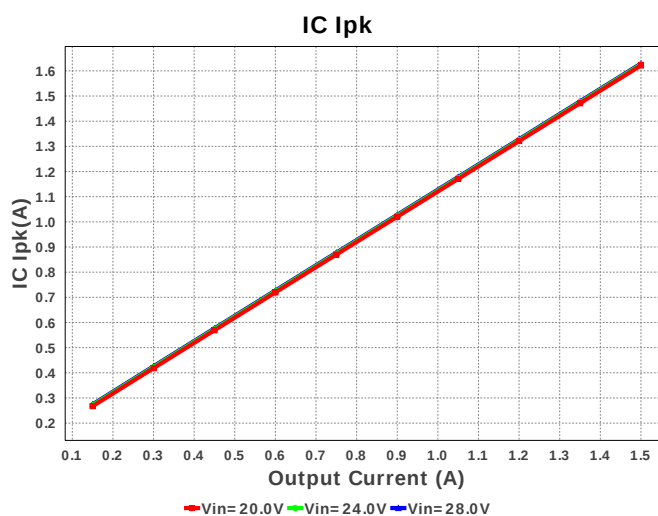
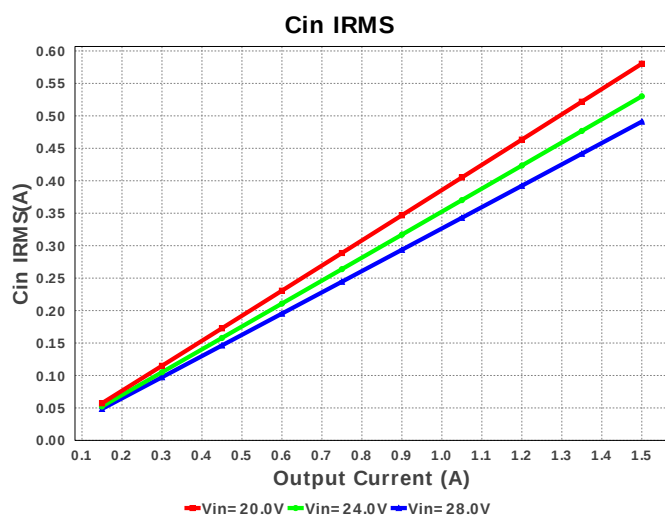
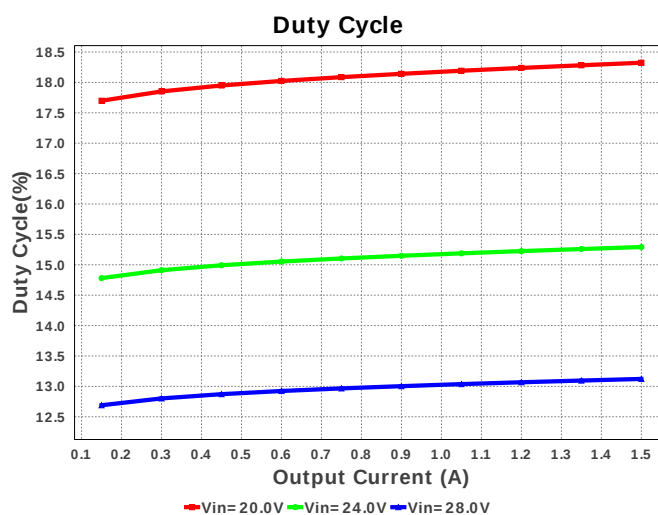
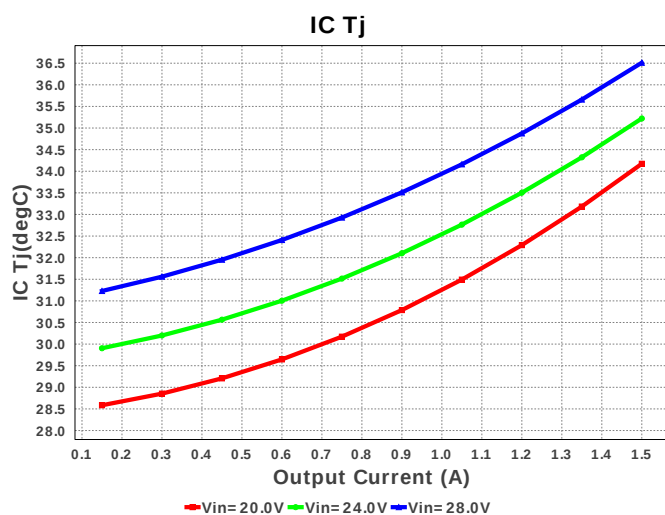
Design : 4774498/28 LM25005MHX/NOPB
LM25005MHX/NOPB 20.0V-28.0V to 3.30V @ 1.5A

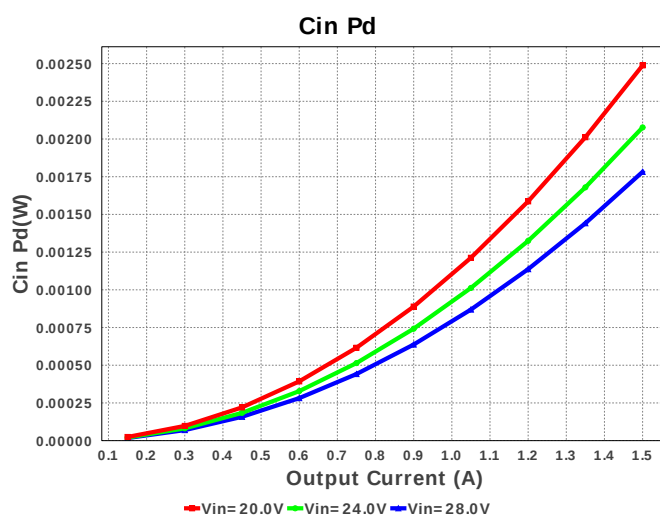
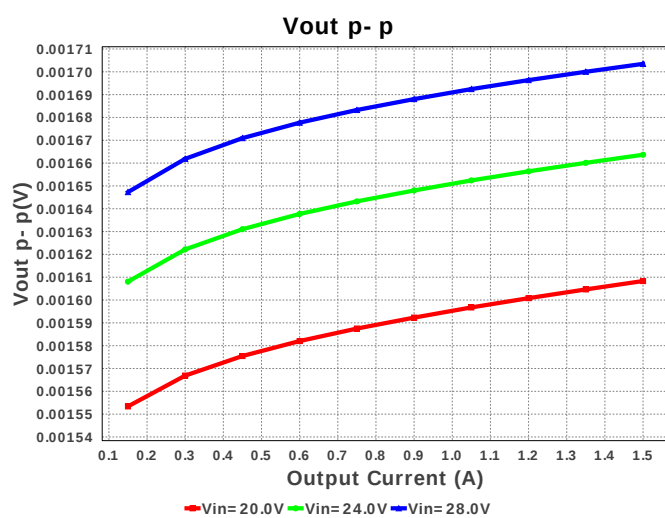
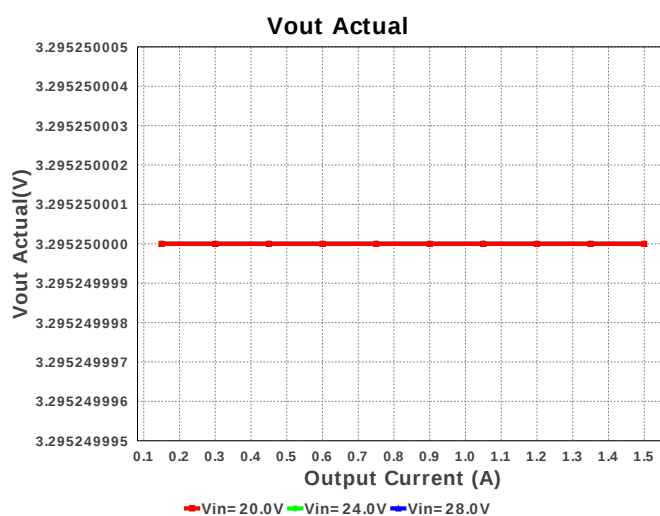
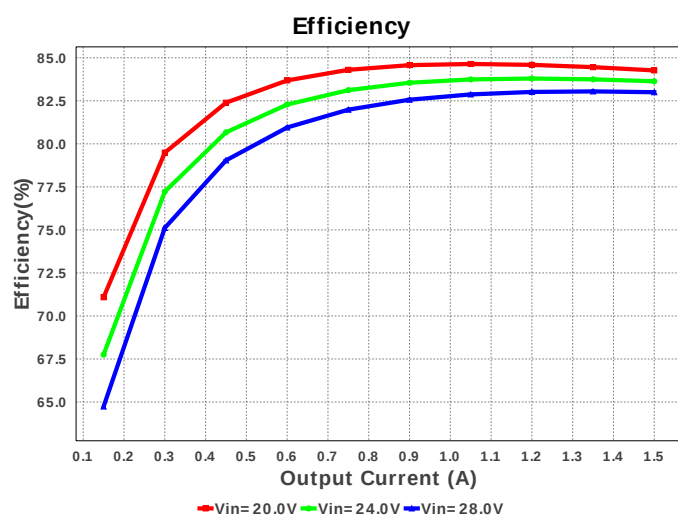
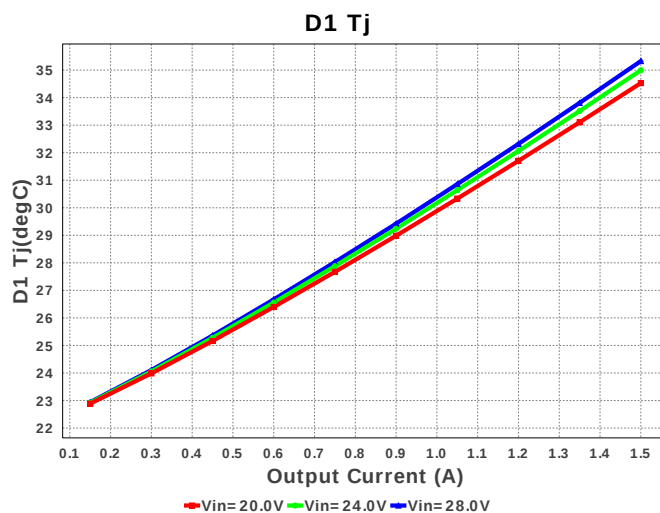
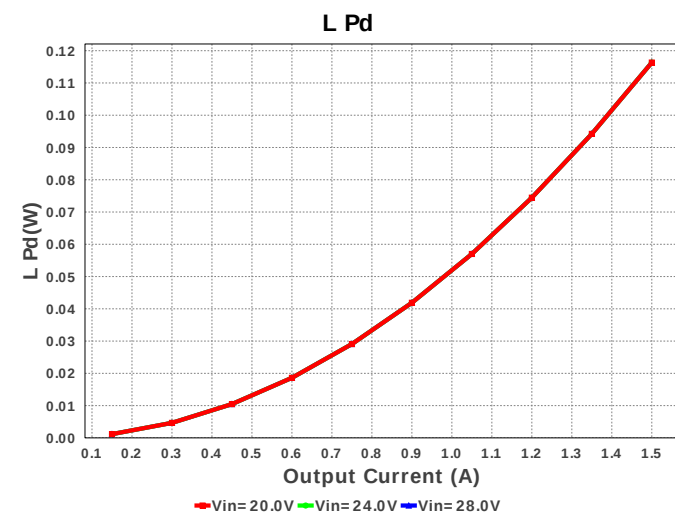


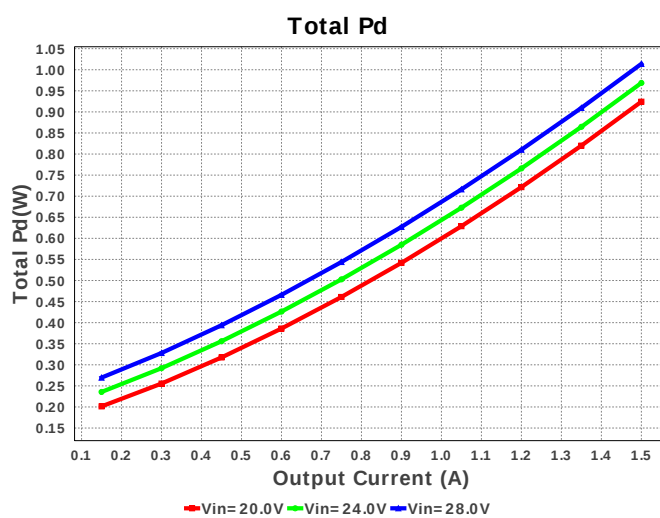
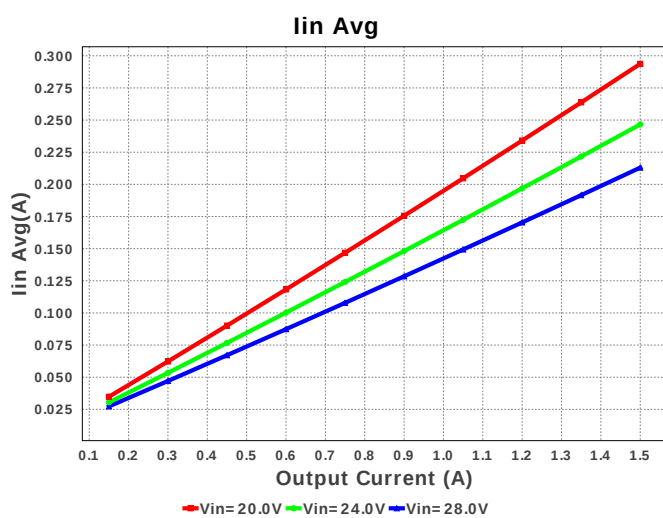
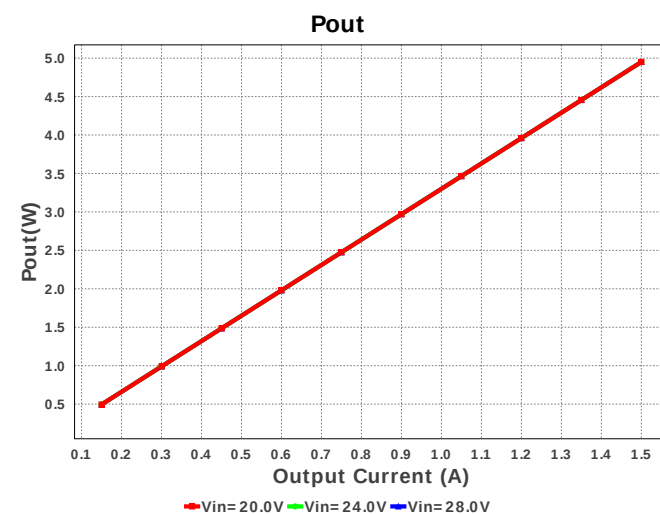
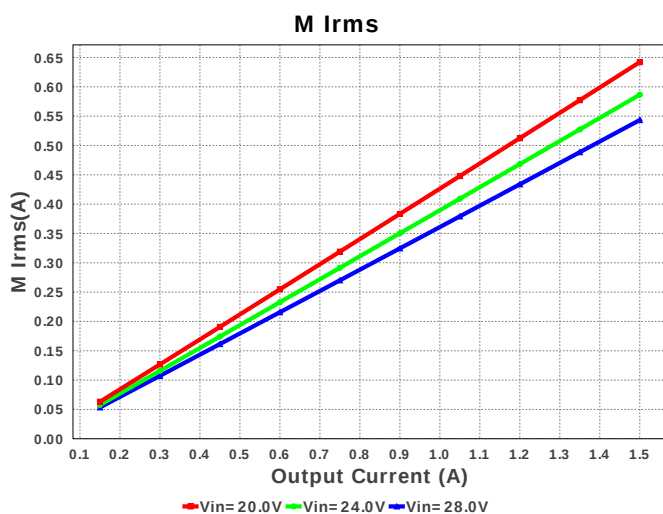
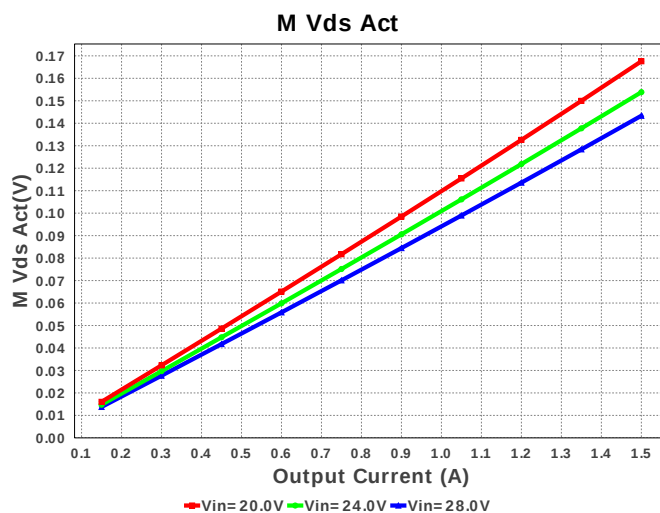
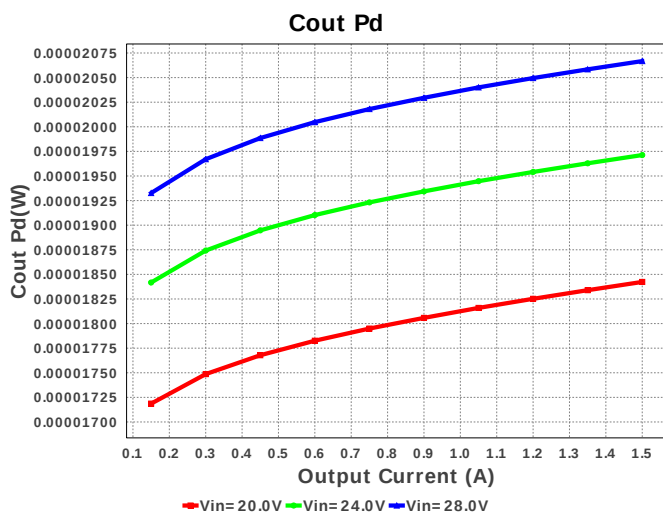
Electrical BOM

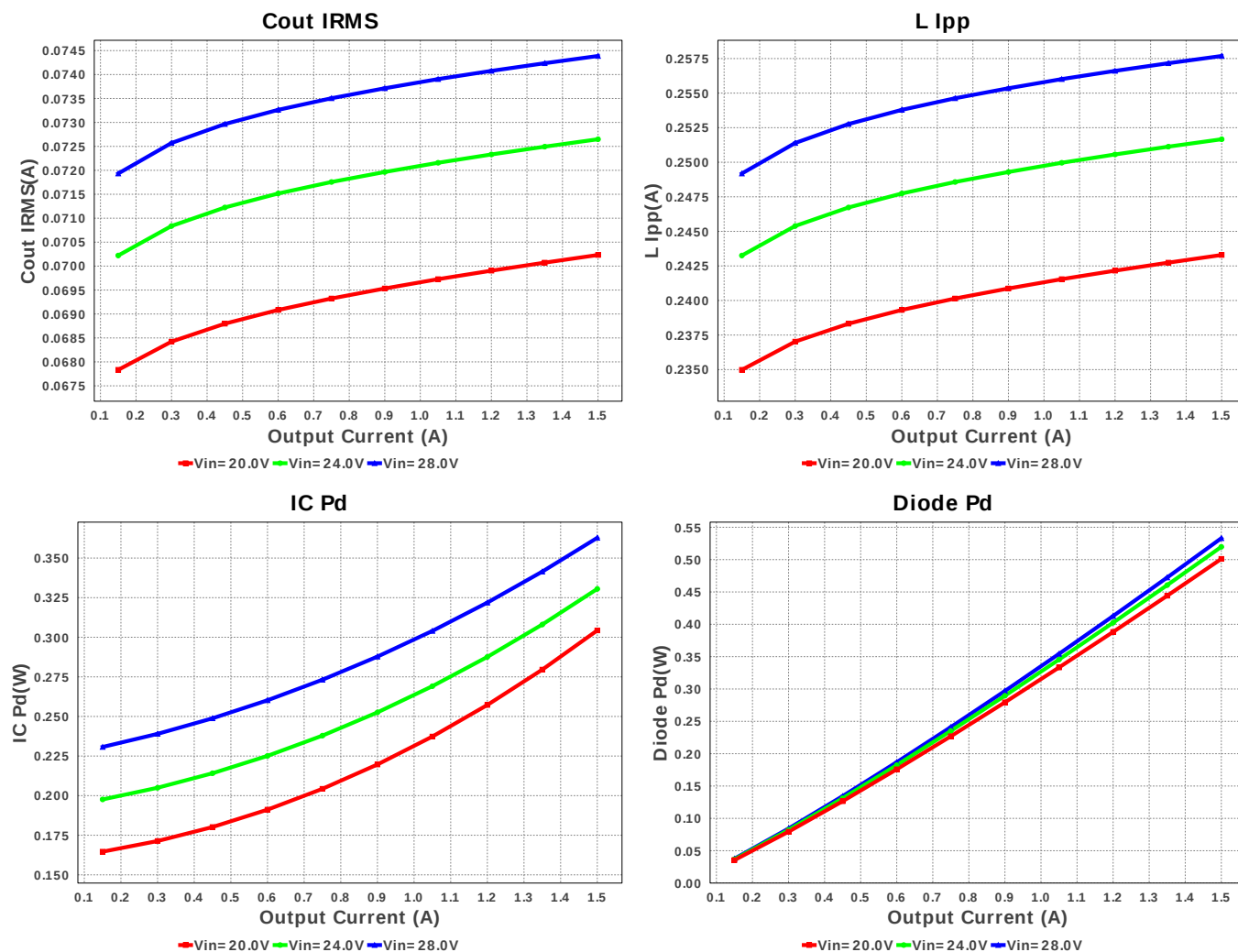
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C223K5RACTU Series= X7R	Cap= 22.0 nF ESR= 125.0 mOhm VDC= 50.0 V IRMS= 645.0 mA	1	\$0.01	0805 7 mm ²
2.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp	MuRata	GRM216R71E332KA01D Series= X7R	Cap= 3.3 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM31MR71H105KA88L Series= X7R	Cap= 1.0 uF ESR= 7.389 mOhm VDC= 50.0 V IRMS= 979.22 mA	1	\$0.03	1206 11 mm ²
5.	Cout	MuRata	GRM31CC80J476KE18L Series= X6S	Cap= 47.0 uF ESR= 3.735 mOhm VDC= 6.3 V IRMS= 4.0522 A	1	\$0.10	1206_190 11 mm ²
6.	Cramp	Kemet	C0805C221J5GACTU Series= C0G/NP0	Cap= 220.0 pF ESR= 46.0 mOhm VDC= 50.0 V IRMS= 888.0 mA	1	\$0.01	0805 7 mm ²
7.	Css	MuRata	GRM155R71E822KA01D Series= X7R	Cap= 8.2 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
8.	D1	Diodes Inc.	B240A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.09	SMA 37 mm ²
9.	L1	Bourns	SDR1307-220ML	L= 22.0 uH DCR= 47.0 mOhm	1	\$0.35	SDR1307 227 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rcomp	Panasonic	ERJ-6ENF8061V Series= ERJ-6E	Res= 8.06 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
11.	Rfb1	Panasonic	ERJ-6ENF1001V Series= ERJ-6E	Res= 1000.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	Rfb2	Panasonic	ERJ-6ENF1691V Series= ERJ-6E	Res= 1.69 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
13.	Rt	Panasonic	ERJ-6ENF8661V Series= ERJ-6E	Res= 8.66 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
14.	U1	Texas Instruments	LM25005MHX/NOPB	Switcher	1	\$1.40	 MXA20A 71 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	491.132 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	74.388 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.628 A	Current	Peak switch current in IC
4.	Iin Avg	213.0 mA	Current	Average input current
5.	L Ipp	257.69 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	543.366 mA	Current	Q lavg
7.	BOM Count	14	General	Total Design BOM count
8.	FootPrint	414.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	571.723 kHz	General	Switching frequency
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	143.347 mV	General	Voltage drop across the MosFET
12.	Mode	CCM	General	Conduction Mode
13.	Pout	4.95 W	General	Total output power
14.	Total BOM	\$2.06	General	Total BOM Cost
15.	D1 Tj	35.326 degC	Op_Point	D1 junction temperature
16.	Vout Actual	3.295 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
18.	Duty Cycle	13.122 %	Op_point	Duty cycle
19.	Efficiency	82.999 %	Op_point	Steady state efficiency
20.	IC Tj	36.511 degC	Op_point	IC junction temperature
21.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	1.5 A	Op_point	Iout operating point
23.	VIN_OP	28.0 V	Op_point	Vin operating point
24.	Vout p-p	1.703 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	1.782 mW	Power	Input capacitor power dissipation
26.	Cout Pd	20.668 μW	Power	Output capacitor power dissipation
27.	Diode Pd	533.051 mW	Power	Diode power dissipation
28.	IC Pd	362.778 mW	Power	IC power dissipation
29.	L Pd	116.325 mW	Power	Inductor power dissipation
30.	Total Pd	1.014 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
31.	Vout Tolerance	2.757 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.5	Maximum Output Current
2.	VinMax	28.0	Maximum input voltage
3.	VinMin	20.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	LM25005	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	22.0	Ambient temperature

Design Assistance

1. **LM25005** Product Folder : <http://www.ti.com/product/LM25005> : contains the data sheet and other resources.

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