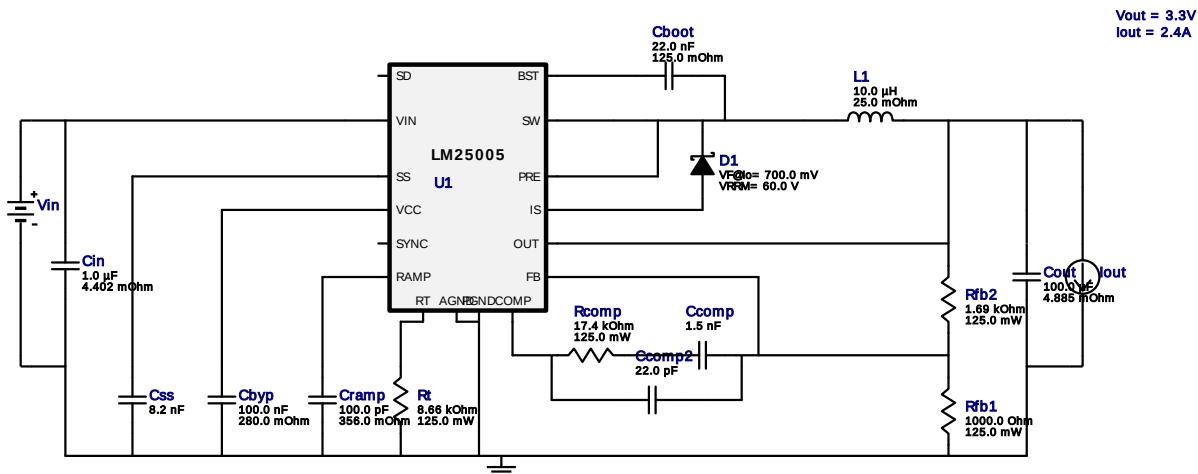


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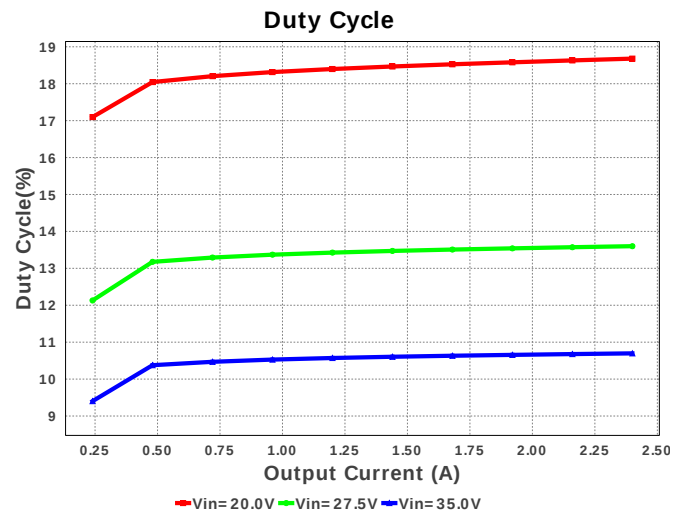
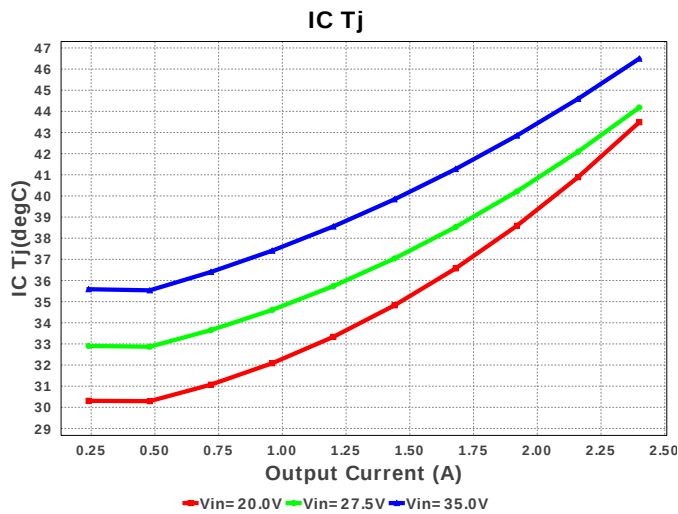
Design : 4774498/13 LM25005MHX/NOPB
LM25005MHX/NOPB 20.0V-35.0V to 3.30V @ 2.4A

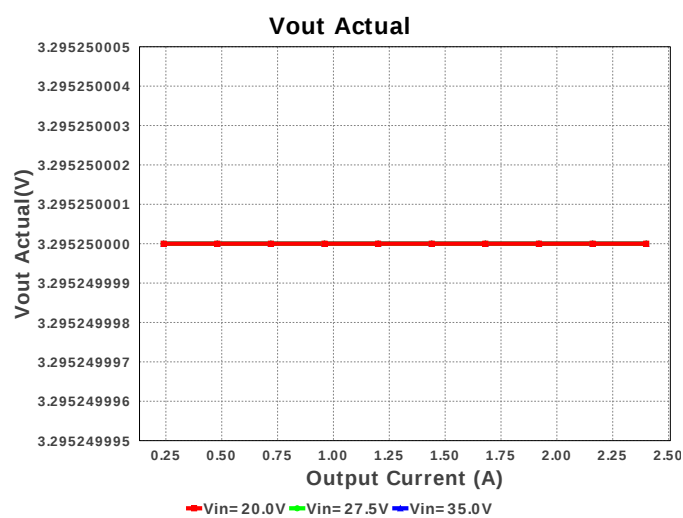
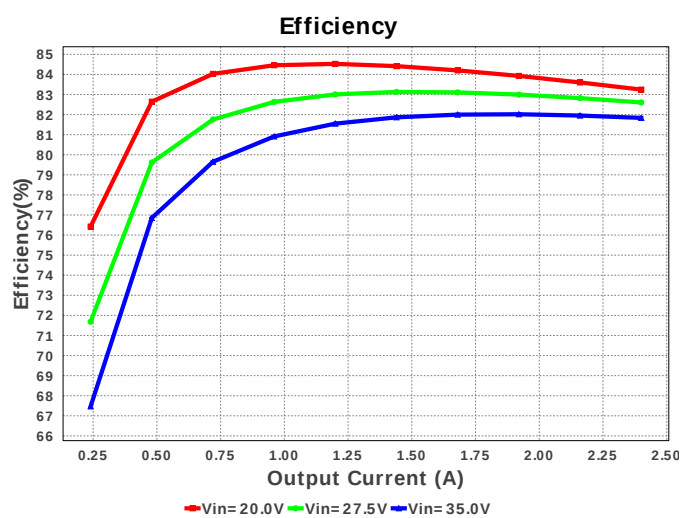
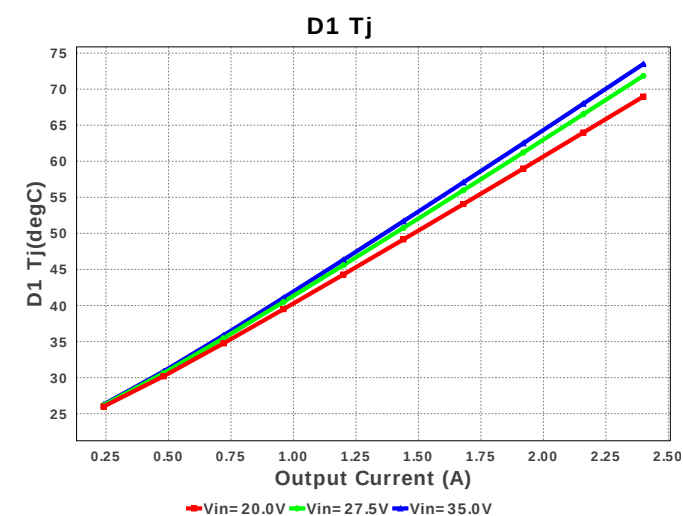
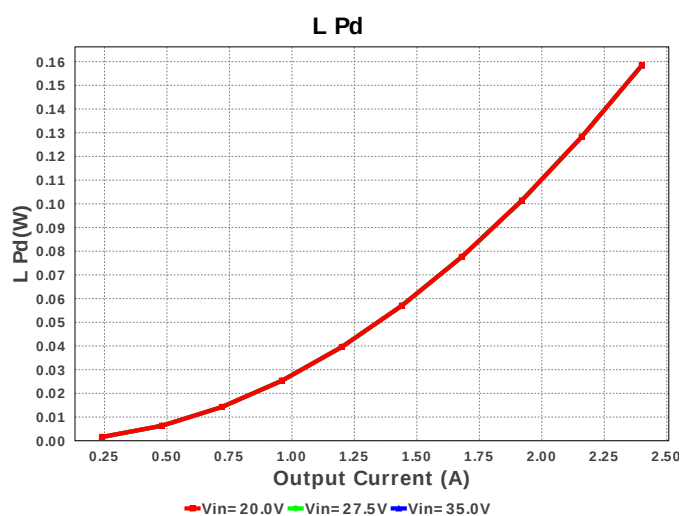
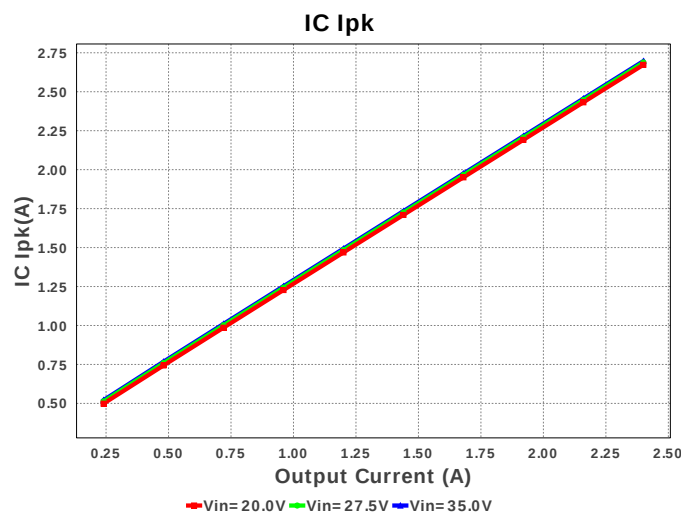
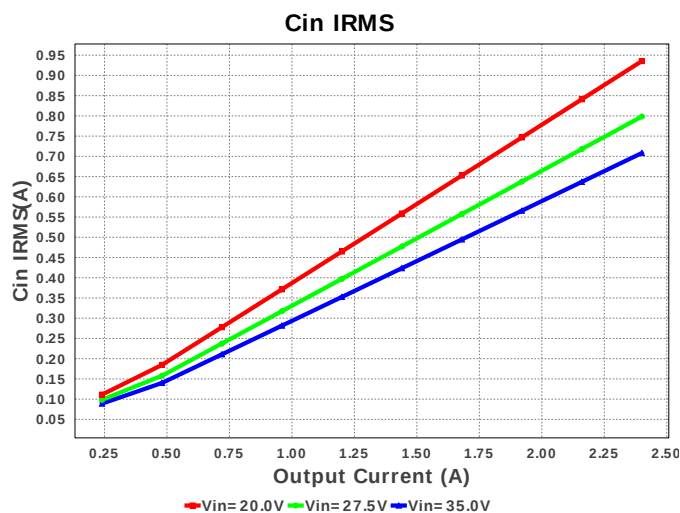


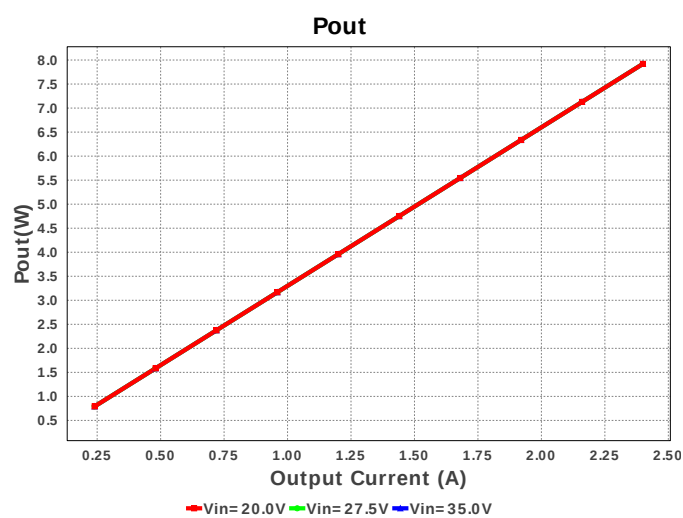
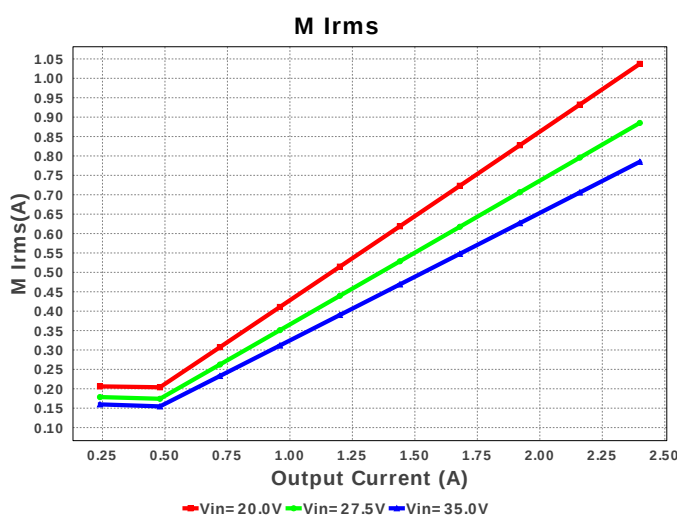
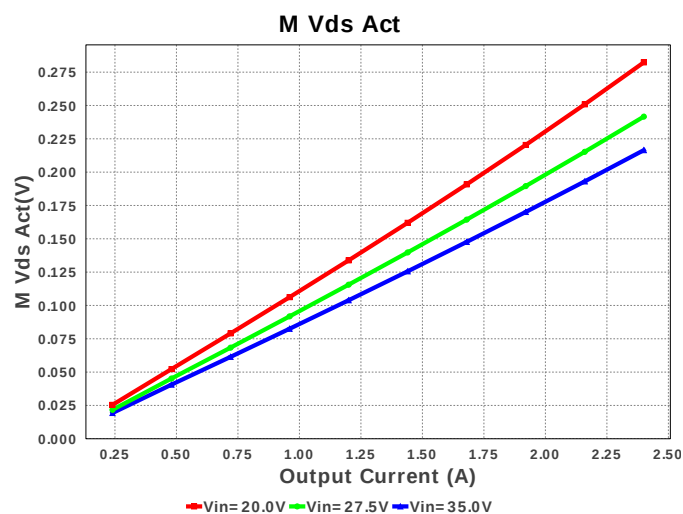
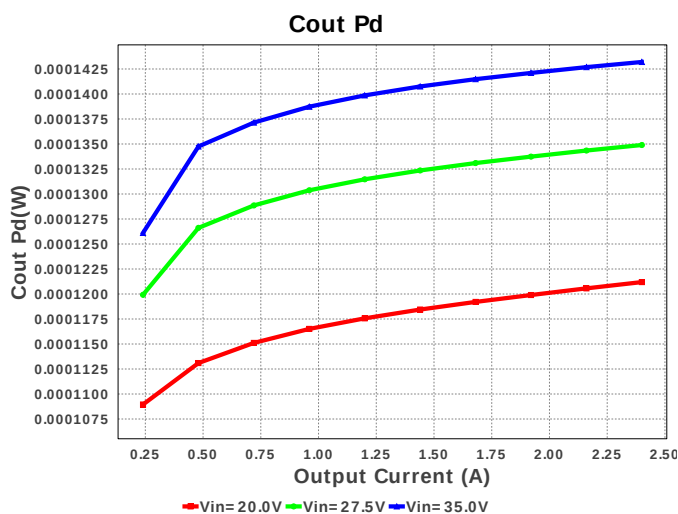
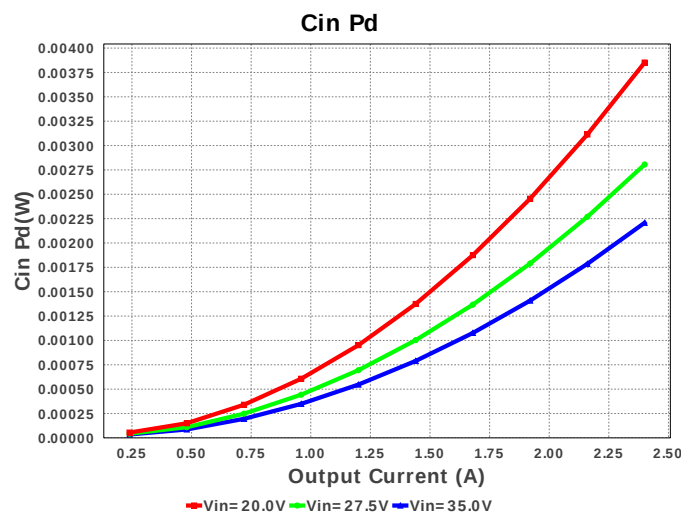
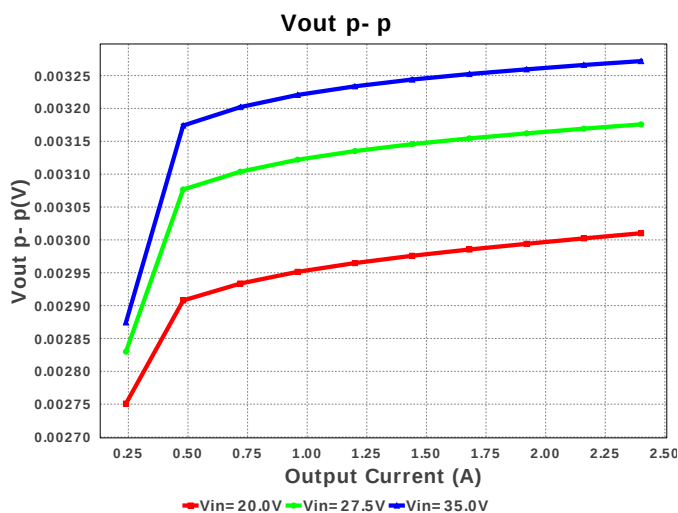
Electrical BOM

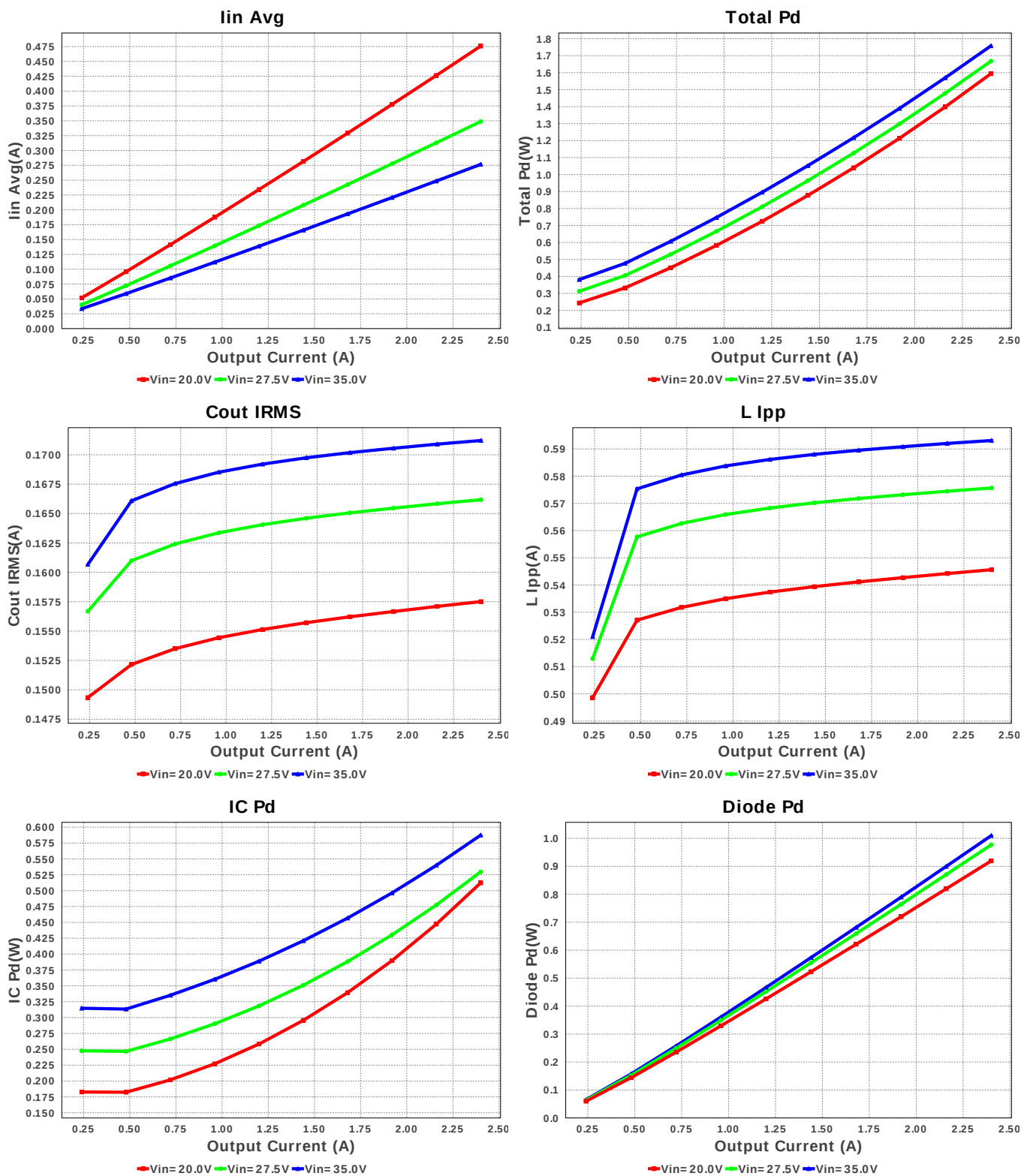
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C223K5RACTU Series= X7R	Cap= 22.0 nF ESR= 125.0 mOhm VDC= 50.0 V IRMS= 645.0 mA	1	\$0.01	0805 7 mm ²
2.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp	MuRata	GRM033R71E152KA01D Series= X7R	Cap= 1.5 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
4.	Ccomp2	Kemet	C0805C220K3GACTU Series= C0G/NP0	Cap= 22.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
5.	Cin	MuRata	GRM21BR71H105KA12L Series= X7R	Cap= 1.0 uF ESR= 4.402 mOhm VDC= 50.0 V IRMS= 1.677 A	1	\$0.05	0805 7 mm ²
6.	Cout	MuRata	GRM31CR60J107ME39L Series= X5R	Cap= 100.0 uF ESR= 4.885 mOhm VDC= 6.3 V IRMS= 4.4118 A	1	\$0.14	1206_190 11 mm ²
7.	Cramp	AVX	08055A101JAT2A Series= C0G/NP0	Cap= 100.0 pF ESR= 356.0 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
8.	Css	MuRata	GRM155R71E822KA01D Series= X7R	Cap= 8.2 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
9.	D1	Diodes Inc.	B560C-13-F	Vf@Io= 700.0 mV VRRM= 60.0 V	1	\$0.17	SMC 83 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	L1	Bourns	SRU1038-100Y	L= 10.0 μ H DCR= 25.0 mOhm	1	\$0.33	 SRU1038 144 mm ²
11.	Rcomp	Panasonic	ERJ-6ENF1742V Series= ERJ-6E	Res= 17.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	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
13.	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
14.	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
15.	U1	Texas Instruments	LM25005MHX/NOPB	Switcher	1	\$1.40	 MXA20A 71 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	708.112 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	171.214 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.695 A	Current	Peak switch current in IC
4.	Iin Avg	276.51 mA	Current	Average input current
5.	L Ipp	593.1 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	784.946 mA	Current	Q lavg
7.	BOM Count	15	General	Total Design BOM count
8.	FootPrint	375.0 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	216.483 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Mode	CCM	General	Conduction Mode
13.	Pout	7.92 W	General	Total output power
14.	Total BOM	\$2.19	General	Total BOM Cost
15.	D1 Tj	73.49 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	10.697 %	Op_point	Duty cycle
19.	Efficiency	81.836 %	Op_point	Steady state efficiency
20.	IC Tj	46.495 degC	Op_point	IC junction temperature
21.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.4 A	Op_point	Iout operating point
23.	VIN_OP	35.0 V	Op_point	Vin operating point
24.	Vout p-p	3.272 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	2.207 mW	Power	Input capacitor power dissipation
26.	Cout Pd	143.201 μ W	Power	Output capacitor power dissipation
27.	Diode Pd	1.01 W	Power	Diode power dissipation
28.	IC Pd	587.364 mW	Power	IC power dissipation
29.	L Pd	158.4 mW	Power	Inductor power dissipation
30.	Total Pd	1.758 W	Power	Total Power Dissipation
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	2.4	Maximum Output Current
2.	VinMax	35.0	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	23.0	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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