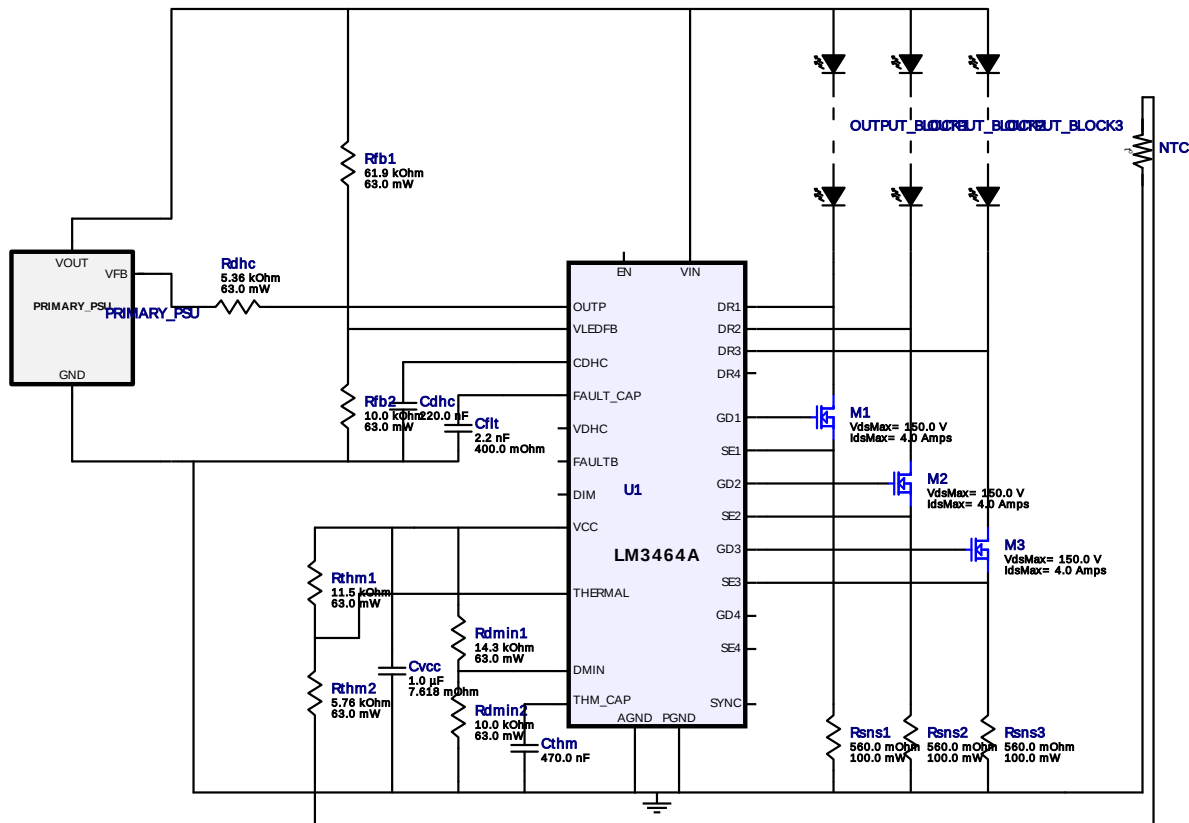


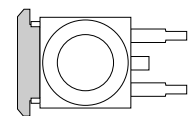
WEBENCH® Design Report

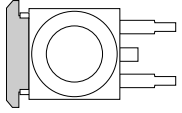
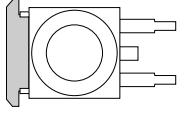
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LM3464AMH/NOPB 210.0V-240.0V to 15.58V @ 1.05A

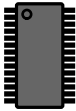


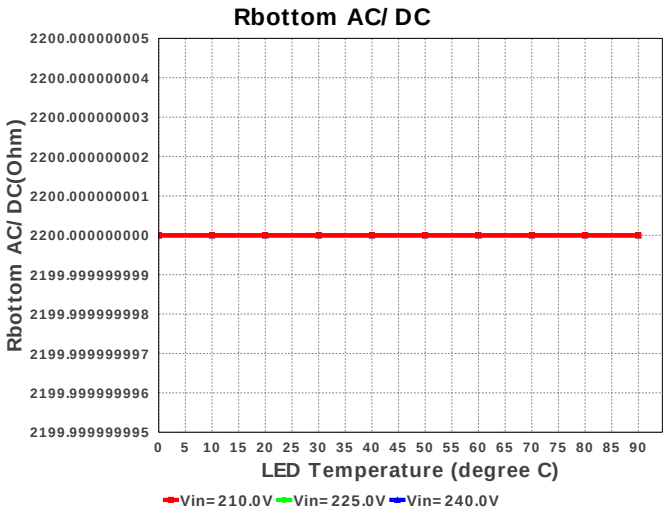
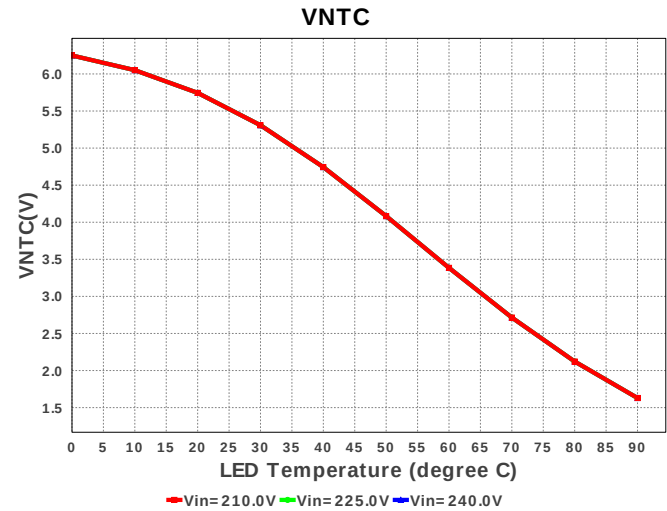
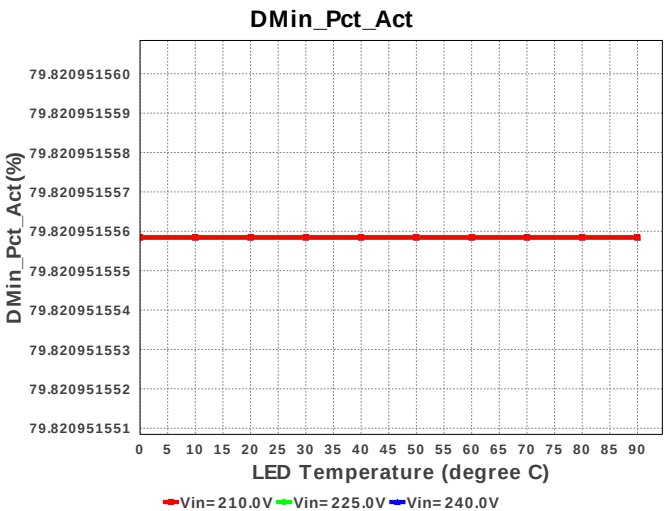
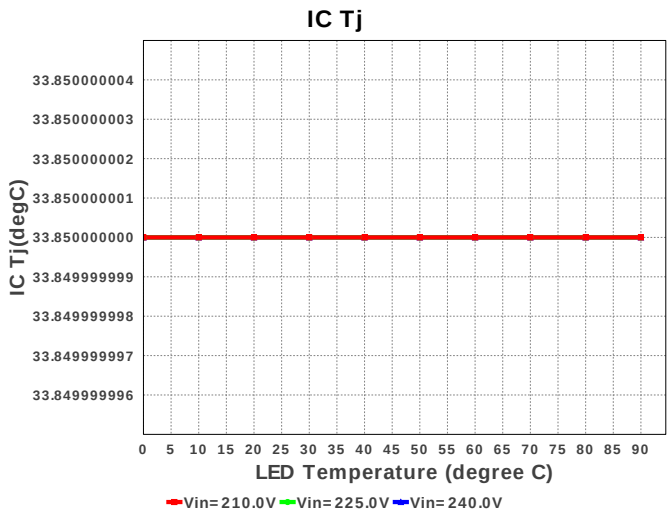
Electrical BOM

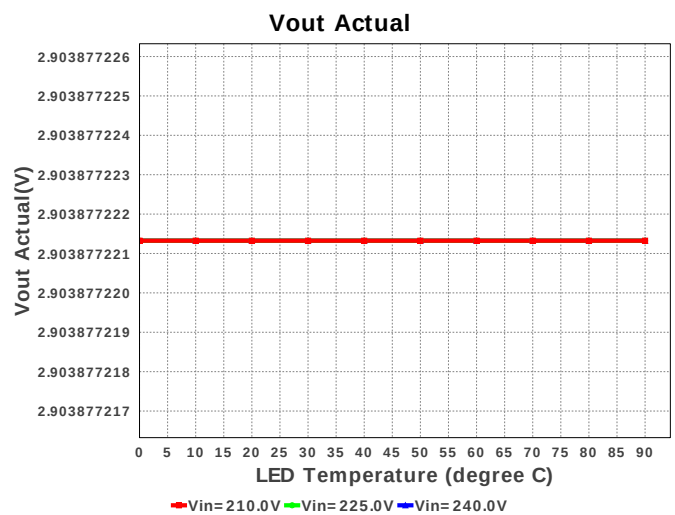
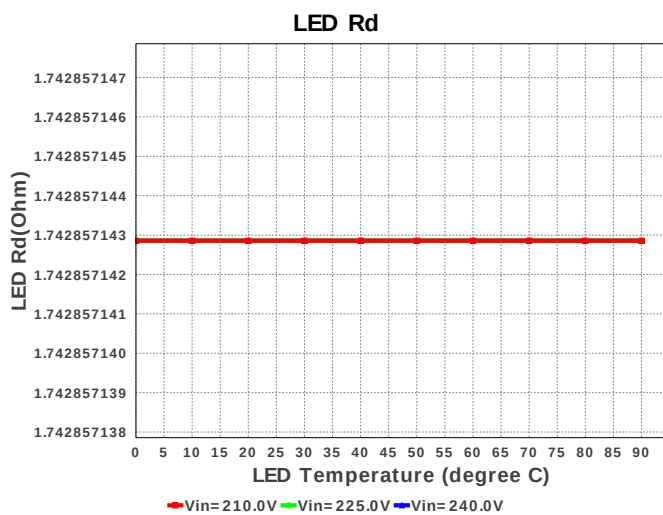
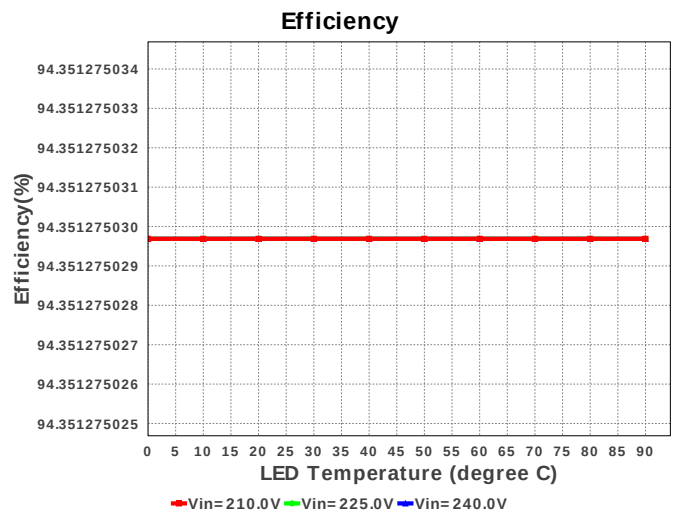
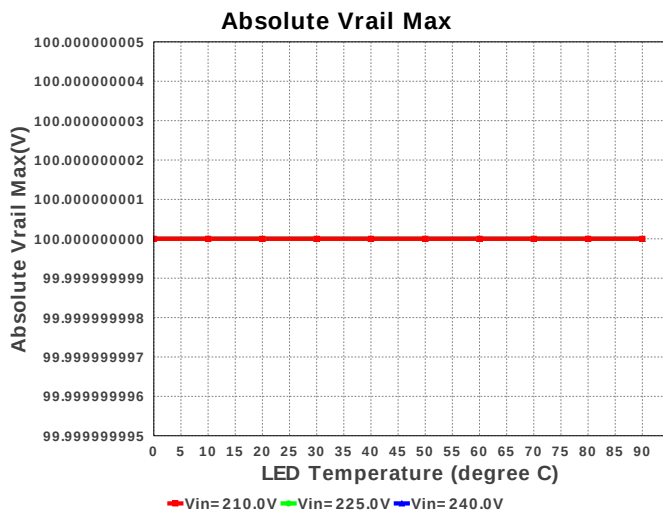
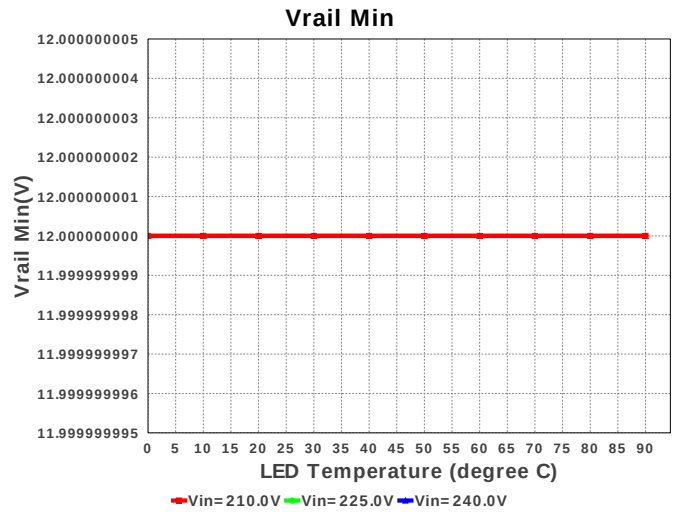
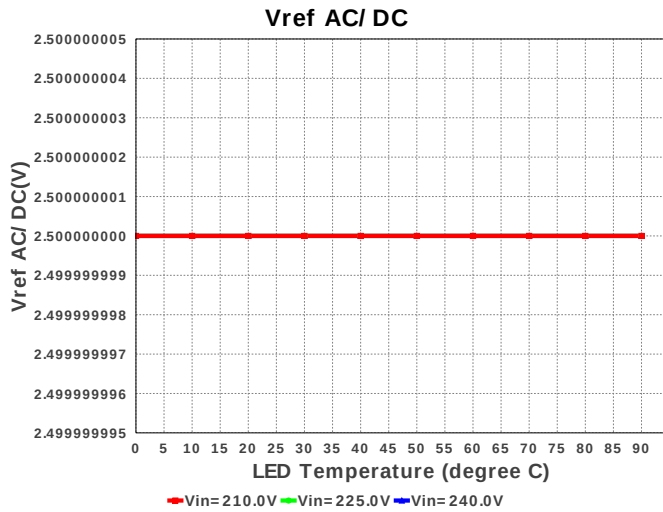
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cdhc	MuRata	GRM155R71C224KA12D Series= X7R	Cap= 220.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cflt	Kemet	C0805C222K5RACTU Series= X7R	Cap= 2.2 nF ESR= 400.0 mOhm VDC= 50.0 V IRMS= 251.0 mA	1	\$0.01	0805 7 mm ²
3.	Cthm	MuRata	GRM155C80J474KE19D Series= X6S	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
4.	Cvcc	TDK	C1005X5R0J105M Series= X5R	Cap= 1.0 uF ESR= 7.618 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
5.	D_LED1	Avago	ASMT-MW06-NLL00	LED	4	\$2.87	asmt_m 216 mm ²

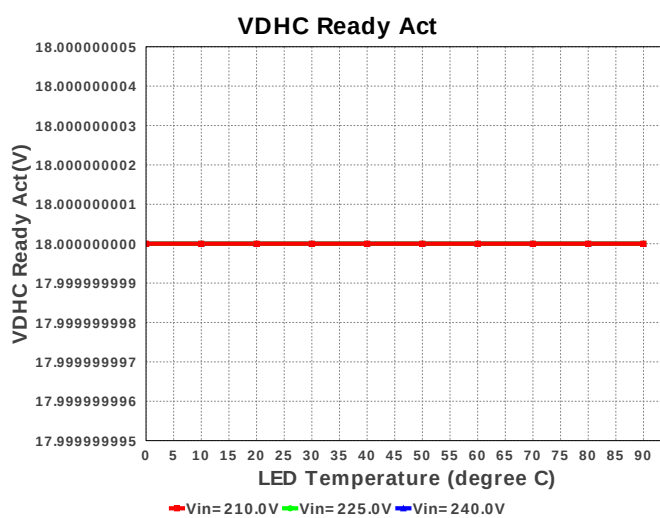
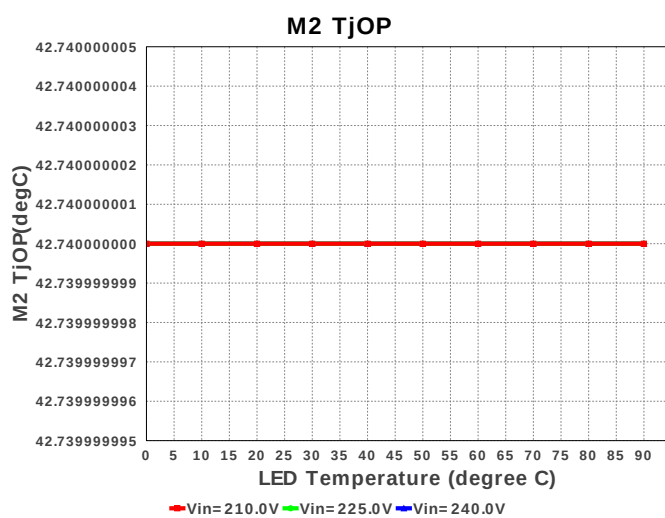
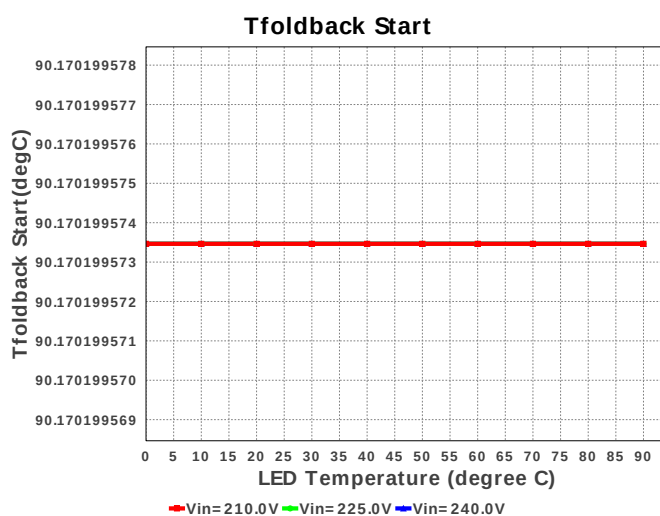
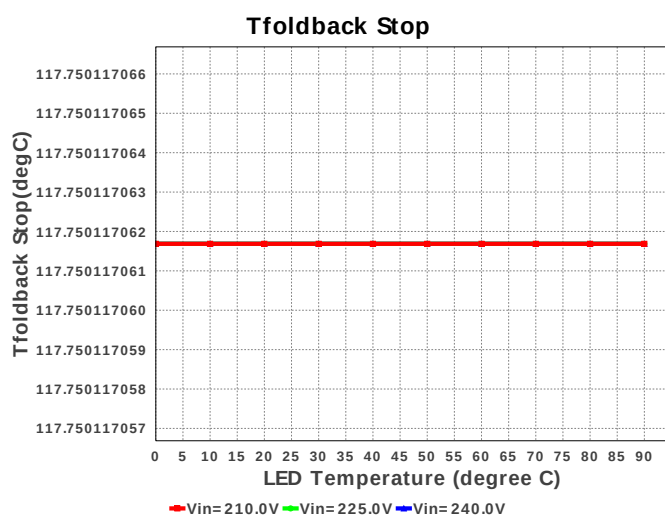
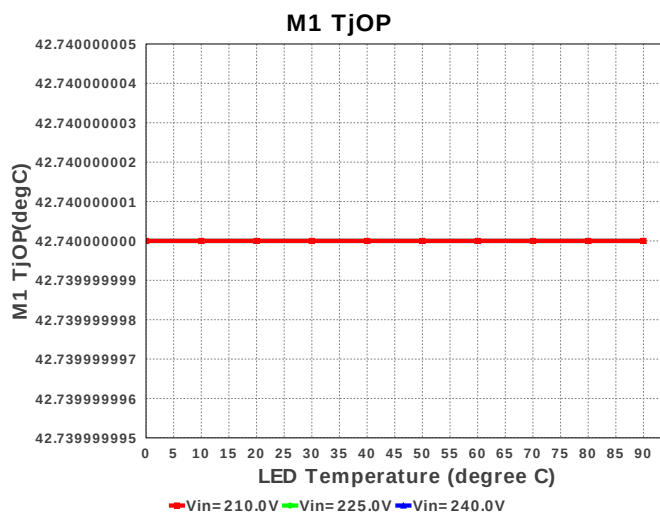
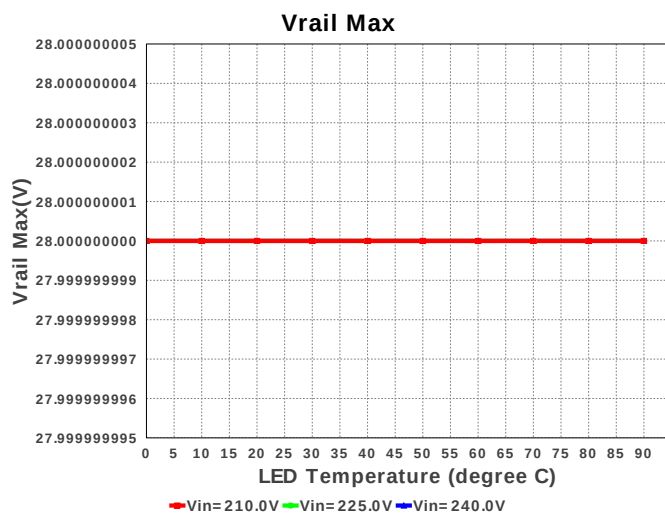


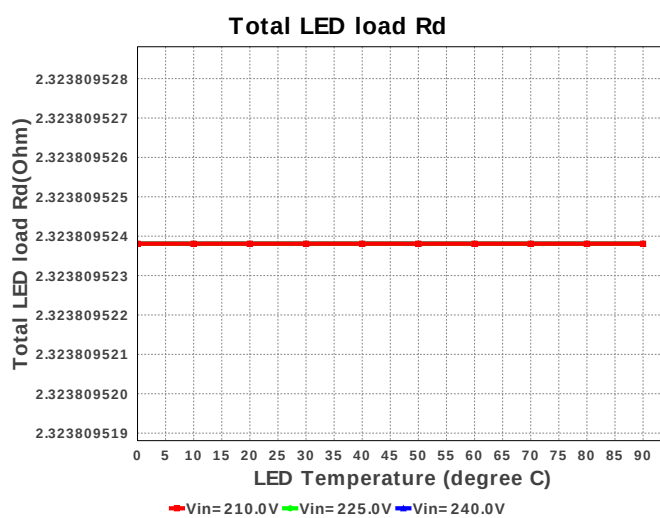
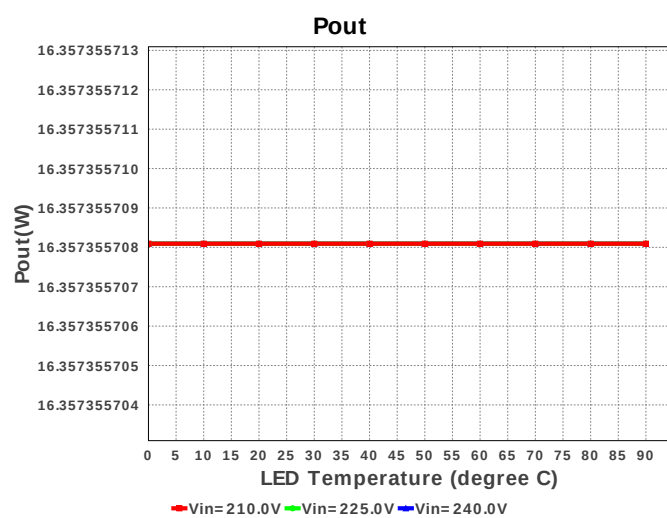
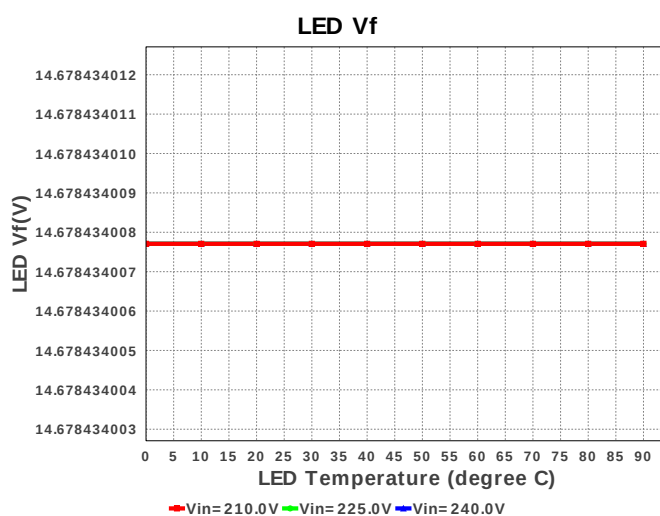
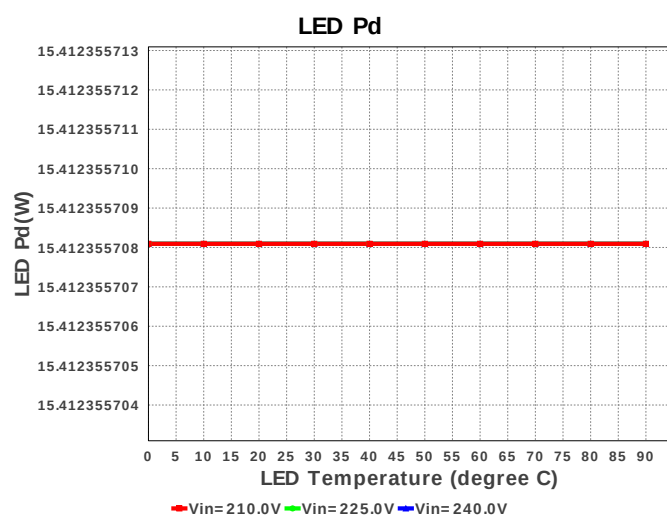
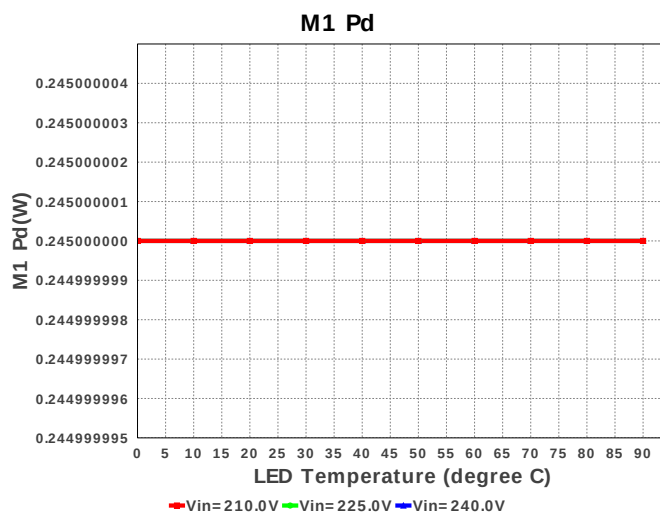
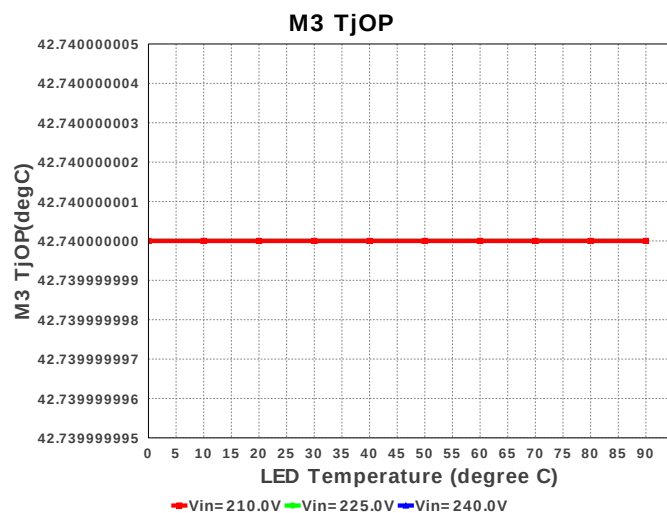
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
6.	D_LED2	Avago	ASMT-MW06-NLL00	LED	4	\$2.87	 asmt_m 216 mm ²
7.	D_LED3	Avago	ASMT-MW06-NLL00	LED	4	\$2.87	 asmt_m 216 mm ²
8.	M1	Fairchild Semiconductor	FDD2572	VdsMax= 150.0 V IdsMax= 4.0 Amps	1	\$0.70	 DPAK 102 mm ²
9.	M2	Fairchild Semiconductor	FDD2572	VdsMax= 150.0 V IdsMax= 4.0 Amps	1	\$0.70	 DPAK 102 mm ²
10.	M3	Fairchild Semiconductor	FDD2572	VdsMax= 150.0 V IdsMax= 4.0 Amps	1	\$0.70	 DPAK 102 mm ²
11.	NTC	Panasonic	ERT-J0EV104H Series= ERT-J	Thermistor	1	\$0.08	 0402 3 mm ²
12.	Rdhc	Vishay-Dale	CRCW04025K36FKED Series= CRCW..e3	Res= 5.36 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
13.	Rdmin1	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
14.	Rdmin2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
15.	Rfb1	Vishay-Dale	CRCW040261K9FKED Series= CRCW..e3	Res= 61.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
16.	Rfb2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
17.	Rsns1	Panasonic	ERJ-3RQFR56V Series= ERJ-3R	Res= 560.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.02	 0603 5 mm ²
18.	Rsns2	Panasonic	ERJ-3RQFR56V Series= ERJ-3R	Res= 560.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.02	 0603 5 mm ²
19.	Rsns3	Panasonic	ERJ-3RQFR56V Series= ERJ-3R	Res= 560.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.02	 0603 5 mm ²
20.	Rthm1	Vishay-Dale	CRCW040211K5FKED Series= CRCW..e3	Res= 11.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
21.	Rthm2	Vishay-Dale	CRCW04025K76FKED Series= CRCW..e3	Res= 5.76 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

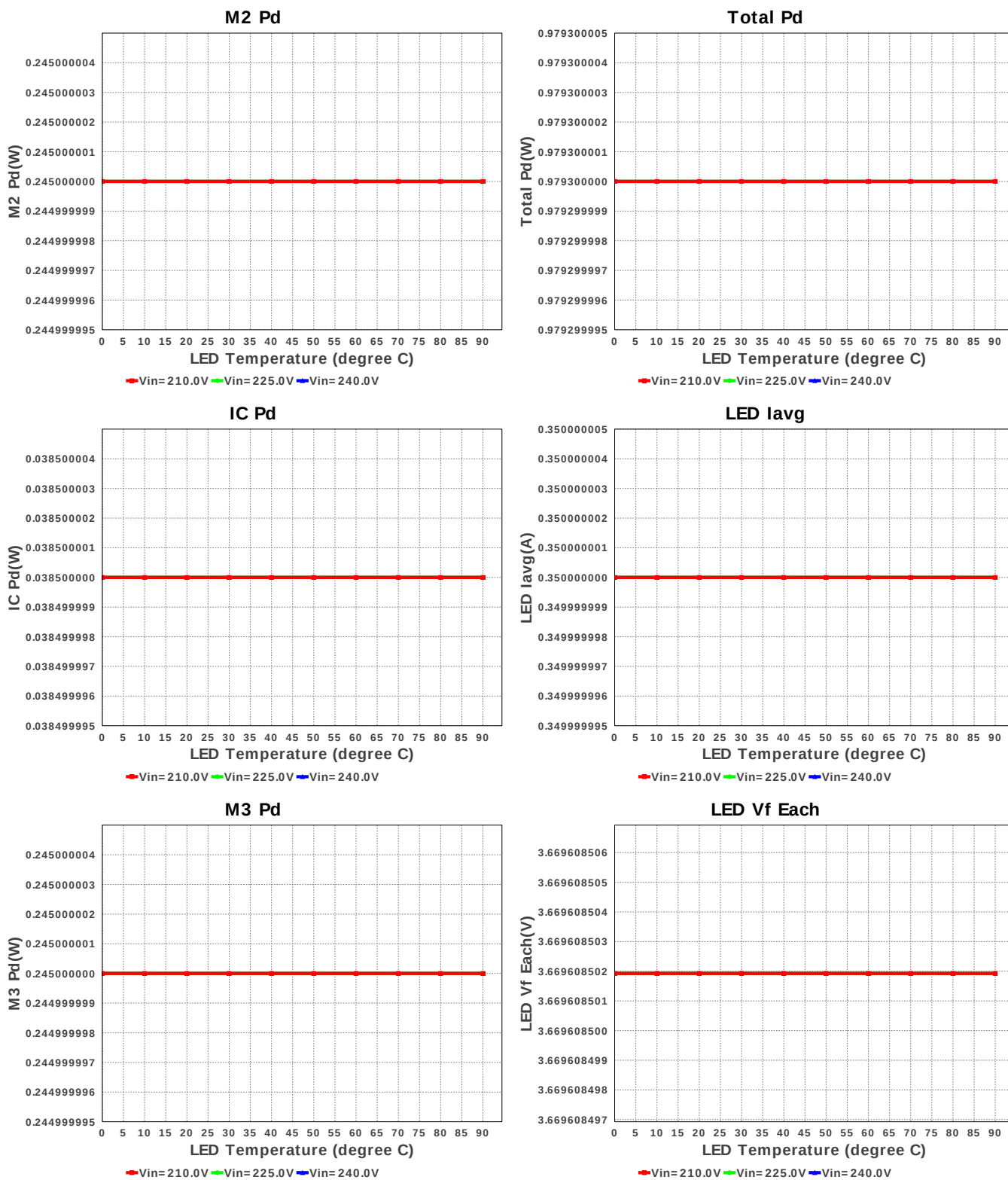
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
22.	U1	Texas Instruments	LM3464AMH/NOPB	Switcher	1	\$2.52	 MXA28A 98 mm²











Operating Values

#	Name	Value	Category	Description
1.	LED Iavg	350.0 mA	Current	LED Average Current
2.	BOM Count	31	General	Total Design BOM count
3.	FootPrint	3.049 k mm ²	General	Total Foot Print Area of BOM components
4.	Frequency	0.0 Hz	General	Switching frequency
5.	Pout	16.359 W	General	Total output power
6.	Total BOM	\$39.31	General	Total BOM Cost
7.	M3 TjOp	42.74 degC	Op_Point	MOSFET junction temperature
8.	Tfoldback Stop	117.75 degC	Op_Point	Stop Temperature for Thermal Foldback
9.	Vout Actual	2.904 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
10.	Efficiency	94.352 %	Op_point	Steady state efficiency
11.	IC Tj	33.85 degC	Op_point	IC junction temperature

#	Name	Value	Category	Description
12.	IOUT_OP	1.05 A	Op_point	Iout operating point
13.	LED Rd	1.743 Ohm	Op_point	LED DynamicResistance
14.	LED Vf	14.68 V	Op_point	Total LED Forward Calculated Voltage
15.	M1 TJOP	42.74 degC	Op_point	MOSFET junction temperature
16.	M2 TJOP	42.74 degC	Op_point	MOSFET junction temperature
17.	VIN_OP	240.0 V	Op_point	Maximum AC voltage input to power supply
18.	IC Pd	38.5 mW	Power	IC power dissipation
19.	LED Pd	15.412 W	Power	LED Power Dissipation
20.	M1 Pd	245.0 mW	Power	Average power dissipation in the switching FET over the AC line period
21.	M2 Pd	245.0 mW	Power	Average power dissipation in the switching FET over the AC line period
22.	M3 Pd	245.0 mW	Power	Average power dissipation in the switching FET over the AC line period
23.	Total Pd	979.3 mW	Power	Total Power Dissipation
24.	Absolute Vrail Max	100.0 V		Absolute Vrail Maximum
25.	DMin_Pct_Act	79.821 %		Minimum Duty Cycle Limit when LEDs are Hot
26.	Single LED Vf	3.67 V		Calculated Forward Voltage of Each LED
27.	Rbottom AC/DC	2.2 kOhm		Bottom Resistor in Feedback Loop of Power Supply Unit
28.	Tfoldback Start	90.17 degC		Start Temperature for Thermal Foldback
29.	Total LED load Rd	2.324 Ohm		Total LED Load DynamicResistance
30.	VDHC Ready Act	18.0 V		Ready Voltage for DHC Startup
31.	VNTC	6.249 V		Voltage across NTC resistor
32.	Vout Tolerance	280.974 m%		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
33.	Vrail Max	28.0 V		Maximum Rail voltage that can be pushed up by the LM3464
34.	Vrail Min	10.0 V		Minimum Rail voltage of Power Supply Unit
35.	Vref AC/DC	2.5 V		Reference Voltage for Circuit in Power Supply Unit

Design Inputs

#	Name	Value	Description
1.	Iout	1.05	Maximum Output Current
2.	VinMax	240.0	Maximum input voltage
3.	VinMin	210.0	Minimum input voltage
4.	Vout	14.4	Output Voltage
5.	line_fsw	60.0	Light Output in Lumen
6.	application	LED_DRIVER	LED Application
7.	base_pn	LM3464A	Base Product Number
8.	LED_Architect	N	LED Architect Project
9.	ledparallel	3.0	Number of LED in parallel
10.	ledpartnumber	ASMT-MW06-NLL00	LED Part number
11.	ledseries	4.0	Number of LED in series
12.	line_fsw	60.0	AC Line Frequency
13.	source	AC	Input Source Type
14.	Ta	30.0	Ambient temperature

Design Assistance

1. Thermal foldback is necessary in many applications due to the extreme temperatures created in LED environments. In general, two functions are necessary a temperature break-point after which the nominal operating current needs to be reduced, and a slope corresponding to the amount of LED current decrease per temperature increase.

2. The user can set the 'Start' and 'Stop' temperatures for the thermal foldback by changing the default settings on the 'Thermal Foldback start and end temperatures' in the 'Advanced Options' menu on the left side bar. These values are then updated on the 'Op-Vals' section. The 'Op-Vals' section has a slider to simulate the increase or decrease in temperature. The operating value 'Thermal Resistance' changes based on the change in temperature. This is the resistance of the thermistor at the selected temperature and it's value is then updated in the simulation directly

3. **LM3464A** Product Folder : <http://www.ti.com/product/LM3464A> : 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.

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