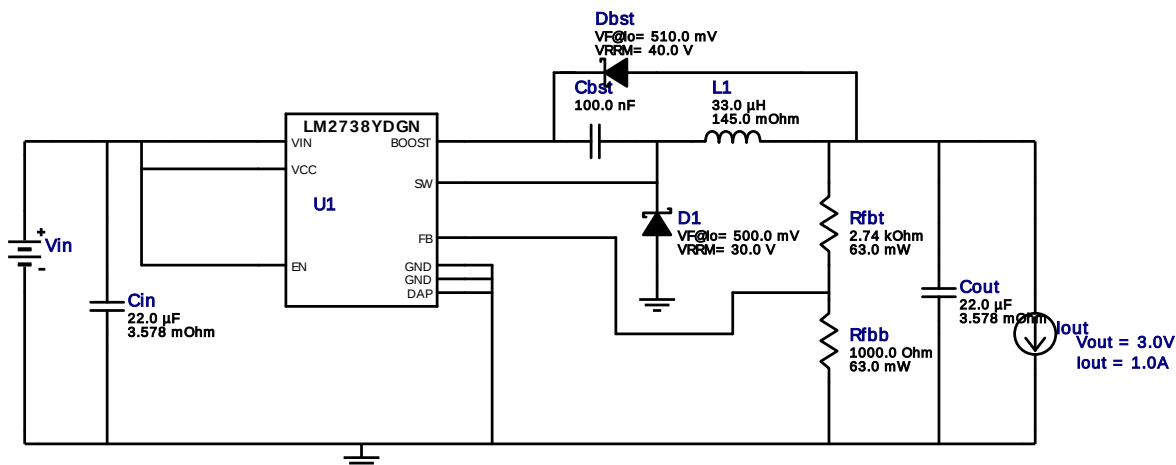


WEBENCH® Design Report

Design : 4728729/12 LM2738YMY/NOPB
LM2738YMY/NOPB 10.0V-19.0V to 3.00V @ 1.0A

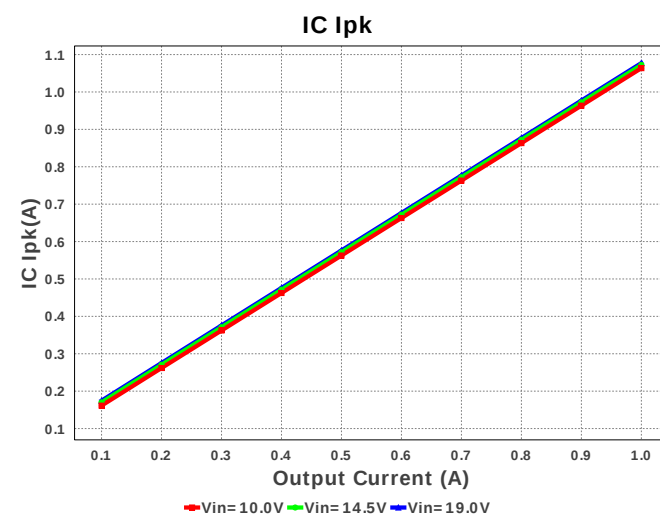
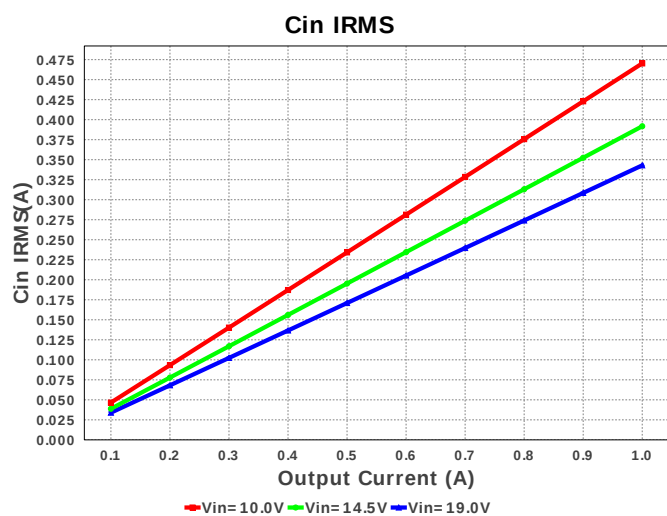
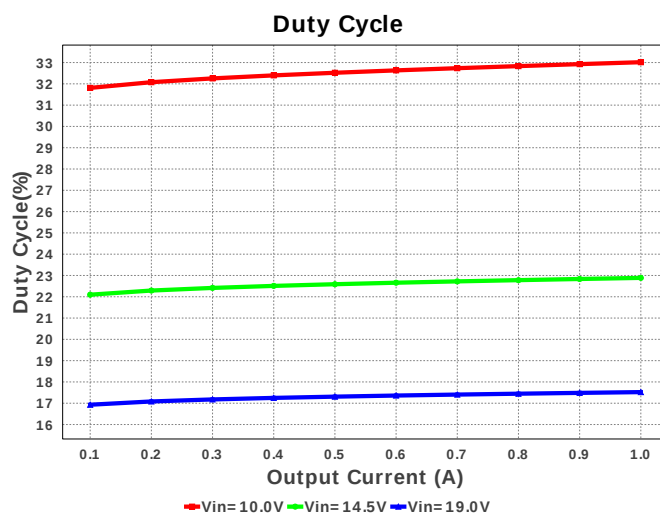
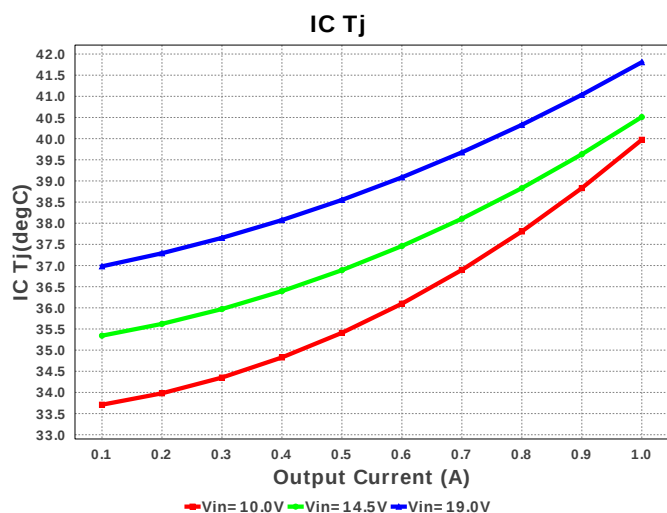


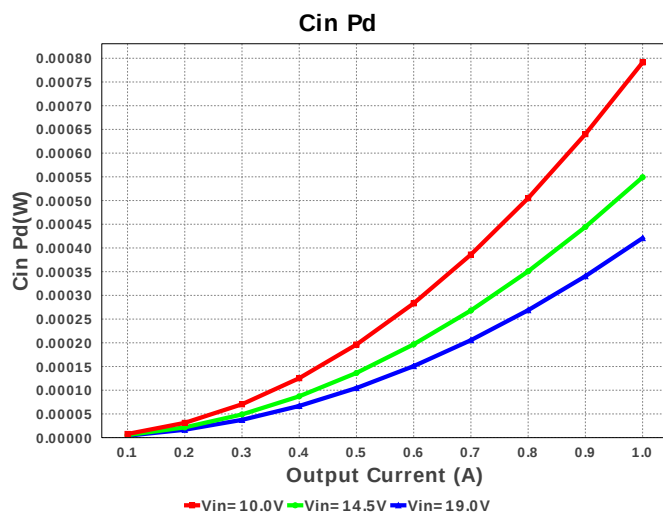
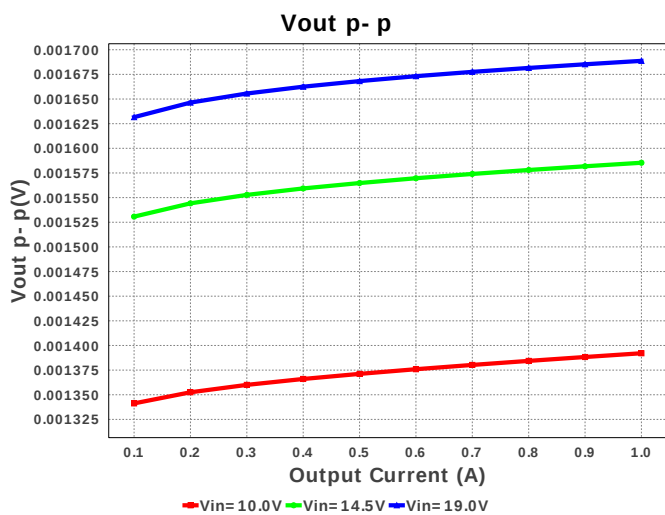
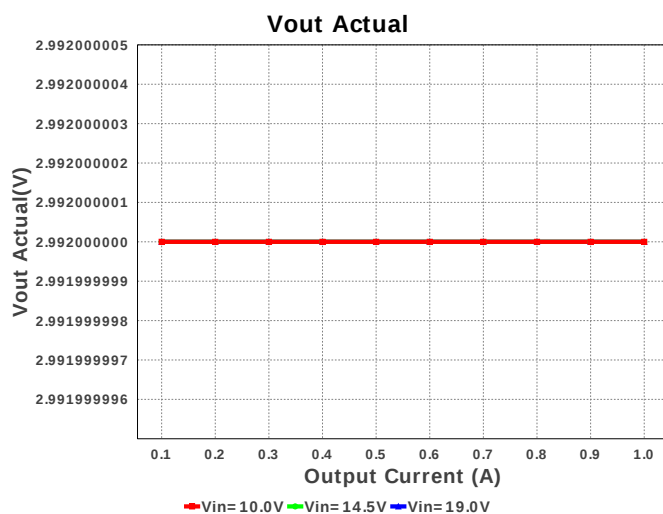
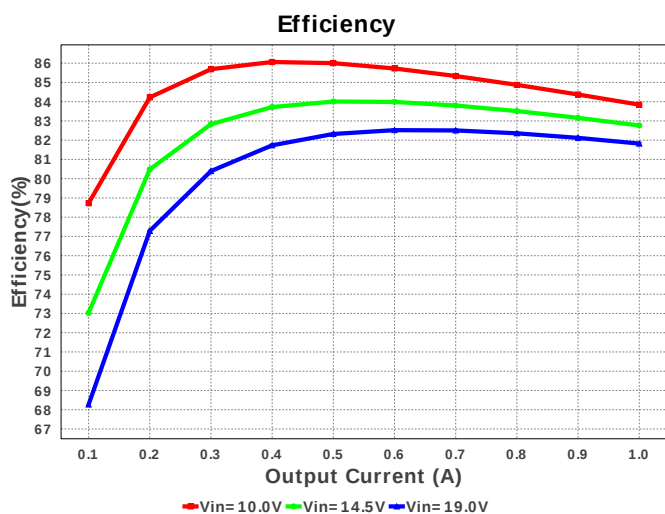
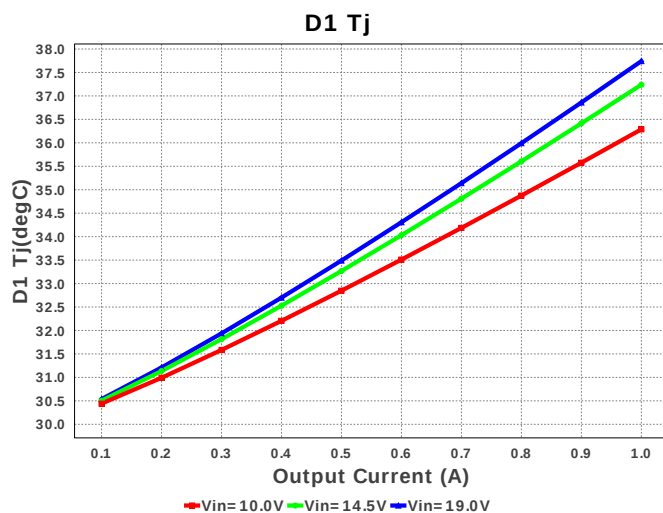
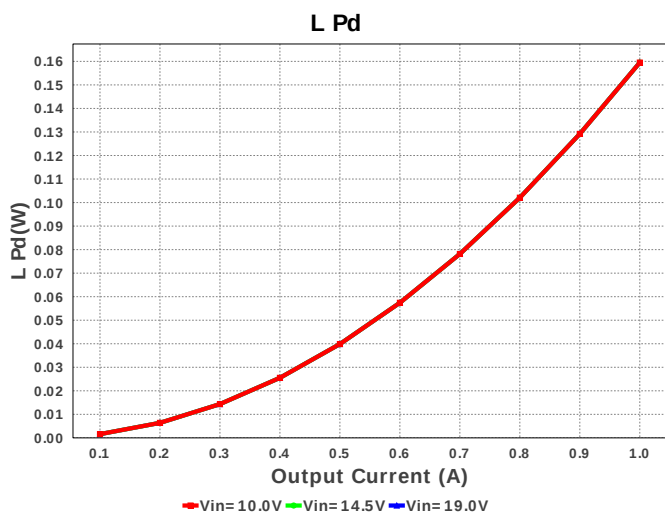
1. The Boost pin voltage must be supplied from a source of less than 5.5V. Recommended methods are described in the LM2734 datasheet Application Information.

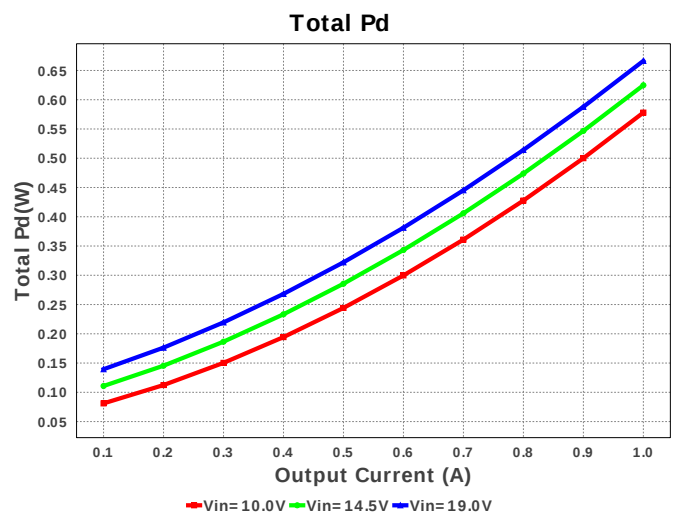
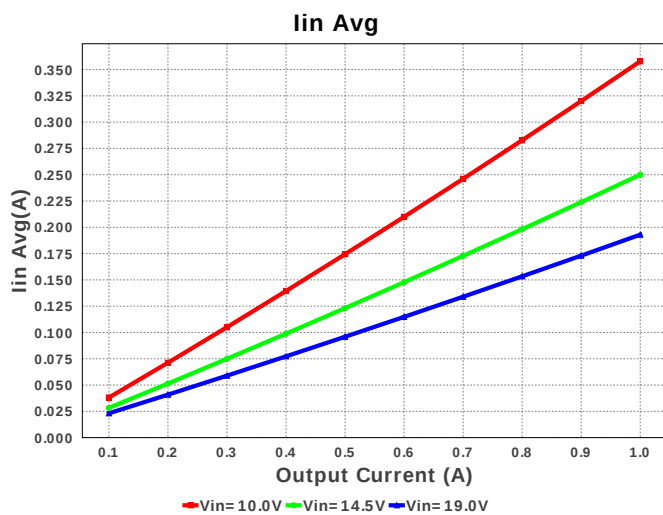
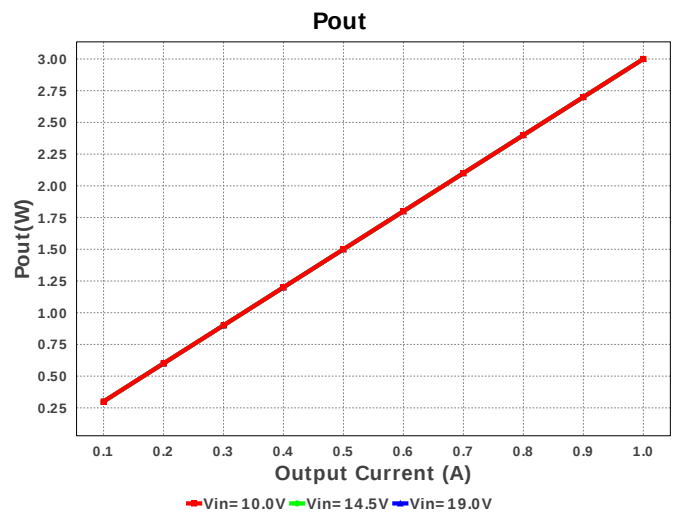
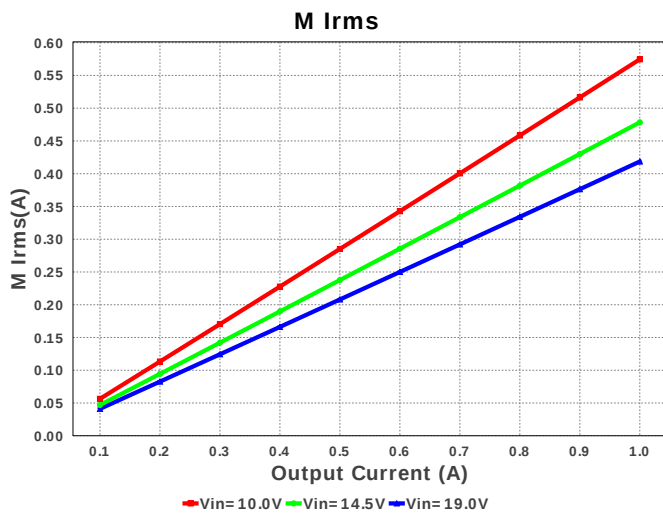
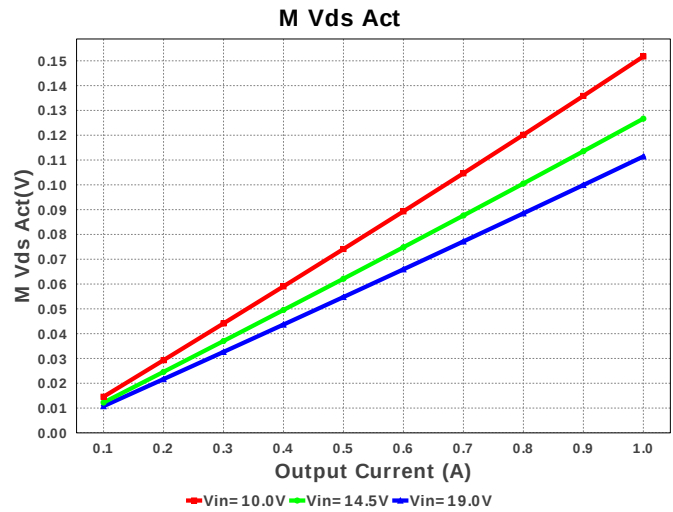
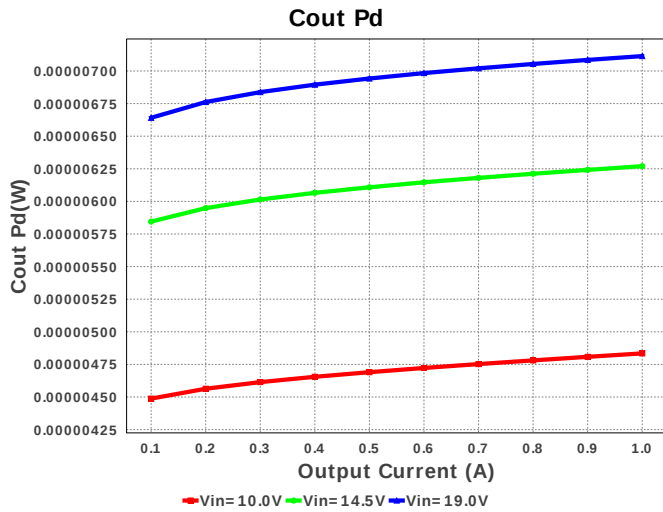
Electrical BOM

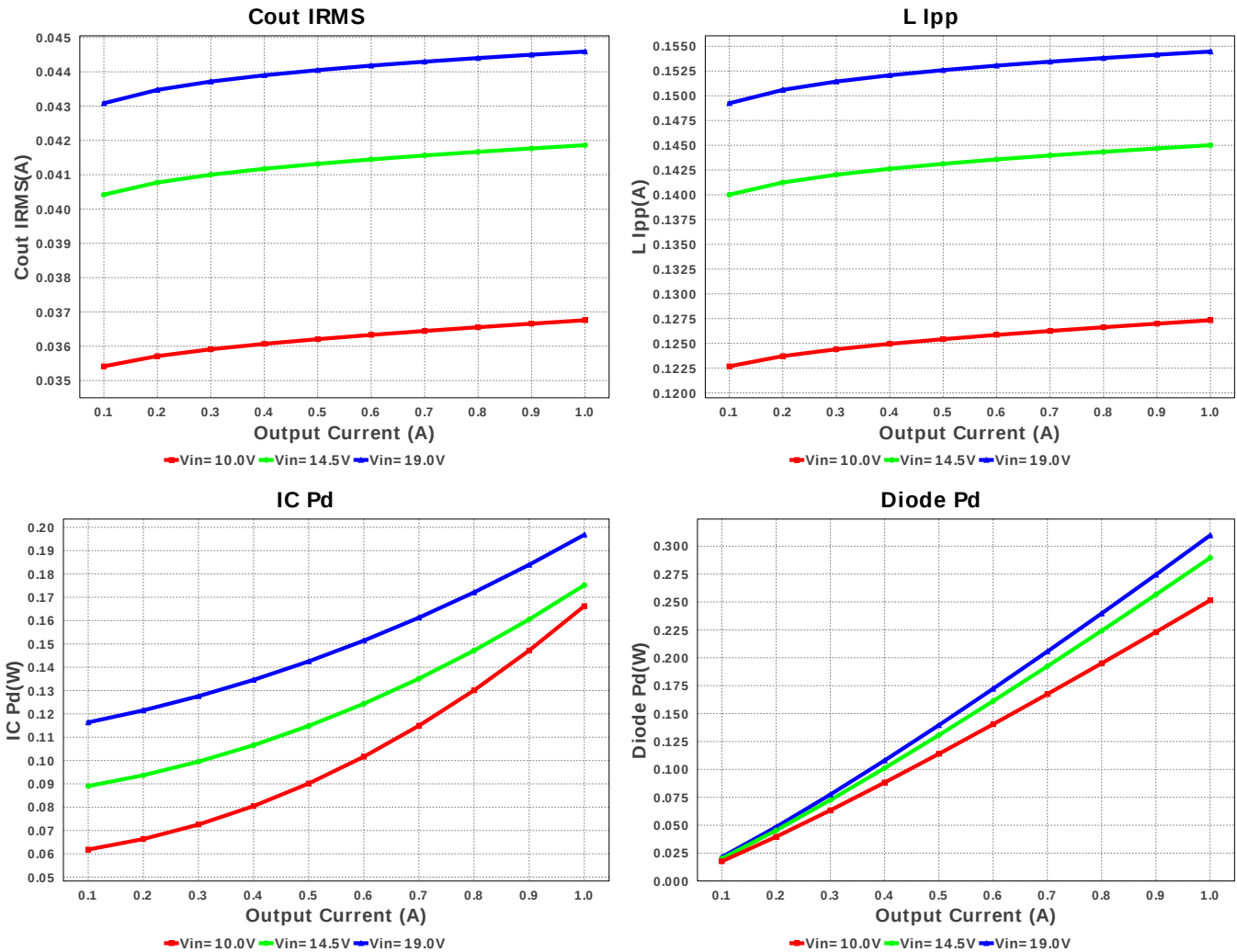
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM155R60J104KA01D Series= X5R	Cap= 100.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cin	MuRata	GRM21BC80G226ME39L Series= X6S	Cap= 22.0 uF ESR= 3.578 mOhm VDC= 4.0 V IRMS= 3.29633 A	1	\$0.04	0805 7 mm ²
3.	Cout	MuRata	GRM21BC80G226ME39L Series= X6S	Cap= 22.0 uF ESR= 3.578 mOhm VDC= 4.0 V IRMS= 3.29633 A	1	\$0.04	0805 7 mm ²
4.	D1	Diodes Inc.	B230A-13-F	VF@Io= 500.0 mV VRRM= 30.0 V	1	\$0.09	SMA 37 mm ²
5.	Dbst	ON Semiconductor	MBR0540T1G	VF@Io= 510.0 mV VRRM= 40.0 V	1	\$0.06	SOD-123 13 mm ²
6.	L1	Bourns	SRN8040-330M	L= 33.0 uH DCR= 145.0 mOhm	1	\$0.22	SRN8040 100 mm ²
7.	Rfbb	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
8.	Rfbb	Vishay-Dale	CRCW04022K74FKED Series= CRCW..e3	Res= 2.74 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	U1	Texas Instruments	LM2738YMY/NOPB	Switcher	1	\$1.20	 DGN0008A_N 24 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	342.925 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	44.59 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.077 A	Current	Peak switch current in IC
4.	Iin Avg	192.95 mA	Current	Average input current
5.	L Ipp	154.47 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	418.594 mA	Current	MOSFET RMS current
7.	BOM Count	9	General	Total Design BOM count
8.	FootPrint	197.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	550.0 kHz	General	Switching frequency
10.	IC Tolerance	16.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	111.433 mV	General	Voltage drop across the MosFET
12.	Pout	3.0 W	General	Total output power
13.	Total BOM	\$1.68	General	Total BOM Cost
14.	D1 Tj	37.742 degC	Op_Point	D1 junction temperature
15.	Vout Actual	2.992 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
17.	Duty Cycle	17.522 %	Op_point	Duty cycle
18.	Efficiency	81.834 %	Op_point	Steady state efficiency
19.	IC Tj	41.807 degC	Op_point	IC junction temperature
20.	ICThetaJA	60.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	1.0 A	Op_point	Iout operating point
22.	VIN_OP	19.0 V	Op_point	Vin operating point
23.	Vout p-p	1.689 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
25.	Cout Pd	7.114 μ W	Power	Output capacitor power dissipation
26.	Diode Pd	309.68 mW	Power	Diode power dissipation
27.	IC Pd	196.783 mW	Power	IC power dissipation
28.	L Pd	159.5 mW	Power	Inductor power dissipation
29.	Total Pd	665.975 mW	Power	Total Power Dissipation
30.	Vout Tolerance	3.51 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	19.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	LM2738Y	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. LM2738Y Product Folder : <http://www.ti.com/product/LM2738> : contains the data sheet and other resources.

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

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