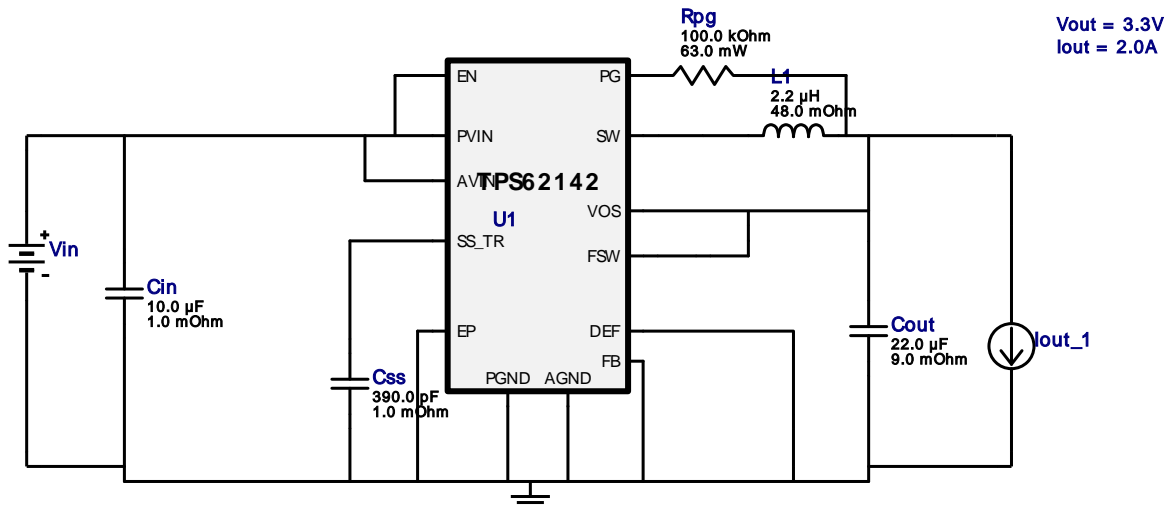


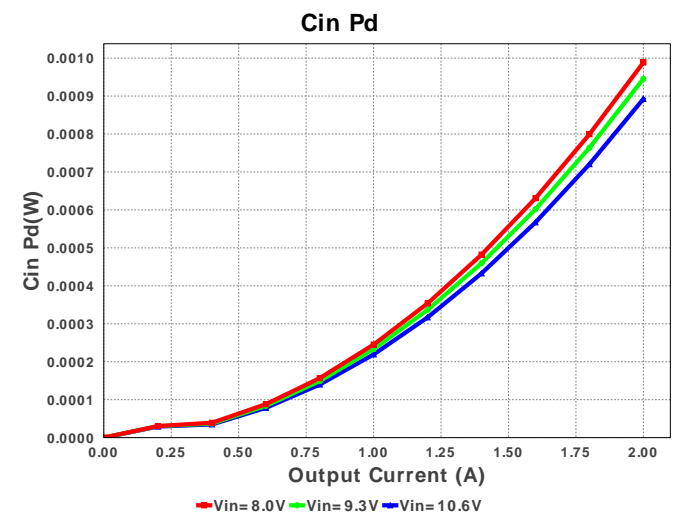
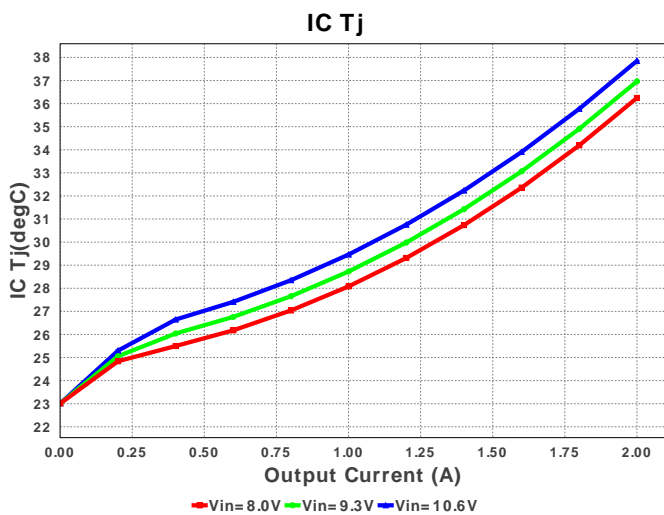
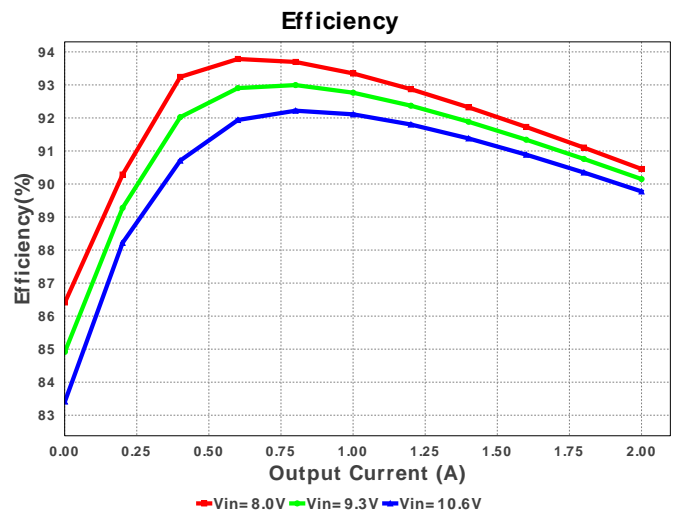
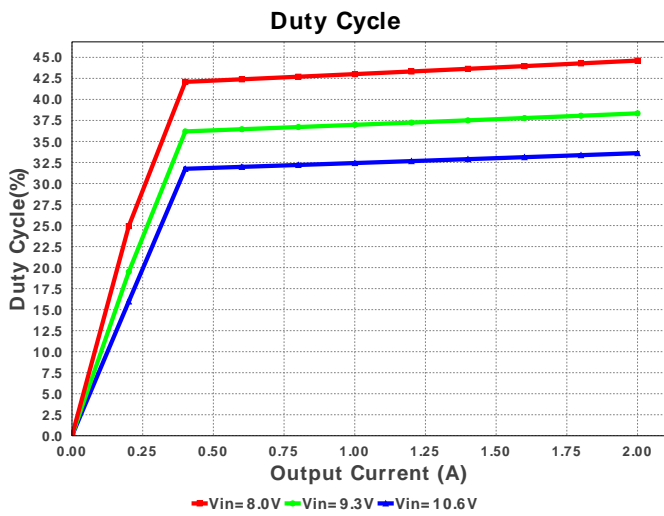
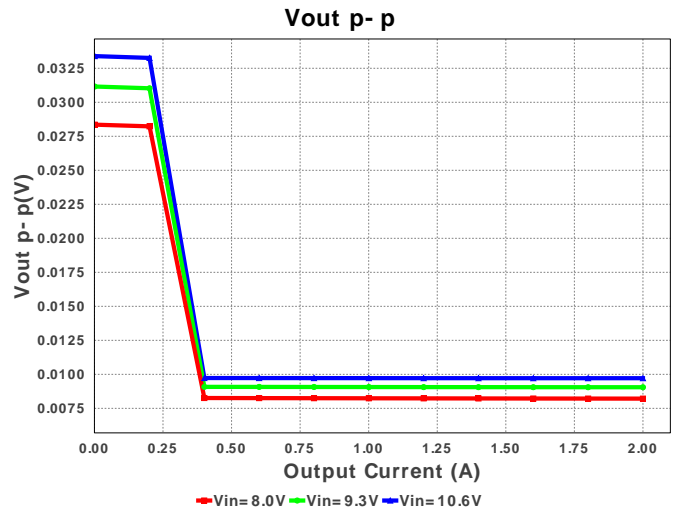
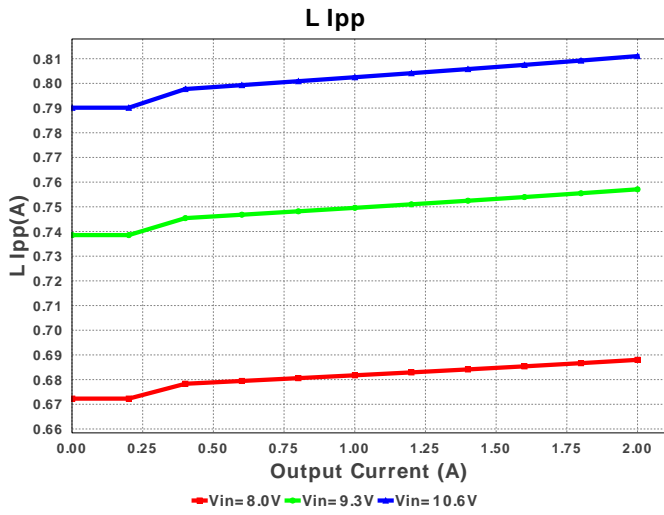
WEBENCH® Design Report

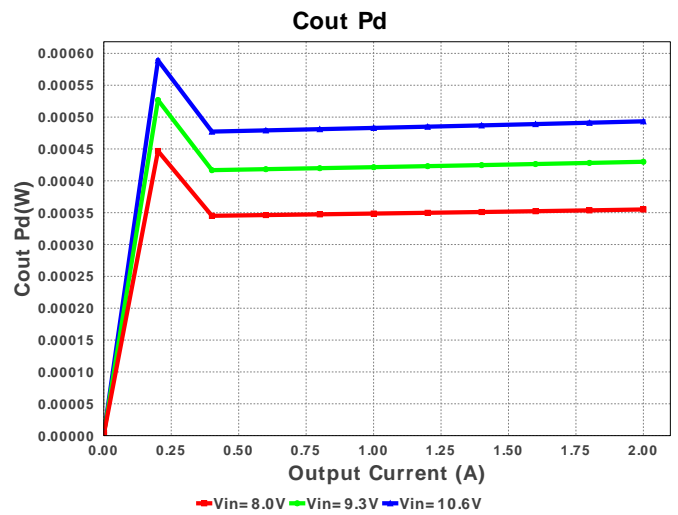
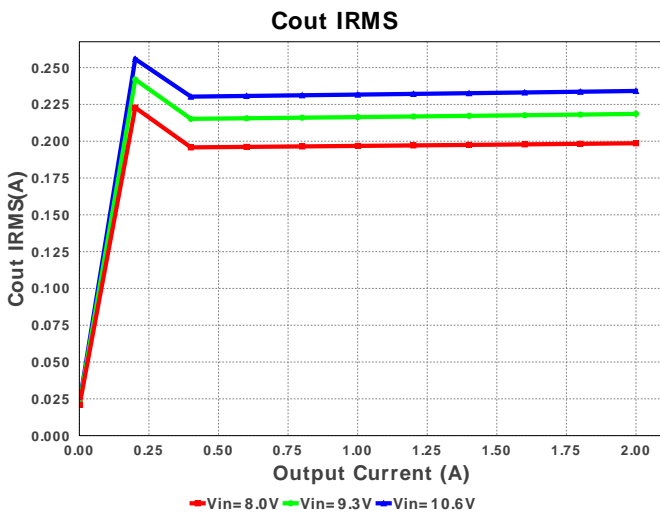
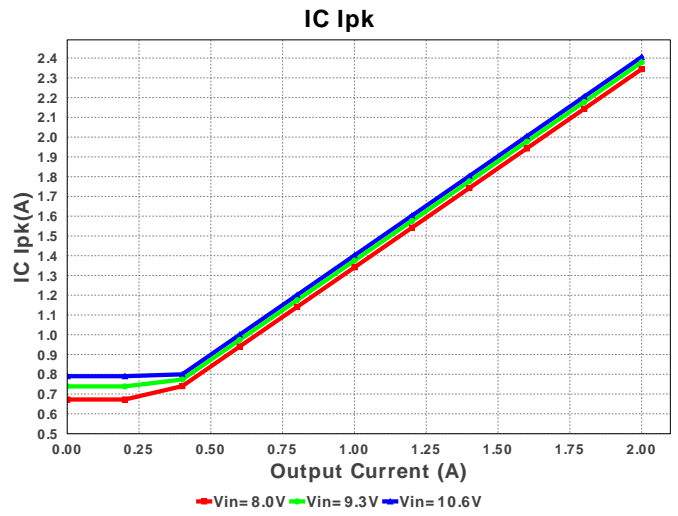
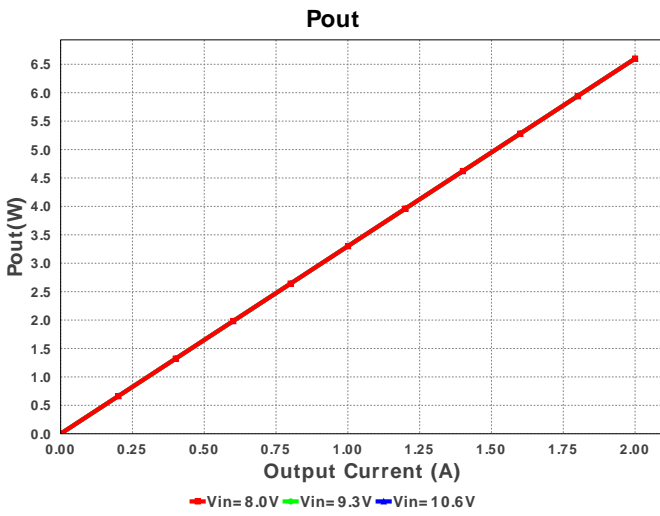
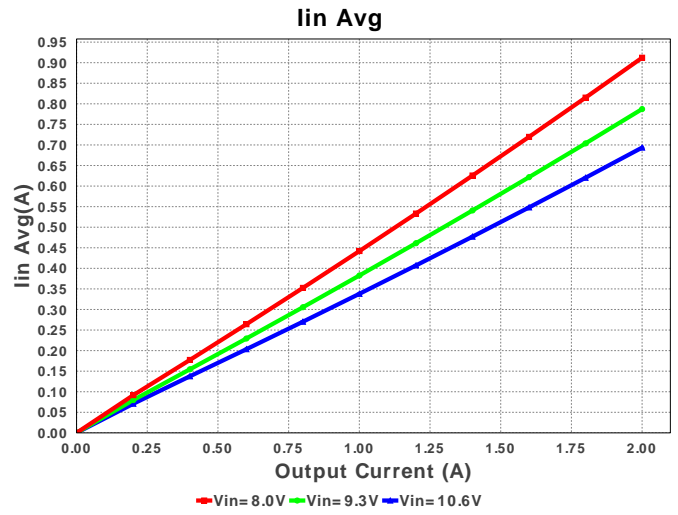
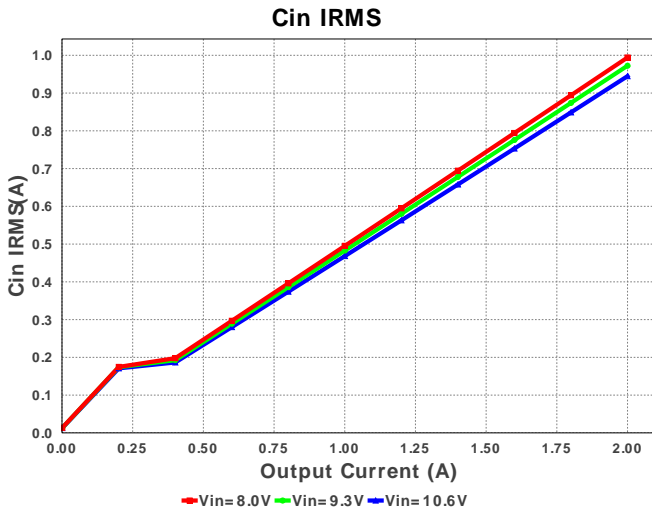
 Design : 4949561/28 TPS62142RGTR
 TPS62142RGTR 8.0V-10.6V to 3.30V @ 2.0A

My Comments

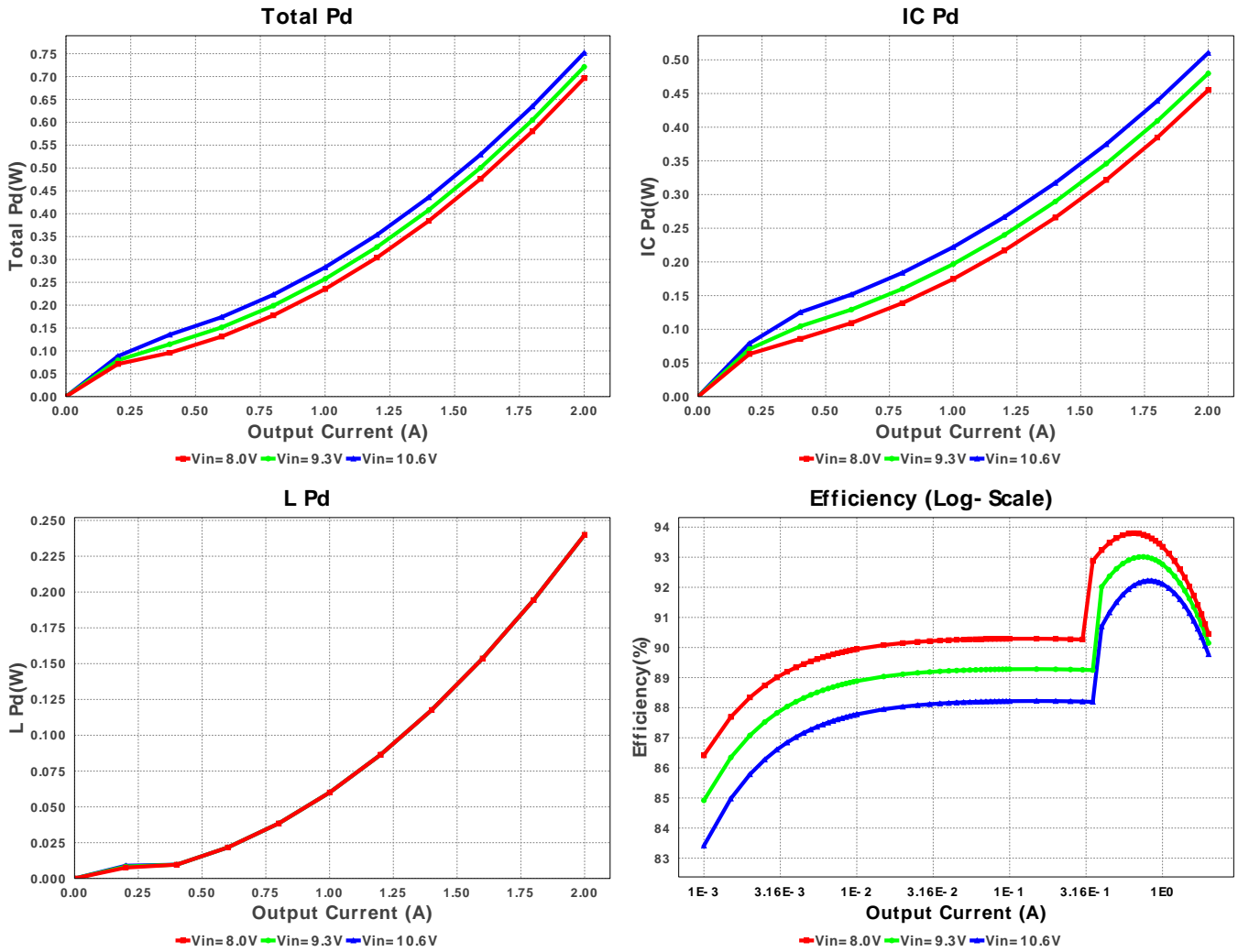
No comments

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.03	0805 7 mm ²
2.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	1	\$0.05	0805 7 mm ²
3.	Css	MuRata	GRM033R71C391KA01D Series= X7R	Cap= 390.0 pF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
4.	L1	Pulse Engineering	PA4332.222NLT	L= 2.2 uH DCR= 48.0 mOhm	1	\$0.21	PA4332 27 mm ²
5.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
6.	U1	Texas Instruments	TPS62142RGTR	Switcher	1	\$0.81	S-PVQFN-N16 17 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	944.764 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	234.132 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.406 A	Current	Peak switch current in IC
4.	Iin Avg	693.56 mA	Current	Average input current
5.	L Ipp	811.06 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	6	General	Total Design BOM count
7.	FootPrint	62.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	1.375 MHz	General	Switching frequency
9.	Mode	CCM	General	Conduction Mode
10.	Pout	6.6 W	General	Total output power
11.	Total BOM	\$1.12	General	Total BOM Cost
12.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	33.612 %	Op_point	Duty cycle
14.	Efficiency	89.775 %	Op_point	Steady state efficiency
15.	IC Tj	37.851 degC	Op_point	IC junction temperature
16.	ICThetaJA	29.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	VIN_OP	10.6 V	Op_point	Vin operating point
19.	Vout p-p	9.716 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	892.578 μW	Power	Input capacitor power dissipation
21.	Cout Pd	493.359 μW	Power	Output capacitor power dissipation
22.	IC Pd	510.348 mW	Power	IC power dissipation
23.	L Pd	240.0 mW	Power	Inductor power dissipation
24.	Total Pd	751.715 mW	Power	Total Power Dissipation
25.	Vout Tolerance	436.36 m%		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current

#	Name	Value	Description
2.	VinMax	10.6	Maximum input voltage
3.	VinMin	8.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS62142	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	23.0	Ambient temperature

Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 2A output current, 3V to 17V Input Voltage Range, 3.3V Fixed Output voltage>Selectable operating frequency, Optional Softstart Capacitor for slow startup, Tracking,Pin selectable output voltage (nominal, +5%) Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. **TPS62142** Product Folder : <http://www.ti.com/product/TPS62142> : 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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