

C2000™ Discrete Power Supply Reference Design



Description

This discreet power reference design is to be used as a guide for the C2000™ power tree for automotive applications.

Resources

TIPA-050114	Design Folder
TMS320F2800157-Q1 , TMS320F280049-Q1	Product Folder
TMS320F280039-Q1 , TMS320F28P659DK-Q1	Product Folder
F29H859TU-Q1 , LMR60410-Q1	Product Folder
LMR60406-Q1 , TPS7A21-Q1	Product Folder
TPS7N41-Q1 , LM4040-N-Q1	Product Folder
REF5030A-Q1 , TPS389C03-Q1	Product Folder



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Features

- Outlines the discreet power tree design needed to support the C2000™ MCUs
- Systematic capability up to ASIL-D
- Adapt to changing system requirements
 - Removing power rail
 - Adjusting power domain accuracy
 - Decreasing power consumption
 - Maximizing ADC performance with voltage reference
 - Optimizing cost and multisource
 - Tailoring to system voltage monitor requirements

Applications

- [Traction Inverter](#)
- [Onboard Charger](#)
- [DC/DC Converter System](#)

1 System Description

In the area of high-performance power electronics, precision and flexibility are critical for designing efficient and reliable systems. Power design using Texas Instrument C2000™ MCU offers a powerful design to meet these demands. Leveraging discreet power design combined with C2000™ MCU, TMS320F28 and TMS320F29, can accelerate product development cycles, reduce costs, and quickly adapt to changing requirements.

1.1 Key System Specifications

Table 1-1. TMS320F28 Power Requirements

Power Device	Signal	Vout(V)	TMS320F2800157-Q1 TMS320F280049-Q1 TMS320F280039-Q1 TMS320F28P659DK-Q1	
			Device	Iout(mA)
DC/DC	VDDIO VDDA	3.3	LMR60406-Q1	600
LDO	VDD	3.3	TPS7A21-Q1	500
VREF	VREFHI	3.0	LM4040-N-Q1	15
SVS+WD	GPIOx_WDI GPIOx_nRST GPIOx_ACT MONx	NA	TPS389C03-Q1	NA

Table 1-2. TMS320F29 Power Requirements

Power Device	Signal	Vout(V)	TMS320F29H859TU-Q1 TMS320F29P58x-Q1	
			Device	Iout(mA)
DC/DC		5	LMR60410-Q1	1000
LDO1	VDDIO VDDA	1.2	TPS7A21-Q1	500
LDO2	VDD	1.2	TPS7N41-Q1	1000
VREF1	VREFHIAB	3.0	REF5030A-Q1	10
VREF2	VREFHICDE	3.0	REF5030A-Q1	10
SVS+WD	GPIOx_WDI GPIOx_nRST GPIOx_ACT MONx	NA	TPS389C03-Q1	NA

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