

V Vin, 3A Synchronous Step-down DCDC Converter

FEATURES

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DESCRIPTION

APPLICATIONS

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SCT2230

REVISION HISTORY

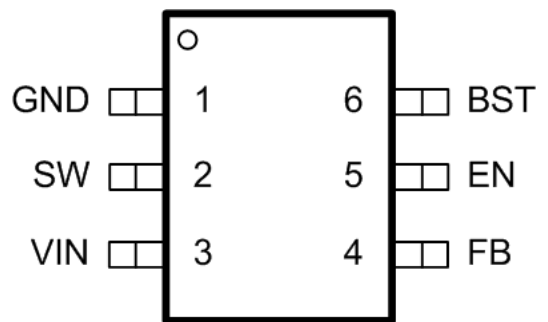
DEVICE ORDER INFORMATION

| PART NUMBER | PACKAGE MARKING | PACKAGE DISCIPTION |
|-------------|-----------------|--------------------|
| | | |
| | | |

ABSOLUTE MAXIMUM RATING

| SYMBOL | PARAMETER | RATING | UNIT |
|--------|-----------|--------|------|
| | | | |
| | | | |

PIN CONFIGURATION



PIN FUNCTIONS

| NAME | PIN NUMBER | | PIN FUNCTION |
|------|------------|----------|--------------|
| | SOT563 | TSOT23-6 | |
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| | | | |
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RECOMMENDED OPERATING CONDITIONS

| PARAMETER | DEFINITION | MIN | MAX | UNIT |
|-----------|------------|-----|-----|------|
| | | | | |
| | | | | |

ESD RATINGS

| PARAMETER | DEFINITION | MIN | MAX | UNIT |
|-----------|------------|-----|-----|------|
| | | | | |
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THERMAL INFORMATION

| PARAMETER | THERMAL METRIC | SOT563 | TSOT23-6 | UNIT |
|-----------|----------------|--------|----------|------|
| | | | | |
| | | | | |

SCT2230

ELECTRICAL CHARACTERISTICS

| SYMBOL | PARAMETER | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|-----------|----------------|-----|-----|-----|------|
| Power Supply and Output | | | | | | |
| | | | | | | |
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| Enable, Soft Start and Working Modes | | | | | | |
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| | | | | | | |
| Power MOSFETs | | | | | | |
| | | | | | | |
| | | | | | | |
| Feedback and Error Amplifier | | | | | | |
| | | | | | | |
| Current Limit | | | | | | |
| | | | | | | |
| Switching Frequency | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Soft Start Time | | | | | | |
| | | | | | | |
| Protection | | | | | | |
| | | | | | | |

TYPICAL CHARACTERISTICS

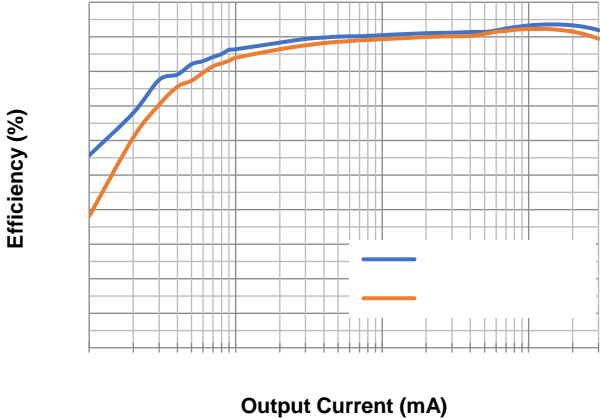


Figure 1. SCT2230 Efficiency, Vin=12V

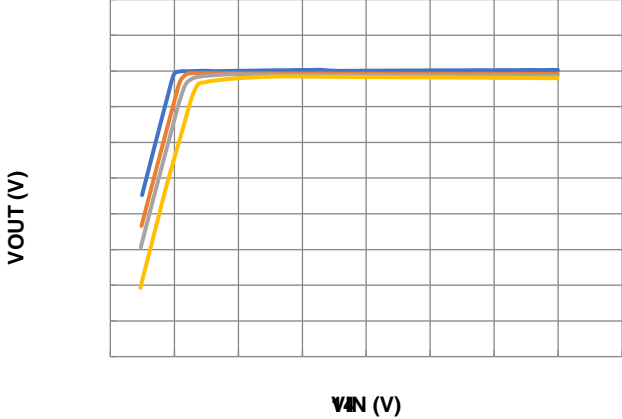


Figure 2. VOUT Vs. VIN

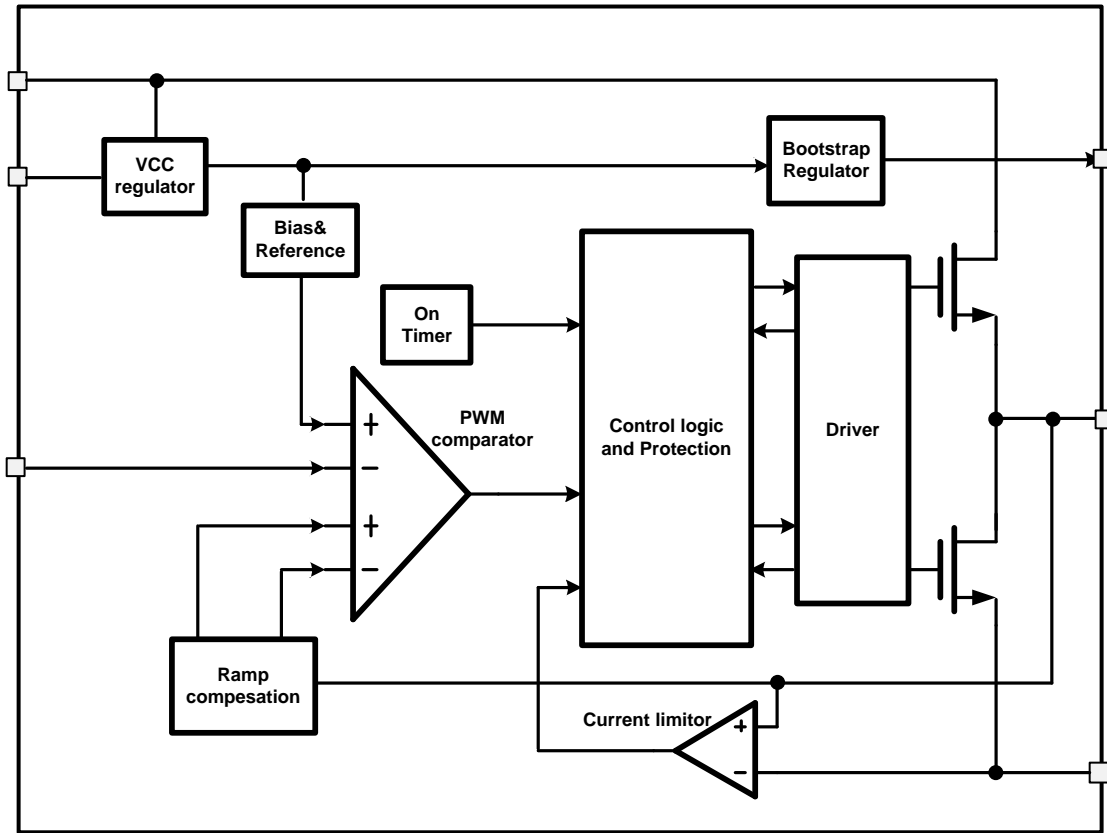
Figure 2. Load Regulation

Figure 4. FB Voltage Vs. Temperature

Figure 5. UVLO Vs. Temperature

Figure 6. Quiescent Current Vs. Temperature

FUNCTIONAL BLOCK DIAGRAM



OPERATION

Adaptive On-time Control

Under Voltage Lockout UVLO

Enable and Start up

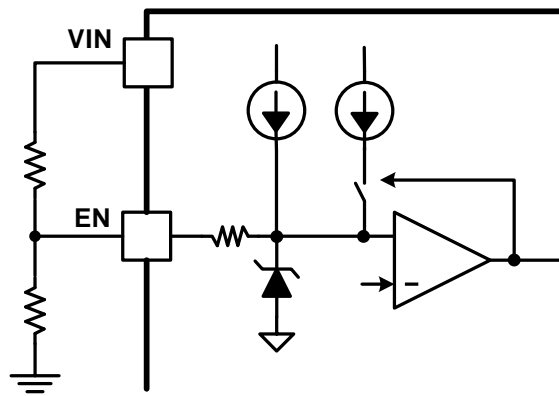
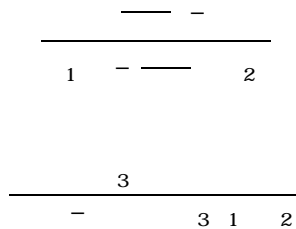


Figure 7. Adjustable VIN UVLO



APPLICATION INFORMATION

Typical Application

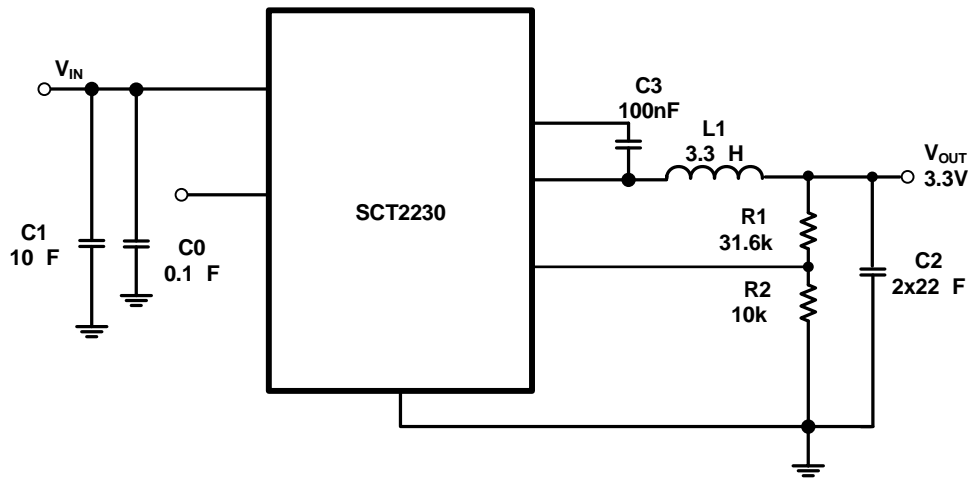


Figure 8. 12V Input, 3.3V/3A Output

Design Parameters

| Design Parameters | Example Value |
|-------------------|---------------|
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Input Capacitor Selection

$$\frac{OUT}{IN}$$

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Inductor Selection

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SCT2230

Output Feedback Resistor Divider Selection

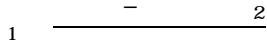


Table 2. Recommended Component Selections

| Output Voltage (V) | SCT2231 | | L (μH) | C1 (μF) | C2 (μF) | C3 (nF) |
|--------------------|---------|--|--------|---------|---------|---------|
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Application Waveforms

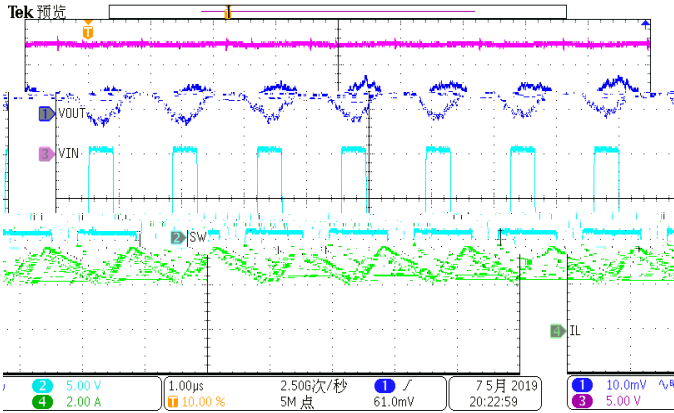


Figure 9. SW node waveform and Output Ripple
VIN=12V, IOUT=3A

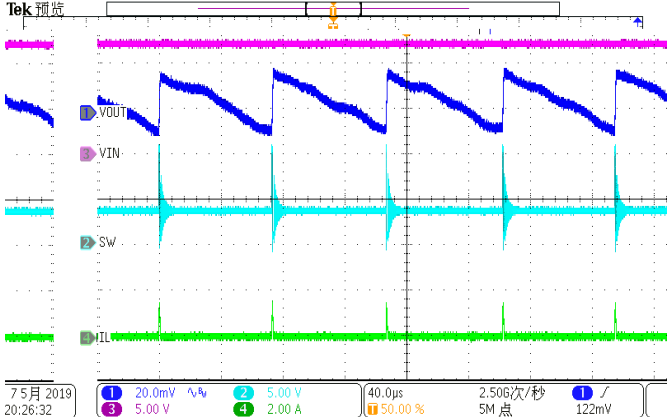


Figure 10. SW node Waveform and Output Ripple
VIN=12V, IOUT=10mA

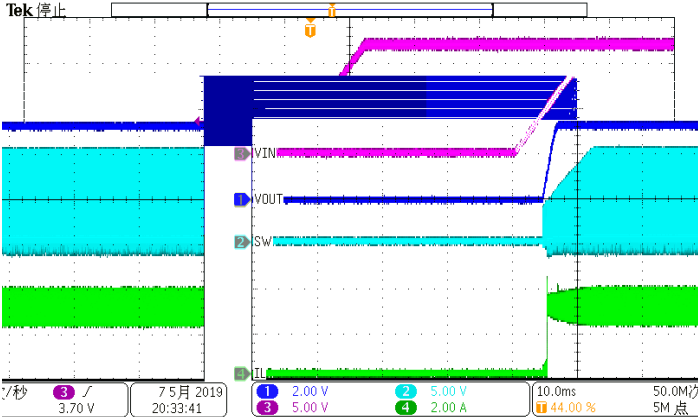


Figure 11. Power Up
VIN=12V, VOUT=3.3V, IOUT=3A

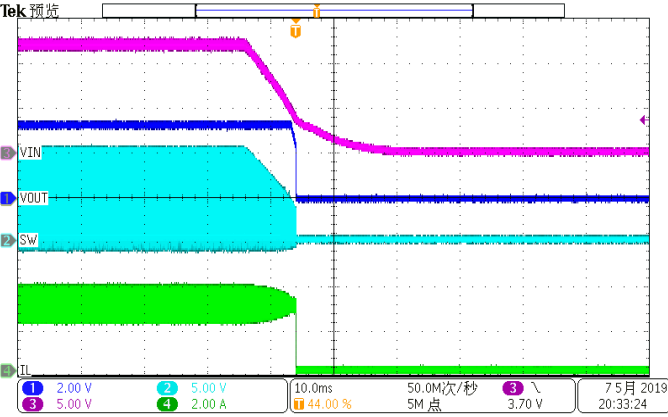


Figure 12. Power Down
VIN=12V, VOUT=3.3V, IOUT=3A

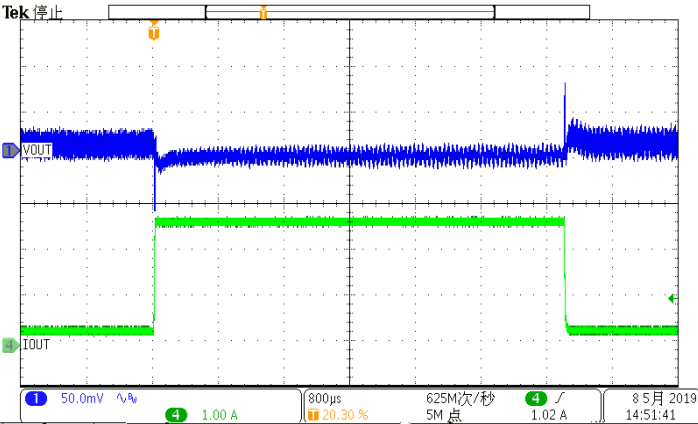


Figure 13. Load Transient
VOUT=3.3V, IOUT=0.3A to 2.7A, SR=250mA/us

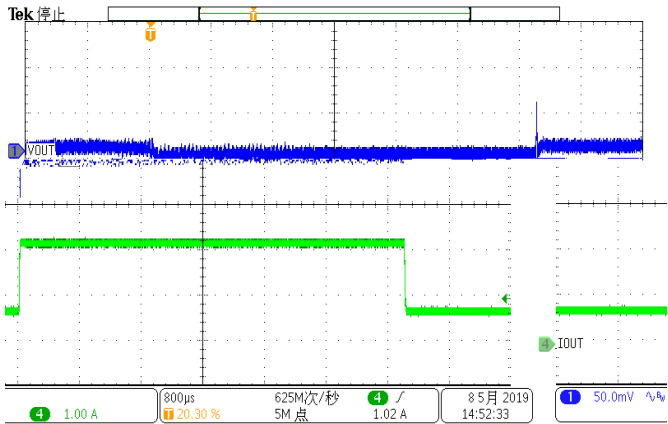


Figure 14. Load Transient
VOUT=3.3V, IOUT=0.75A to 2.25A, SR=250mA/us

Layout Guideline

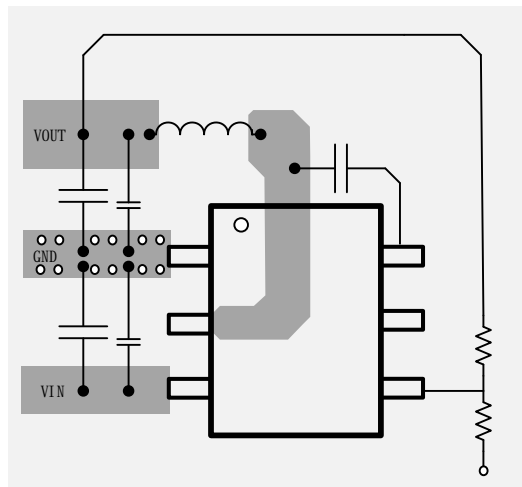


Figure 15. PCB Layout Example5

