17

E E

1

1

1

1

1

E E

1

E E DE

1

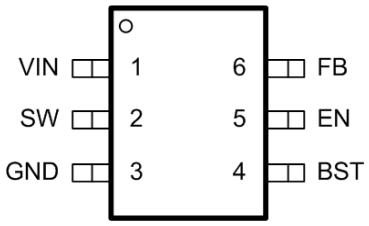
1

1

E E E

ORDERABLE DEVICE	PACKAGING TYPE	STANDARD PACK QTY	PACKAGE MARKING	PINS	PACKAGE DESCRIPTION	MSL

E E C

SYMBOL	RATING	UNIT	**E EC E**
( )		o o	

E E

NAME	PIN	PIN FUNCTION
		1

E C E E

PARAMETER	DEFINITION	MIN	MAX	UNIT

E C

PARAMETER	DEFINITION	MIN	MAX	UNIT
	1 1			
	1 1			

D E E

PARAMETER	THERMAL METRIC	SOT563	UNIT

E D E E

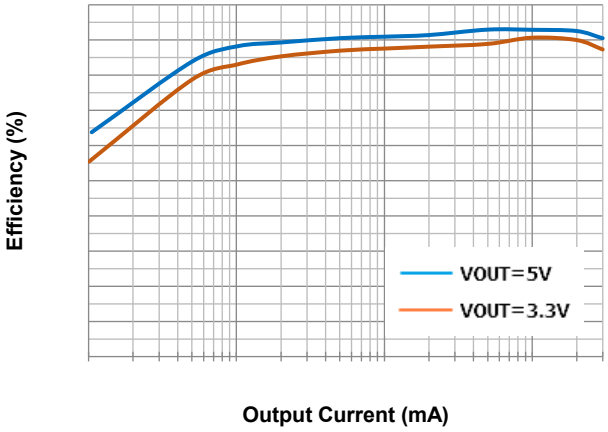


Figure 1. SCT2230H Efficiency, Vin=12V

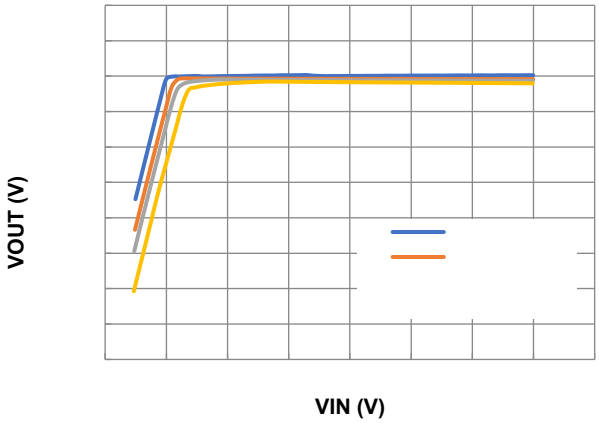


Figure 2. VOUT Vs. VIN

Figure 3. Load Regulation

Figure 4. FB Voltage Vs. Temperature

Figure 5. UVLO Vs. Temperature

Figure 6. Quiescent Current Vs. Temperature

E E C

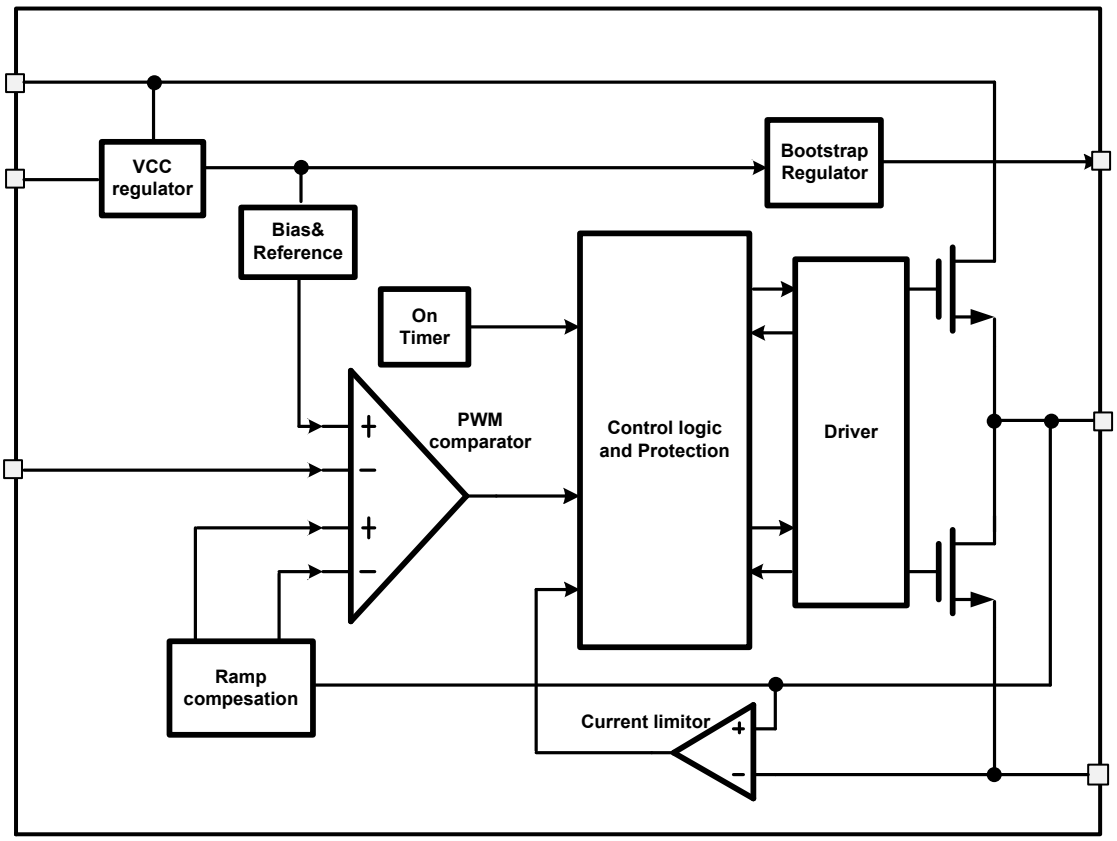


Figure 7. Functional Block Diagram

E

Adaptive On-time Control

1 1

1

1

1

1

$\frac{}{f_S}$

1

1

1 1

1 1

Power Saving Mode (PSM)

1

1 1

1 1

1

$\frac{}{}$

1

VIN Power

1

1

Under Voltage Lockout UVLO

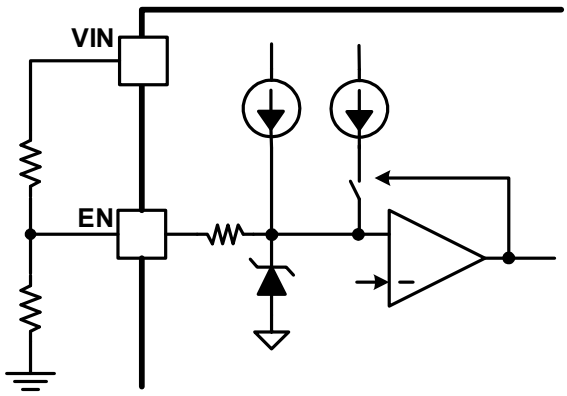
Enable and Start up

1

1

1

1



$$3 = \frac{(\text{——}) -}{{}_1(1 - \text{——}) + {}_2}$$

$$4 = \frac{{}_3 \times}{- \quad + {}_3({}_1 + {}_2)}$$

1

- 1
- 1
-
-
-
-

Over Current Protection (OCP) and Hiccup Mode

1

1

1 1

Bootstrap Voltage Regulator

Thermal Shutdown

° 1
°

E E E E

Typical Application

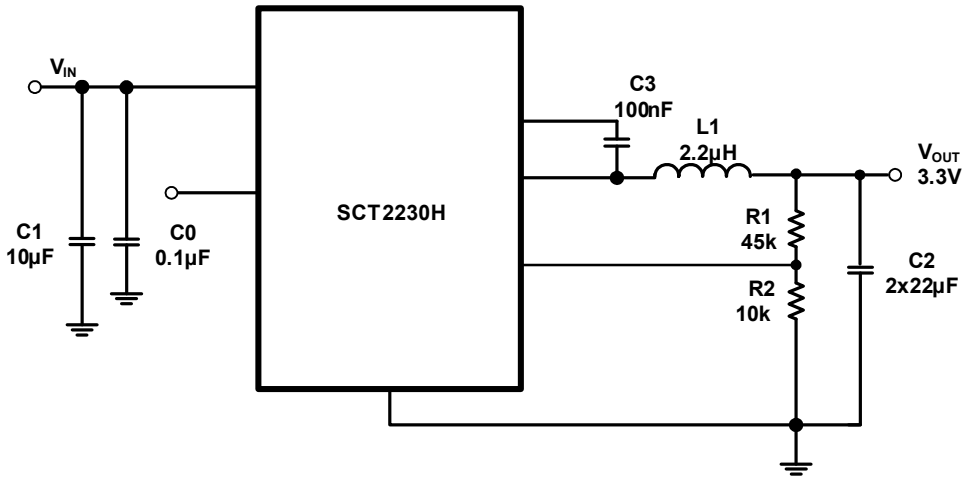


Figure 9. 12V Input, 3.3V/3A Output

Design Parameters

Design Parameters	Example Value

Input Capacitor Selection

1

1

$$\Delta = \frac{}{\times} \times \frac{V_{OUT}}{V_{IN}} \times \left(1 - \frac{}{}\right)$$

1

1

1

Inductor Selection

1 1 1
1 1
1
1
1
1
1
1
1 1 1
1
1

1

$$= \frac{\times (\quad - \quad)}{\times \quad \times \quad \times}$$

1

1 1 1

$$= \quad + \quad \times \frac{}{2}$$

1

1

Table 1. Recommended Inductors

Part Number	L (uH)	DCR Max (mΩ)	Saturation Current/Heat Rating Current (A)	Size Max (LxWxH mm)	Vendor

Output Feedback Resistor Divider Selection

$$_1 = \frac{(\quad - \quad) \times \ _2}{}$$

Table 2. Recommended Component Selections

Output Voltage (V)	R1 (kΩ)	R2 (kΩ)	L (μH)	C1 (μF)	C2 (μF)	C3 (nF)

Application Waveforms

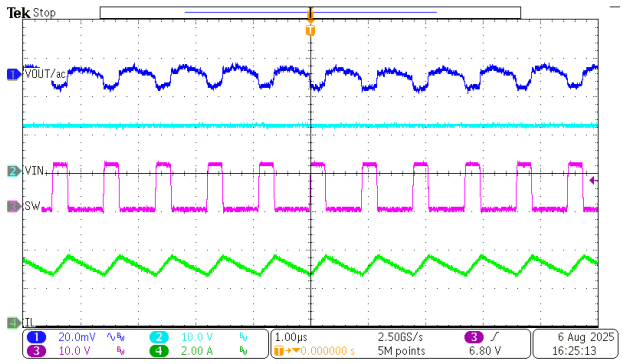


Figure 9. SW node waveform and Output Ripple
VIN=12V, VOUT=3.3V IOUT=3A

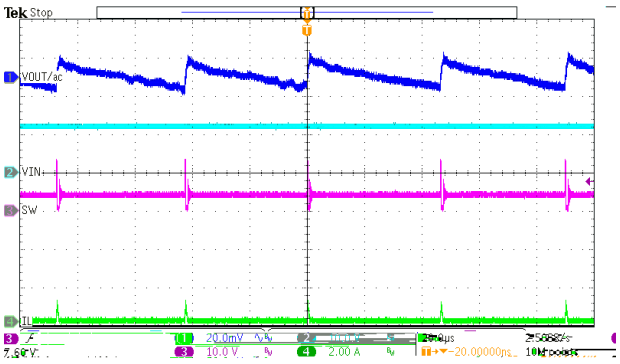


Figure 10. SW node Waveform and Output Ripple
VIN=12V, VOUT=3.3V IOUT=10mA

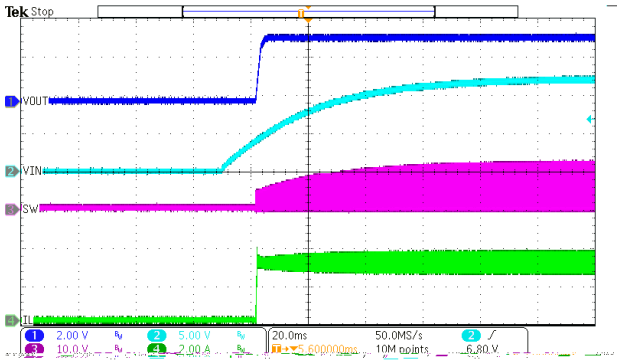


Figure 11. Power Up
VIN=12V, VOUT=3.3V, IOUT=3A

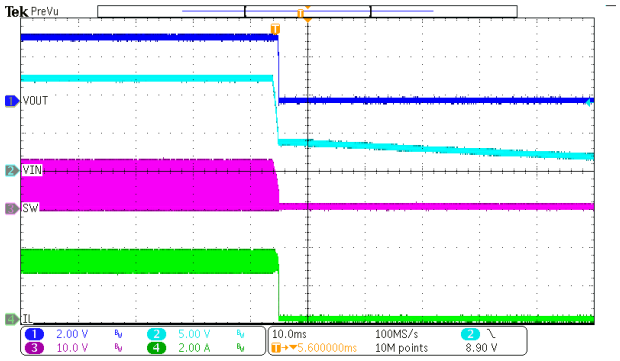


Figure 12. Power Down
VIN=12V, VOUT=3.3V, IOUT=3A

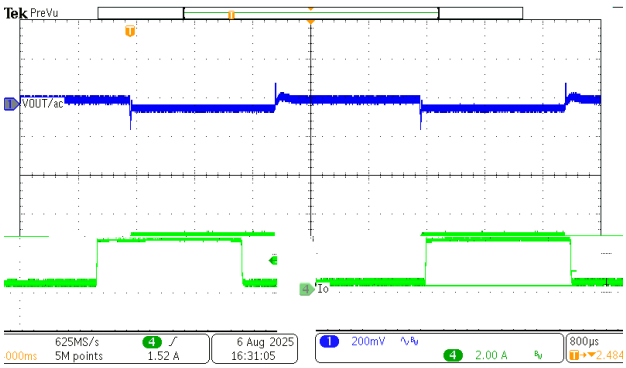


Figure 13. Load Transient
VOUT=3.3V, IOUT=0.3A to 2.7A, SR=250mA/us

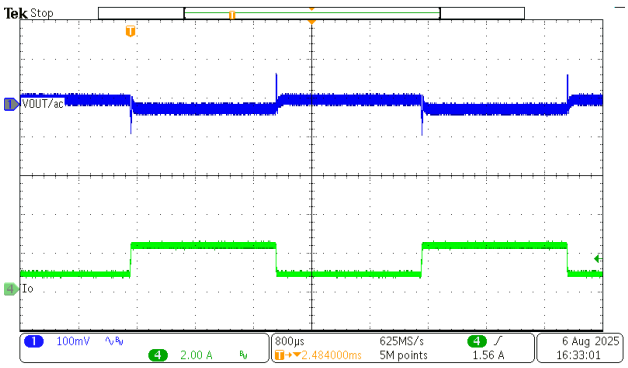


Figure 14. Load Transient
VOUT=3.3V, IOUT=0.75A to 2.25A, SR=250mA/us

Layout Guideline

1

1

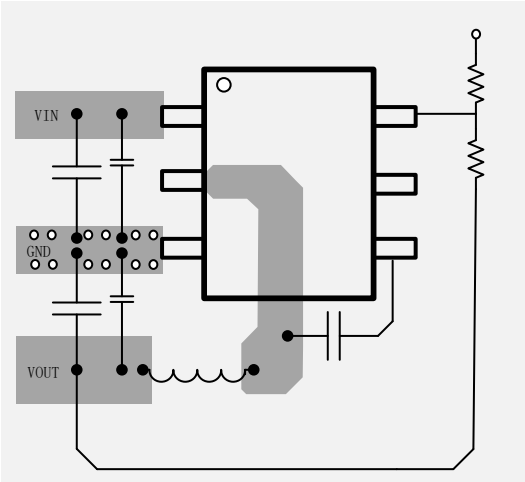


Figure 15. PCB Layout Example

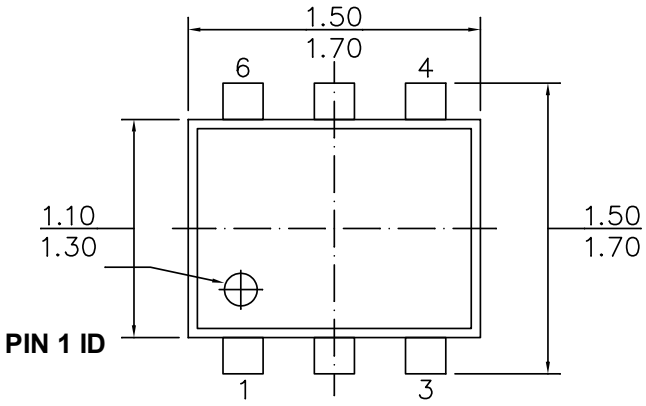
Thermal Considerations

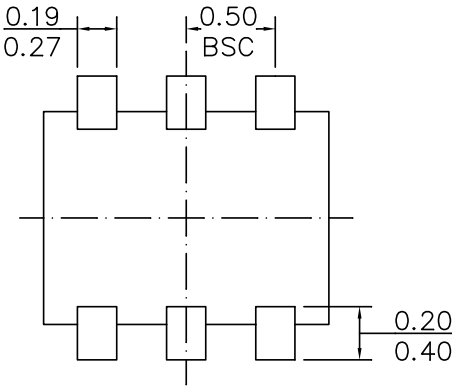
1 1

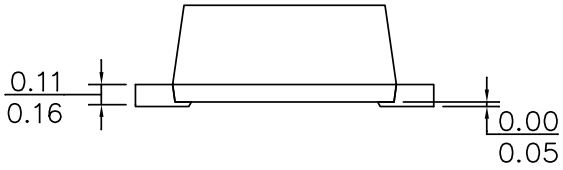
$$(\quad) = \frac{125 -}{\theta JA}$$

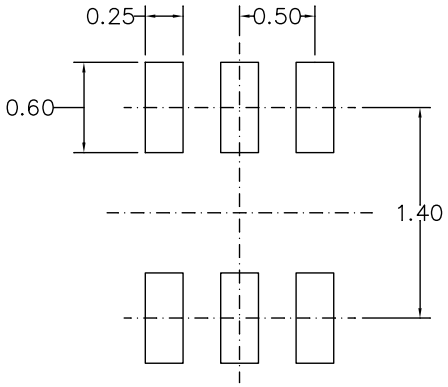
1 1

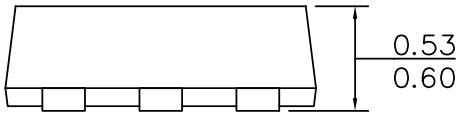
C E E


1.50
1.70
6
4
1.10
1.30
1.50
1.70
PIN 1 ID
1
3


0.19
0.27
0.50
BSC
0.20
0.40

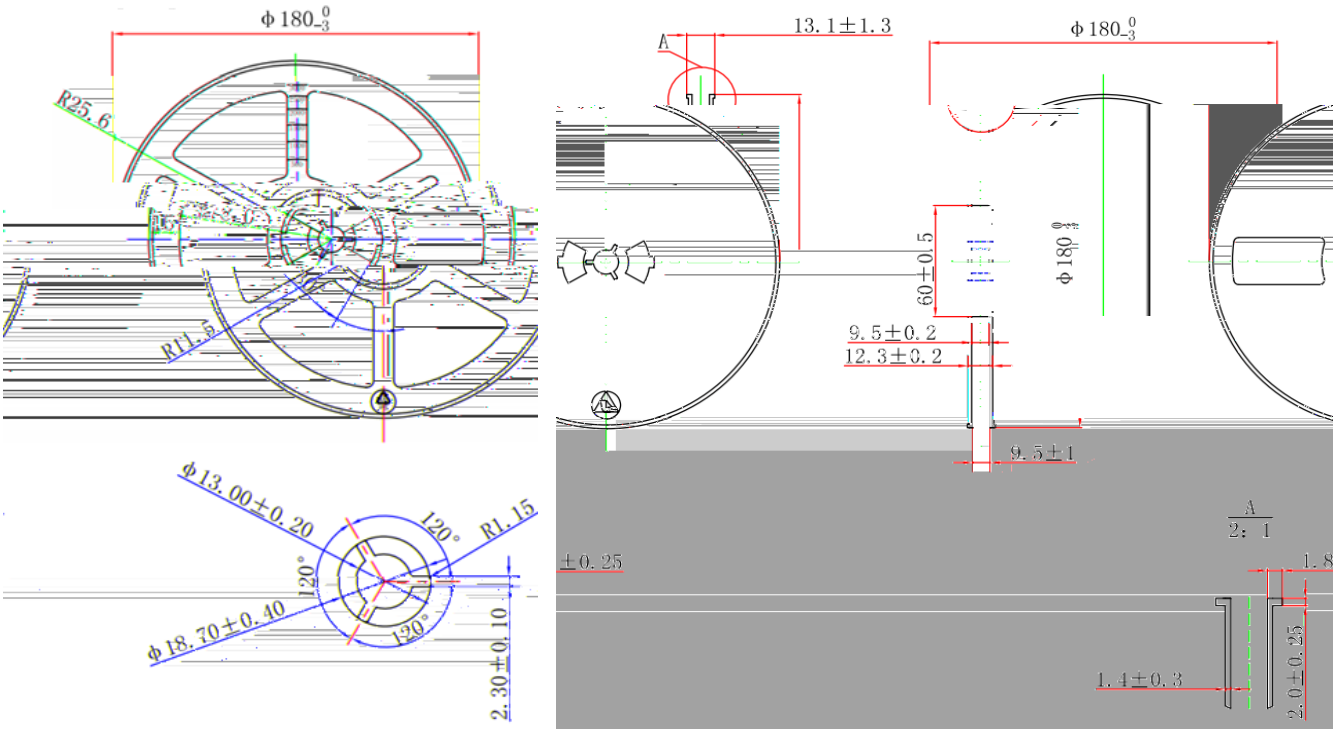

0.11
0.16
0.00
0.05

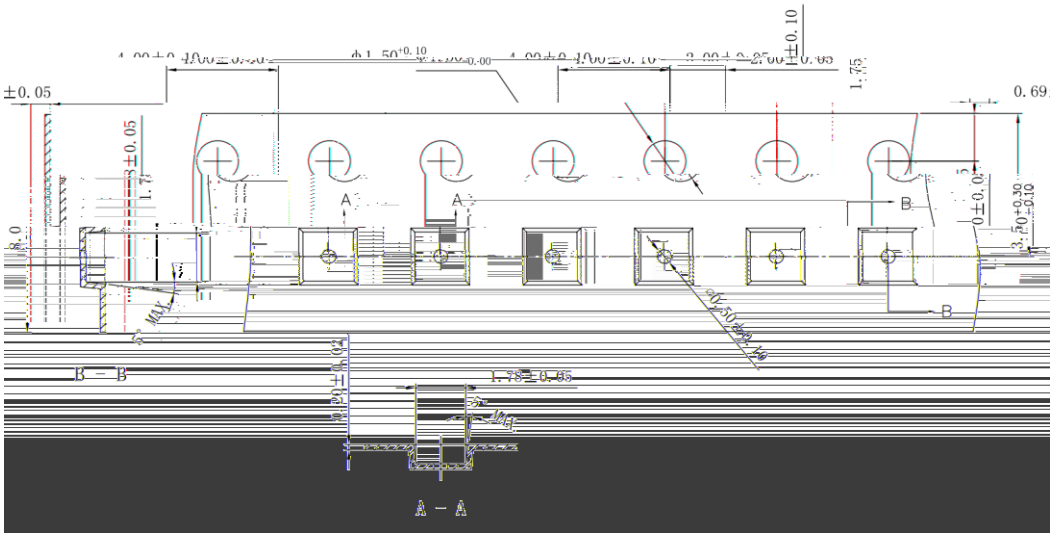

0.25
0.50
0.60
1.40


0.53
0.60

NOTE:

E E


Φ180
R25.6
R1.5
13.1±1.3
60±0.5
9.5±0.2
12.3±0.2
9.5±1
Φ13.00±0.20
120°
R1.15
Φ18.70±0.40
2.30±0.10
±0.25
1.4±0.3
2.0±0.25


±0.05
0.69
B — B
A — A