

17DD

C

51 : <A 8-31
 : 5 A A A<A A 1: C54 : 13 - 10
 9 9
 # 51 A<A 8-31 -: 31
 A /1: A 1: A
 E/8 .E E/8 A 1: 5 553
 : 1:-8 9 2 - 5 5 41 5 A 4/A 1:
 510 F C5/453 1=A1:/E
 : <A : 01 8-31 /7 A
 C1 -B1 9 01 - 54 8-0
 B1 19<1 - A1 1/ 5:
 B-5. 8 5 - -/7-31

8 -: 18 55-8 -: 0 : 5
 AB158:/1
 1 < D1
 1 C 753 E 19
 : A91 8/ : 5
 1: 1-8 A< 1

41 5 - 2A5E 5 13 - 10 454 125 5:/E
 E/4 : A 1<0 C: / : B1 1 /-<. 8 2
 01551 53 /A 1: 41 01B51 <1 - 1 B1 -
 C51 5<A B 8-31 -: 31 2 9 -: 0 2A5E
 5 13 - 1 454 51 < C1 -: 0
 E/4 : A C54 B1 E 8C 0 :
 9 5 5 51 41 / : 0A/ 5: 8
 # 54 F C5/453 21=A1:/E 8C A<A B 8-31
 5<8 9-81D1:-85 0A/ -: 0 /-</5 51 - 1
 -/45B10 -0 < -0-<51 / : -:
 51 / : 8- /451/ A1 -/45B1 2 8-0 -: 5:
 1 < : 1 2 1<0 C: -<<5- 5:

41 <1 - 1 5 < C1 -B53 9 01
 C454 9-5 -5 454 125 5:/E 0A53 54 8-0
 <1 - 5:

5/801 2A59 0A 2 1 << A1 5A 45

SCT2230H

D

-31 : A9.1 2 <1B5 A -E052 2 9 <-31 : A9.1 5 41 / A 1: B1 5:

1B55: 18- 10 - 71

1B55: <0- 1 9 : 0 5 -.8

D

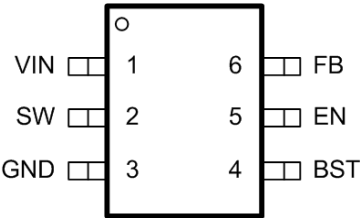
ORDERABLE DEVICE	PACK	WARD QTY	PACKAGE MARKING	PINS	PACKAGE DESCRIPTION	MSL

C

B1 <1 - 53 211 - 5 19<1 - A1 A 8 41 C51 : 10

SYMBOL	RATING	UNIT
# # (:)	# #	o o

C



< 5C

99 D 99

1 1 .1E : 0 4 1 5 10 A 01 . 8A1 -D5 A9 - 53 9 -E / - A 1 01B51 <1 9 -: 1: 0-9-31 41 01B51 5 : 3A -: 110
2A / 5: A 51 25 1/ 991: 010 <1 - 5: : 055:
41 5/801 B1 19<1 - A1< 1/ 5: < 1/ 41 01B51 10A53 B1 8-0/ : 055: A / 5: 19<1 - A1 C51D/110 C41:
B1 19<1 - A1< 1/ 5: 5 -/ 51 : 5 A A <1 - 5: -. B1 41 <1/ 51 0 9-D5 A9 <1 - 53 6A / 5: 19<1 - A1 C51 10A/1
51 91

C

NAME	PIN	PIN FUNCTION
		C1 A<<E 5<A A<<E 41 < C1 41 - C1E 41 1<0 C: / :B1 1 C5/41 E1 C54 - < C1 A/1 E<- C54 - A5- E 8 31 /- <- /5 1E 5- 1: 51 : 41 5<A 41 11 :<A - <- /5
#		C1 C5/453 A<A # 5 41 C5/453 : 01 4- A<<E < C1 41 A<A : :1/ 41 A<A 2E 2 9 # 41 A<A 8-0 1 4- - /- <- /5 5 1=A510 2 9 # < C1 41 454 E1 C5/4
		C1 3 A 0 A . 1 E1 10 051/ E 3 A 0 <8:1
		C1 A<<E 2 41 454 E1 < C1 3- 10 E1 A / : :1/ - A 3 1- 1 /1 - 9 5 /- <- /5 . 1 C11: <5 -: 0 # : 01
		: -. 8 8 3 5 5<A 8- 53 41 <5 1: -. 8 41 01B51 41 01B51 4- <1/55: 1: -. 8 41 4 E 553 2 E 3 2 < 3- 9 9- . 8 41 4 E -: 0 4E 1 1 5
		A/7 / :B1 1 A<A 210. - /7 1: 53 B 8-31 : :1/ - 1 5 0E E1 2 9 1 A< A<A B 8-31 41 01B51 13A 1 41 5 1 : - 8 12 1: /1 2 E<5- 8

B1 <1 - 53 211 - 5 19 <1 - A1 -: 31 A 8 41 C51: 10

PARAMETER	DEFINITION	MIN	MAX	UNIT
	: <A B 8-31 -: 31			
	<1 - 53 6A / 5: 19 <1 - A1			

PARAMETER	DEFINITION	MIN	MAX	UNIT
	A9 -: 0E 018 <1 <1/ E 5: - E <5			7
	4- 310 1B51 018 <1 <1/ E 5: - E <5			7
-: 0 1 53 - 10 : 1 5 - / / 0 -: /1 C54 41 <1/ E 5: - 5:				

PARAMETER	THERMAL METRIC	SOT563	UNIT
	A / 5: - 9. 5: 41 9- 81 5 -: /1		#
	A / 5: /- 1 41 9- 81 5 -: /1		

< B51 -: 0 : A9. 1 : E- 12 1: /1 1 E- 1 6A / 5: 19 <1 - A1 2 41 01B51 -: 0 - 1: = -
/4- - /1 5 5 2<- /7- 31 5 12. A = 29 -: E 41 E 19 8B18/4- - /1 5 5 A /4- 41 01 E -: 0 8E A = /5 A1 <5 10 - 0
: C454 41 - 1 9 A : 10 01D1 : - 81: B5 : 91: - 82/ 41 . - 0 5 - 41- = 57 4- 5 E1 10 41
8- 0 -: 0 41 9- 8- 0 2 41 4-: 353 41 01 E: / : 2A - 5: 2 41 . - 0 /4: 31 41 12 5: /E 2 41 41- 57
-: 0 41 12 1 41 - / A 8 -: 0

SCT2230H

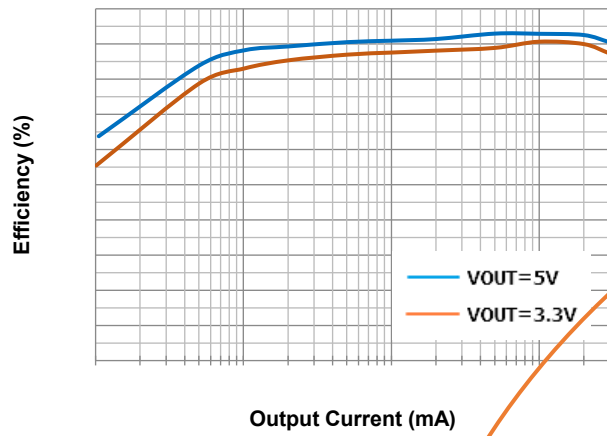


Figure 1. SCT2230H Efficiency Vin=12V

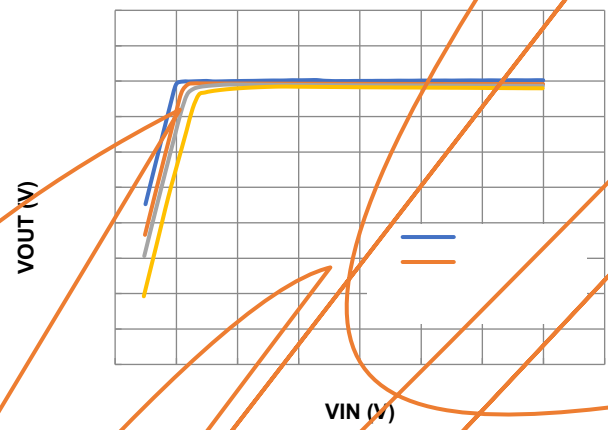


Figure 2. VOUT Vs. VIN

Figure 3. Load Regulation

Figure 4. FB Voltage Vs. Temperature

Figure 5. UVLO Vs. Temperature

Figure 6. Quiescent Current Vs. Temperature

C

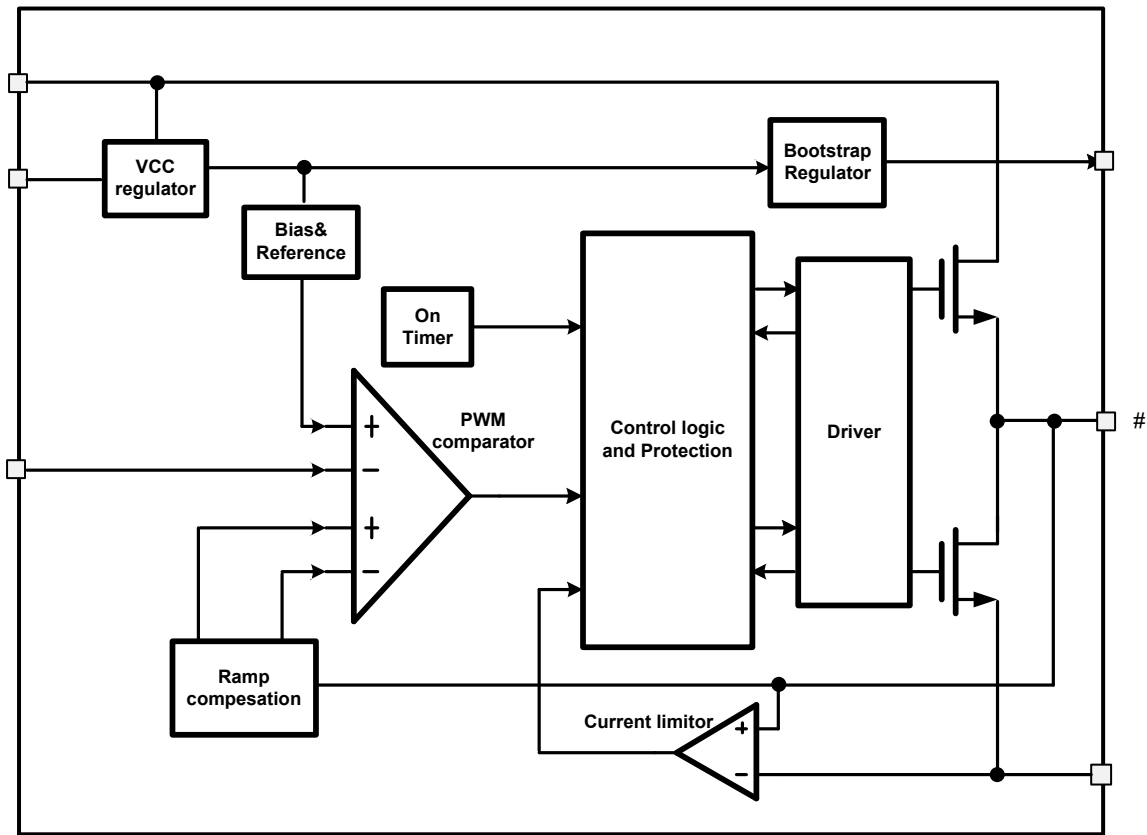


Figure 7. Functional Block Diagram

Adaptive On-time Control

41 01B51 5 5<A A<A E/4 : A 1<0 C: / :B1 1 C54 5 1:-8< C1
 0-<51 / : -: : 51 / : 85 19<8E10 < B512 -: 5: 1 < : 1-:01- E8 <
 -.55- 5: 41.135:53 21-/4/E/8 41 454 51 5 A:10 : 2 - 2510 :1 4 51 51
 <1 50 41 :1 4 51 5 /-8A8 10.E 41 / :B1 1 5<A B 8-31 -:0 41 A<A B 8-31 /E/8
 .E/E/8 .- 10 9-5-5- <1A0 2510 21=A1:/E B1 41 5<A B 8-31 -:31 41:/1 55 /-80-0-<51 :
 51 / : 8 A: 2454 51 -21 41 2510 : 51 -:0 A: : 41 8C 51
 A: 22 41 8C 51 :/1 41 A<A B 8-31 0 <<10.18C 41 A<A 13A8 5: 41 :1
 4 51 41: 1 1 -:0 41 454 51 5 A:10 : -3-5 41 : 51 5 5B1 1E < < 5:-8 41
 5<A B 8-31 -:0 < < 5:-8 41 A<A B 8-31 /-: .1 /-8A8 10 A 53 41 2 8C531=A 5:

 f_s

41 1

5 41 A<A B 8-31
 5 41 5<A B 8-31
 2 5 41 C5/453 21=A1:/E

21 -: 51<1 50 41 13A8 3 1 5 41 51<1 50 41 51<1 50 8:3 401<1:0 :
 5 9 /- 1 C51:0C41: 41 B 8-31 01/ 1- 1 .18C - C454< 5 41 51<1 50 5 531 10
 2 41 51<1 50 5 8 4-: 41 9 5 5A9 51 41 9 5 5A9 51 C51.1-<<80 C454 5 - A 0
 : E<5-8

Power Saving Mode (PSM)

41 5 01 5:10 C54 C1 -B1 01 - 84 8-0 / :055: 2 454< C1 1255:/E 41
 13A8 -A 9-5-8E 10A/1 41 C5/453 21=A1:/E -:0 1D1:0 22C45: : /4-:353 0A53 41 84
 8-0/ :055: 31 4541255:/E -:0 8C A<A 5<8 41 A<A/A 1: 01/ 1- 1 2 9 41-8E 8-0/ :055:
 41 50A /A 1: 01/ 1- 1 - C181B1: A 8E:1- 53 F1 /A 1: 45 5 41 . A 0- E.1 C11: -:0
 41 8C 51 5 A:10 22C41: 41 50A /A 1: 1-/41 F1 8B18 41 8-0 5< B510 :E
 .E A<A /-<-/5 C41: B 8-31 5 8C1 4-: 41:1D /E/8.135 41 : 51 5 41 9 5 5A9 :
 51 4- .1:125 2 01/ 1- 53 5<8 - 84 8-0 / :055: # 41: 41 A<A /A 1: 5/ 1- 1 2 9 84
 41-8E 8-0 41 C5/453 21=A1:/E 5/ 1- 1 711< A<A B 8-31 41 -: 55: < 5 84 8-0 <1- 5:
 /-: .1 /-8A8 10 A 53 41 2 8C531=A 5:

41 1

5 : 51

VIN Power

41 5 01 5:10 <1- 1 2 9 -: 5<A B 8-31 A<<E -:31 .1 C11: - 8- A
 01/ A<83/1-95 /-<5 1/ 991:010 .E<- 41 A<<E: 51 2 41 5<A A<<E 8/- 1 9 1 4-: - 2C
 5/41 2 9 41 / :B1 1 -: -0055:-818/ 8E5 -: -89 .A7 /-<-/5 C54 1/ 991:010 A 9-E.1
 1=A510 5 -0055: 41 8/-8/1-95 .E<- /-<-/5

SCT2230H

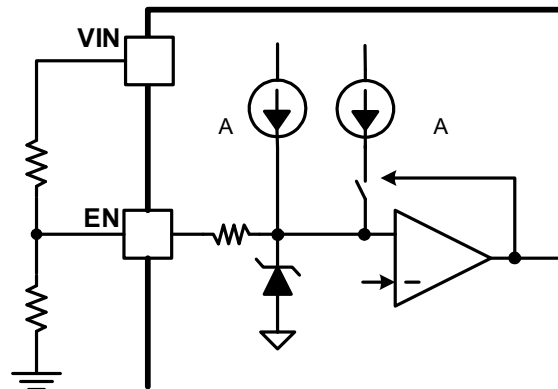
Under Voltage Lockout UVLO

41 :01 8-31 /7 A 012 A8 - A< 41 4 8 5 E<5-8 C54 553 -:0
4A0 C: 41 4 8 5 C54 2 8 3 41 9 1 -//A- 1 41 4 8 /-: .1 < 3 -9 9 10 4 A34 41
<1/55: 1:-. 8 41 4 8 2 <5

Enable and Start up

41: -<<E53 - B 8-31 4541 4-: 41 454 41 4 8 E<5-8 51 41 1:-. 8 -82A / 5:
-:0 41 01B51 - 2 - <4- 1 41 4- 41 .A8 5 9 2 - 51 <1B1: 41 A<A
B1 4 -:0 5 A 4 /A 1: # 41: <5 5 <A8 0 8C 41 5 1:-8 :1 C58.1 05/4- 310 3 A:0 A/7
<1 - 5: 5 05-. 8 0 C41: B 8-31 2 8 .18C 5 8C1 41 4 8 E<5-8 2 8

: 5 1:-8 A <A8A /A 1: A/1 / ::1/102 9 5 1:-8 < C1 -8 <5 3A -: 11 4- 28- 53
<5 -A 9- 5-8E 1:-. 8 41 01B51 41 -<<8- 5: 1=A553 4541 B 8-31 4-: 41 012 A8
1 A< 41 1 5 - A 4E 1 1 5 <A8A /A 1: A/1 : <5 C454 / :25A1 41 B 8-31 C54 -:
2/45 1 5 0551 -:0 4 C: 5 5A1 41 1 5 0551 -:0 - 1 /-8 A8 10.E1=A 5:
-:0



5A1 06A -. 8

$$3 = \frac{(\text{---}) -}{1(1 - \text{---}) + 2}$$

$$4 = \frac{3 \times}{- + 3(1 + 2)}$$

41 1

- - 5 51 41 4 8 1:-. 8 41 01B51
- < 5 2 8 41 4 8 05-. 8 41 01B51
- A
- A
-
-

Over Current Protection (OCP) and Hiccup Mode

: 1-/4 C5/453/E/8 41 50A/ /A 1: 5 1: 10.E9 :5 53 41 8C 51 0A53 41 <1 50
 # 41: 41 B 8-31 .1 C11: <5 -:0 # <5 5 8C1 4: 41 B1 /A 1: 41 4 8 B 8-31 41 C5.1
 531 10 -:0 41 / : 8 711< 41 - 1 :1C C5/453/E/8 C5.135 : 8C41: 41 91- A10 B 8-31
 5 4541 4: 8 5B 8-31 2 A<A 8-053 / : 5 A1 5/ 1- 1 A<A C5.135 <.18C 41 -:0 <5 5
 05/4- 310 A/4 4- A<A 5 41: 41 01B51 C5.135/ A 2 /E/8 2 2 - 51 2 45/A<C-553 51
 -:0 1 - : 9-8-21 /E/8 2 - <1 50

Bootstrap Voltage Regulator

: 1D1 :-8. -</-</5 .1 C11: -:0 # <5 < C1 2B- 53 454 51 < C1 3- 1 0 51
 41. -</-</5 B 8-31 5 /4- 310 2 9 -: 5 13- 10 B 8-31 13A8 C41: 454 51 < C1 5
 22 -:0 8C 51 < C1 5 :

Thermal Shutdown

: /1 41 6A / 5: 19<1 - A1 5 41 1D/110 ° 41 41 9-8 1: 53 /5/A5 < / :B1 1
 C5/453 -:0 1 - C54 41 6A / 5: 19<1 - A1 2 53.18C ° 41 9-8 4A0 C: <1B1: 41 0-9-31
 : 01B51 0A53 1D/1 51 41- -:0 < C1 05 5- 5: / :055:

Typical Application

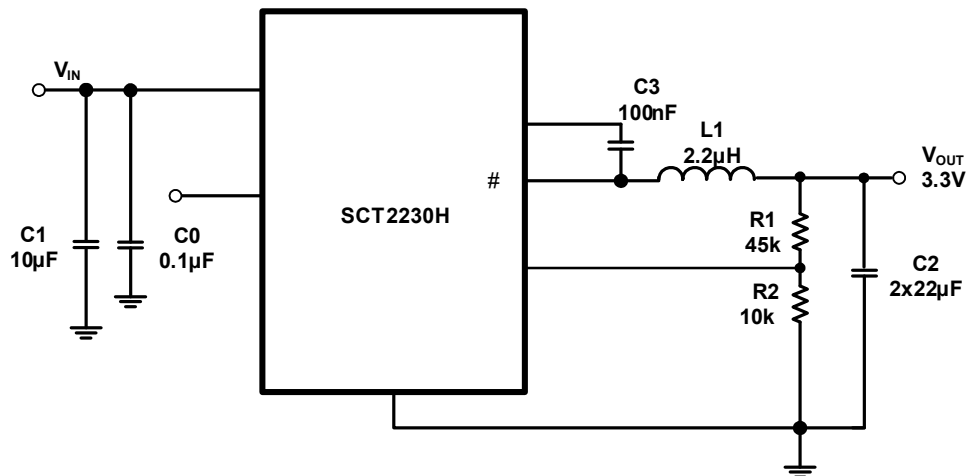


Figure 9. 12V Input, 3.3V/3A Output

Design Parameters

Design Parameters	Example Value
V_{IN}	12V
V_{OUT}	3.3V
I_{OUT}	3A
C_1	10µF
C_0	0.1µF
C_3	100nF
L_1	2.2µH
R_1	45k
R_2	10k
C_2	2x22µF

Input Capacitor Selection

3 0 5 <A B 8-31 2 1 5 3 / 4 1 8 C / 1 - 9 5 / - < / 5 / 1 - 9 5 / - < / 5 5 1 / 9 9 1: 010
 2 41 01 / A < 5 3 / - < / 5 - : 0 - / 1 - 9 5 . E < / - < / 5 5 1 / 9 9 1: 010 . 1 < 8 / 10 - / 8 1 -
 < 5 8 41 < 5 2 41

1 =A 5: / - 8 A 8 1 41 5 <A B 8-31 5 < 8

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

41 1

5 41 5 <A / - < / 5 B- 8 A1
 2c 5 41 / : B1 1 C5/ 45 3 21=A1: / E
 5 41 9 - D 9 A 9 8-0 / A 1:

A1 41 50 A / A 1: 5 < 8 41 5 <A B 8-3

4 1 41 54 /- < /5 B-8A1 /- 12A5 C54 / : 51 53 454 /- < /5 : /1 /1 - 95 /- < /5 . 5 121 /
C4544 - : 352A1 /1 : 41 25-8121 / 51 /- < /5 : /1

Inductor Selection

41 < 12 9 - : /1 250A / - 21 / 41 < C1 A<E 1-0E - 1 < 1 - 5 : - : 5 : .14-B5 8 < - . 55E
- : 0 . A7 / : B1 1 1225 : /E 41 50A / B-8A1 1 5 - : /1 - : 0 - A- 5 : /A 1: 52A1 /1 . 4
1225 : /E - : 0 41 9-3: 5A01 2 41 A<A B 8-31 5<8 - 31 50A / - : /1 B-8A1 10A/1 50A / /A 1: 5<8
- : 0 41 12 1 8-0 8C1 A<A B 8-31 5<8 - 2510 - 8 31 B-8A1 50A / E5 8 4541 1225 : /E
B5 10A/10 - : 0 / 1 8 1 C1B1 - 8 31 50A / C545 - 351: 50A / 2 9 5 C531: 1 - 8 4-B1 -
31-1 1 5 1 5 - : /1 41 1.E / A 1 - / 53 45 1225 : /E - 0B- : - 31

: 0A / B-8A1 /- : 4-B1 1B1: 8 - : /1 C54: /A 1: . 5 # 41: 41 50A / /A 1: - << - /41
- A- 5: 8B18 5 50A / - : /1 /- : 01/ 1- 1 2 9 41 B-8A1 - /A 1: 01<1: 053 : 4 C 41
50A / B1: 0 01251 - A- 5: # 41: 18 / 53 - : 50A / /4 1 5 - 10 /A 1: 1 < 1/5 8 41 - A- 5:
/A 1: 8 31 4- : 5 < 1-7 /A 1: 0A53 41 < 1 - 5:

/- 8A8 1 41 /A 1: 5 41 C /- 1 A1 41 9-D5 A9 5<A B 8-31 955 A9 A<A B 8-31 9-D5 8-0
/A 1: - : 0 955 A9 C5/453 21=A1: /E 2 41 - << 5- 5: C45 / : 51 53 41 50A / - : /1 C54 8 - : /1
- : 0 8C < C1 / : B1 5: 1225 : /E

- . A7 / : B1 1 /- 8A8 1 41 50A / 955 A9 B-8A1 - 4 C: 5 1=A- 5:

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

41 1

5 41 / 1225 : 250A / 5<8 /A 1: 18 51 41 9-D5 A9 A<A /A 1:

41 12 1 41 < 1-7 C5/453 /A 1: 250A / 5 /- 8A8 10- 5 1=A- 5:

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

1 41 /A 1: 85 2 41 4541 4- : 41 < 1-7 /A 1: - : 0 18 / 41 50A / C54 41 - A- 5:
/A 1: 4541 4- : 41 /A 1: 85 41 50A / 1 5 - : /1 - : 0 41 / 1 8 5: 55- : 8-21 / 41
1225 : /E 2< C1 / : B1 5: 1 8 5 18 10 41 / 1 9-1 58- : 0 0521 : 50A / 4-B1 0521 : / 1
8 - /1 - 5 50A / 8 31 /A 1: 5<8 31: 1 - 1 4541 - : 0 / : 0A / 5: 8 1 - : 0 4541 / 1
8

- . 8 5 1/ 991: 010 50A / 2 41 1 5 C41 41 41 1/ 991: 010 50A / /- : A< 41
A1 - 31 - << 5- 5: C54 41 < 1B5 A /- 8A8 5: - : 0 .1: /41 B-8A 5: : 45 - << 5- 5: 41 # 50A /
5 A 10 : 1B-8A 5: . - 0

Table 1. Recommended Inductors

Part Number	L (uH)	DCR Max (mΩ)	Saturation Current/Heat Rating Current (A)	Size Max (LxWxH mm)	Vendor
				D D	# A 4 8 / : 5

SCT2230H

Output Feedback Resistor Divider Selection

41 2- A1 1D1 : -8< 3 -99-. 8 A<A B 8-31 .EA 53 - 1 5 0B01 :1 C 7 - :0 -
4 C: 5 41 E<5-8-<<5- 5: /5/A5 5A1 11=A- 5: /-8A8 1 41 1 5 0B01 B-8A1

$$_1 = \frac{(\quad - \quad) \times \quad }{2}$$

Table 2. Recommended Component Selections

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

Application Waveforms

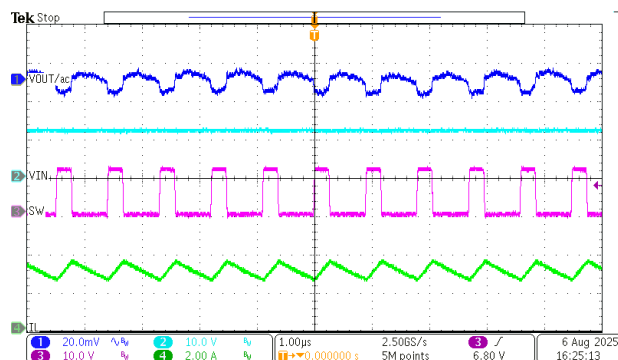


Figure 9. SW node waveform and Output Ripple
VIN=12V, VOUT=3.3V IOUT=3A

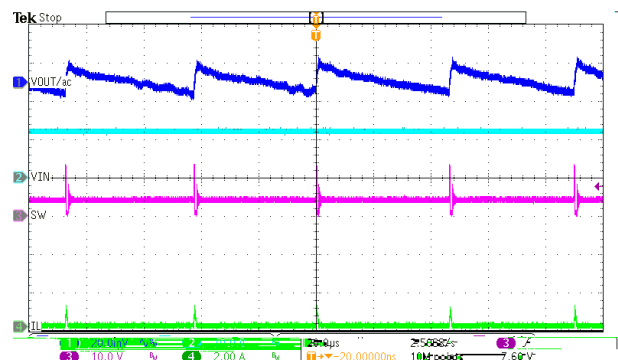


Figure 10. SW node Waveform and Output Ripple
VIN=12V, VOUT=3.3V IOUT=10mA

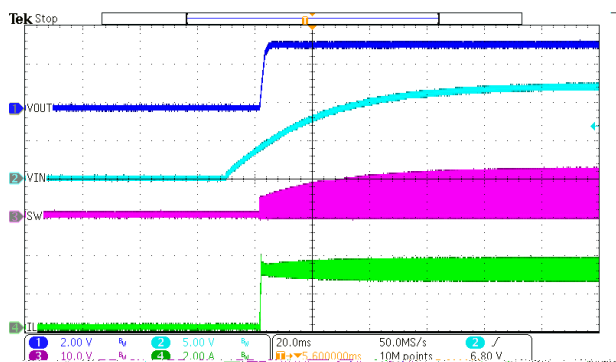


Figure 11. Power Up
VIN=12V, VOUT=3.3V, IOUT=3A

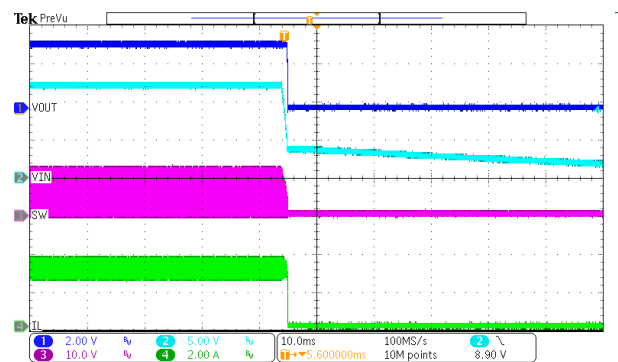


Figure 12. Power Down
VIN=12V, VOUT=3.3V, IOUT=3A

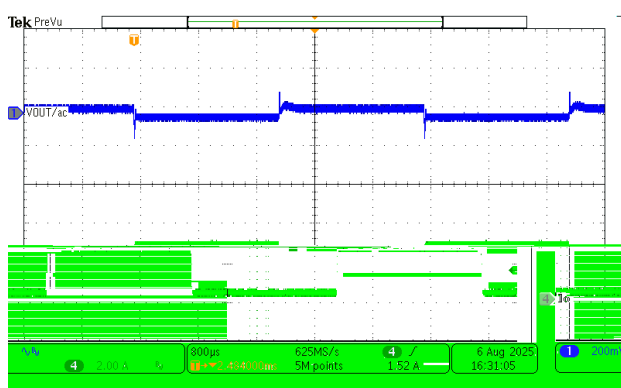


Figure 13. Load Transient
VOUT=3.3V, IOUT=0.3A to 2.7A, SR=250mA/us

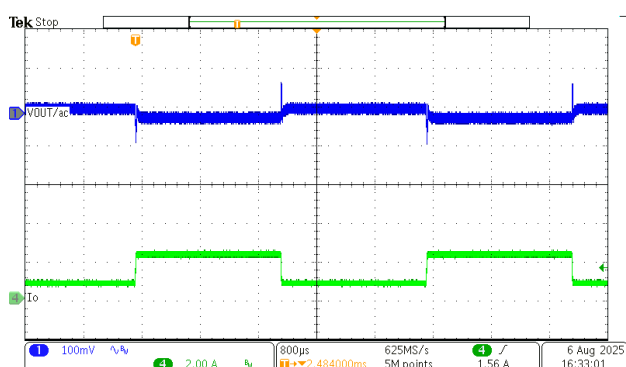


Figure 14. Load Transient
VOUT=3.3V, IOUT=0.75A to 2.25A, SR=250mA/us

Layout Guideline

41 13A8 / A0 A2 2 9 5 - .5E - : 0 : 51 < .89 C54 A / - 12A8 8E A 2 -05 5: 2454
 21=A1:/E: 51 50A1 < <1 8E A 2 41 454 21=A1:/E C5/453 < 45 1 1: 58 59 51 41 8:3 4
 -: 0 - 1- 2-8 -/1 / ::1/ 10 41 # <5 -: 0 - 8-E A 1 - 3 A 0 <8:1 A 01 41 C5/453 13A8
 9 5 51 / A<5 3 41 5<A / - < / 5 : 110 .1 B1 E/8 1 41 <5 -: 0 <5 10A/1 41 5<A A<<E
 5<8 8/1 41 / - < / 5 - / 8 1 <5 - < 58 10A/1 454 21=A1:/E 5353 B 8-31 : # <5 -
 C18 5A1 5 41 1/ 991:010 8E A 2

41 8E A : 110 .1 0 : 1 C54 C18/ : 51 - 5: 2 41 41 9-8 8 31 < 8E1 3 A 0 <8 1 A 53 9 A85-8
 41 9-8B5 5 A 10 5 < B1 41 41 9-805 5- 5: 41 . 9 8E1 5 - 8 31 3 A 0 <8:1 / ::1/ 10 41
 < 8E1 3 A 0 .EB5

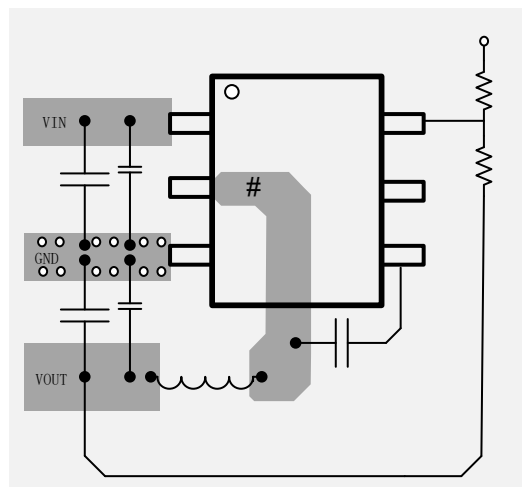


Figure 15. PCB Layout Example

Thermal Considerations

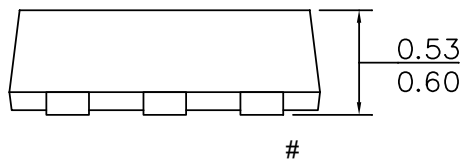
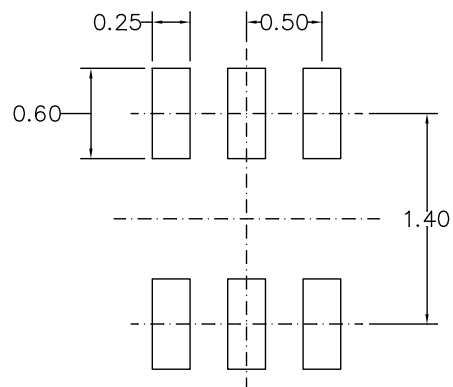
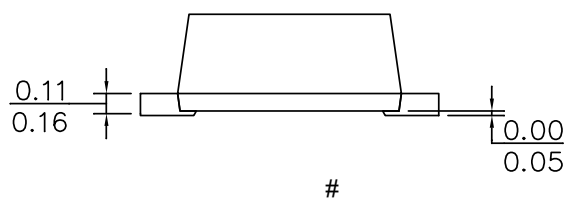
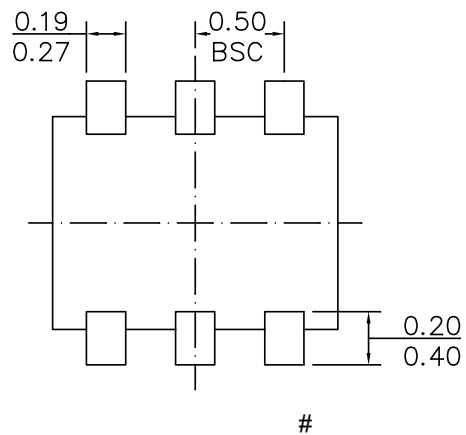
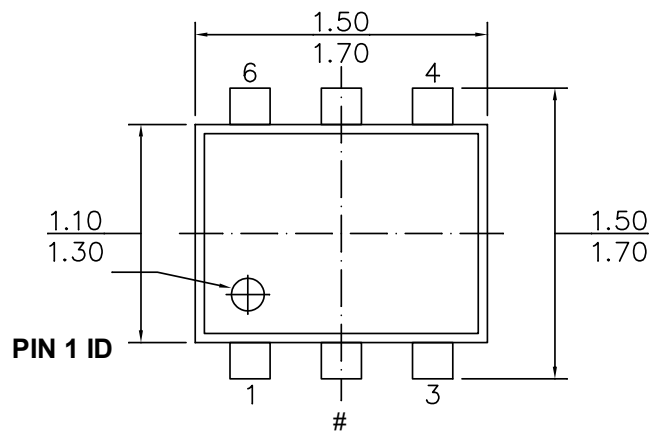
41 9-D9 A9 6A / 5: 19 <1 - A1 4 A0 .1 1 5 10 A 01 : 9-8 <1 - 53 / : 055: - 8 A8 1
 41 9-D9 A9 - 8 C-. 8 05 5- 5: 9-D -: 0 711 < 41 - / A 8 < C1 05 5- 5: 8 4-: 1=A 8 9-D 41
 9-D9 A9 < C1 05 5- 5: 8 55 01 1 9 510 A 53 =A 5:

$$\left(\right) = \frac{125 -}{\theta_{JA}}$$

C41 1

5 41 9-D9 A9 -9.5: 19 <1 - A1 2 41 - <<5- 5:
 5 41 6A / 5: -9.5: 41 9-81 5 - : / 1 351: 5 41 41 9-8:2 9- 5: -.8

41 1-86A / 5: -9.5: 41 9-81 5 - : / 1 2 41 <- / 7-31 31- 8E 01 <1: 0 : 41 E<1 8E A
 41 9-8<0 / ::1/ 5: -: 01: B5 : 91: - 82 / 53 457 / <<1 -: 0 81 53 41 - 8 31 3 A 0
 <8 1 1: 4-: / 1 41 41 9-8<1 2 9-: / 1 53 9 1 B5 / ::1/ 41 3 A 0 <8 1 : 41 < 8E1 -: 0 . 9
 8E1 - A 0 41 C54 A 81 9- 7-8 1: 4-: / 1 41 41 9-8 / - <-. 55E



- / 7 - 31 A 5 1 5 1 : 5 :

NOTE:

#

%

#

Silicon Content Technology Co., Ltd.

8 A 5 3 % 0 5 5 - 0 - 5 5 : 5 5 1 5 3

CCC 5 : 1 : / 9 5 : : 1 :



