

17

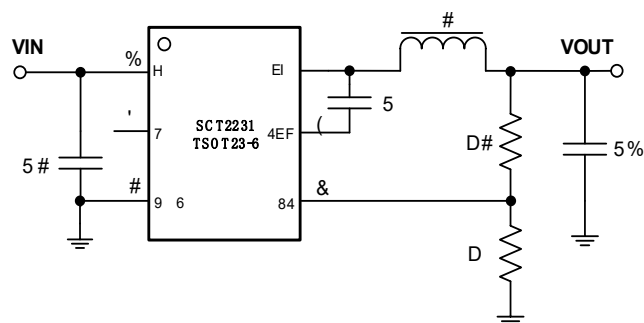
I H , & #)H
% 5 A 5
) & 87F
I A H D , *H)H
C 5)' 3
5 5 5
' E E
5
8)' : E 8
G H
8 BI
A F B
3 FEAF %(B

8 B 6 FH
E
E F 4
E
5 7
9 B

F E5F %
% 6565
F & H #)H
AE87F AE87F D

I)' :
E5F %
A
F E5F %
8BI 8 B I

F E5F %
FEAF %(



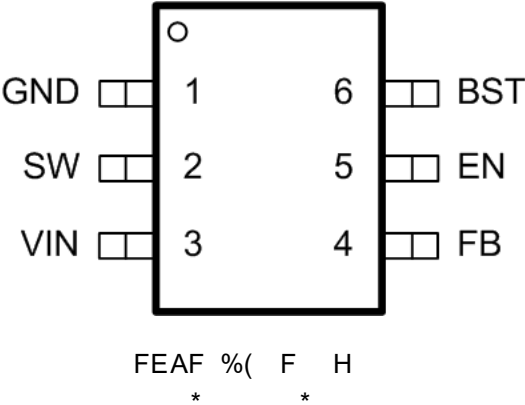
SCT2231

AF7, B

D # , D
D # #, G 67H 57 AD67D 8AD 3F A
D # , G 34E F< 873FGD7E E
E5F %FH3D

ORDERABLE DEVICE	PACKAGING TYPE	STANDARD PACK QTY	PACKAGE MARKING	PINS	PACKAGE DESCRIPTION	MSL
E5F %FH4D	F D	%	%#	(	FEAF %((	#

A #			
SYMBOL	PARAMETER	RATING	UNIT
H	E H	%	H
H _{EI}	E H	#	H
H _{EI} (. #)	E F H	'	H
H _{4EF}	4	H _{EI} % H _{EI} (	H
H ₈₄	8 H	% ('	H
H ₇	7 GH A H	% ('	H
F<	A	& #	°5
F _{EF9}	E	(' #	°5
# E	3 D	F	
F 5	A 5		
# 5	5	<	



NAME	PIN	PIN FUNCTION
9 6	#	B
EI		B 5 E A EI EI 5 4EF EI
H	%	B H H 5 4 H #)H 5 4 H 9 6 5 E
84	&	4 84 *H F 5 84 HAGF
7	'	7 8 # H # #I F GH A
4EF	(	B AE87F # 8 4EF EI

A

PARAMETER	DEFINITION	MIN	MAX	UNIT
H		&	#)	H
F<	A	&	# '	5

PARAMETER	DEFINITION	MIN	MAX	UNIT
H7E6	: 4 : 4 3 E <7675 <E # #&			H
	5 6 56 3 E <7675 <E #&	,	,	H
# : 4 56 3 E 7E63 <7675 <E # #&				

PARAMETER	THERMAL METRIC	TSOT23-6L	UNIT
D <3	< #	**	5 l
D <5	< #	#	

E5F D <3 D <5 D <3 D <5

B54 E5F %# F B54 B54

E5F %# 5 D <3 D <5



SCT2231

H / # H F</ & 5 # ' 5

' 5

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
Power Supply and Output						
H	A		&		#)	H
H _{GH A}	GH A	H		&	& #	H
E6	E	7 / H / # H		%	'	H
C	C	7 / H H / # H 4EF EI / ' H		#'	'	3
Enable, Soft Start and Working Modes						
H ₇ :	7			# #*	# '	H
H ₇	7		# %	# #		H
7	7	7 / #H	#	#'		3
7 : KE	7	7 / #' H		' '		3
Power MOSFETs						
D _{6EA} :	: 87F			)		
D _{6EA}	87F			&		
Feedback and Error Amplifier						
H ₈₄	8 H	F</ ' 5	) +	*	* *	H
		F</ & 5 # ' 5	) * &	*	* #	H
Current Limit						
E6	E6		%	%)	&	3
Switching Frequency						
8EI	E	H / # H H _{AGF} / ' H		)'		:
A				+		
A88						
Soft Start Time						
EE				'		
Protection						
F _{E6}	F	F<		#		5

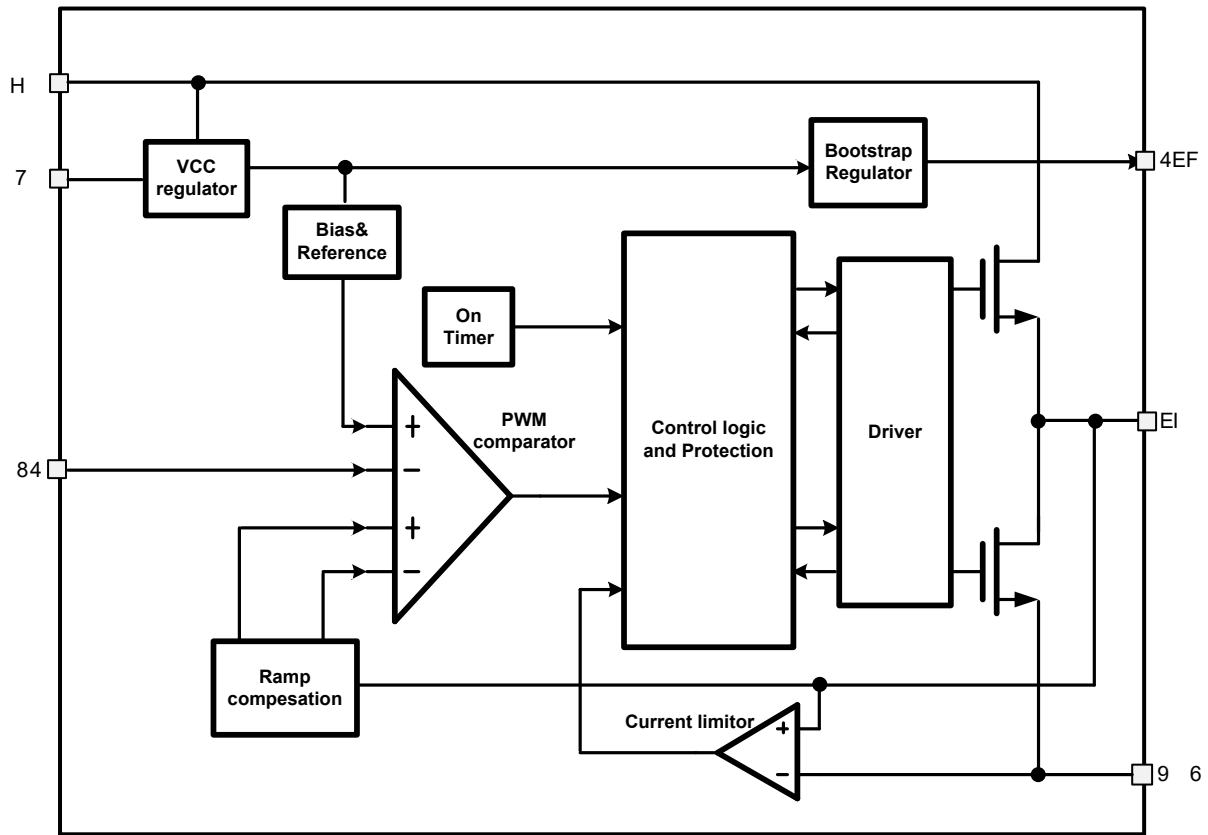
6

& 8

' E 5 F 5 3 D D

B 8 , E5F % #

Figure 3. L



Adaptive On-time Control

F E5F %# & #)H %3
AE87F 3 35 AF
F 3 AE87F H A
HAGF
E5F %# E5F %# AE87F AE87F
E5F %# AE87F AE87F F
,
A $\frac{H_{AGF}}{H f_s}$ #
I ,
• HAGF
• H
•
3 A A88 F A88 H84
84 *H A88 A
A88 A88 A88

Forced Pulse Width Modulation (FPWM)

F E5F %# 8 B I 8BI
F E5F %0/#)' : 3

VIN Power

F E5F %# & H #)H # 8
8

Under Voltage Lockout UVLO

F E5F %G H A GH A %+H H
%(H H F GH A
7

Enable and Start up

I 7 # H E5F %#
F E5F %# EE 4
7 I 7 # #1



3 # ' 3 6 A 7
7 ' % 3 8 H 7 GH A
D% D& 8) F 7 D% D& GH A
%

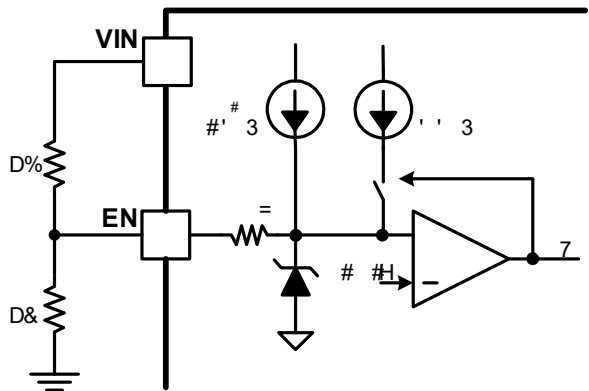


Figure 7. Adjustable VIN UVLO

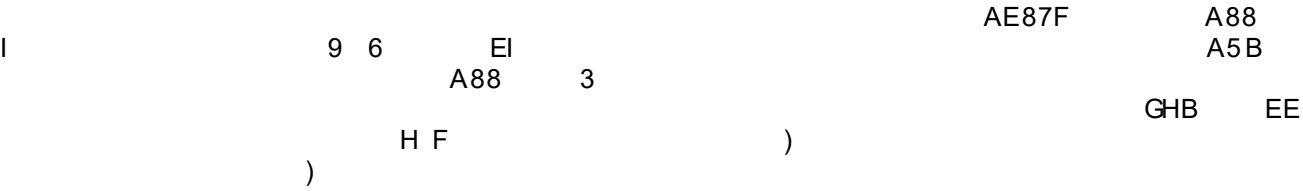
$$3 = \frac{(\text{---}) -}{1 (1 - \text{---}) + 2}$$

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

%

- H , H
- H , H
- #/ # ' 3
- / ' ' 3
- H7 D/ # #*H
- H7 8/ # #H

Over Current Protection (OCP) and Hiccup Mode



Bootstrap Voltage Regulator



5 # H 9 ' H # 8 65

Inductor Selection

F F 65 65D
8 65D
D E :
%
% I 3
I
F %
8 ,
$$= \frac{\times (\quad - \quad)}{\times \quad \times \quad \times}$$

I ,



Output Feedback Resistor Divider Selection

F E5F %#

8 * G)

D# D

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

)

Table 2. Recommended Component Selections

Output Voltage (V)	R1 (kΩ)	R2 (kΩ)	L (μH)	C1 (μF)	C2 (μF)	C3 (nF)
#	& ++	#	#'	#		#
#'	* ((	#	#'	#		#
#*	# &	#		#		#
'	#'	#		#		#
%%	%#(	#	%%	#		#
'	' %	#	%%	#		#

Application Waveforms

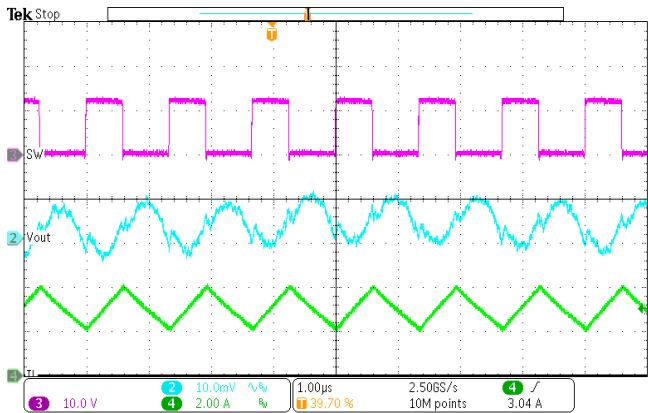


Figure 9. SW node waveform and Output Ripple
VIN=12V, IOUT=3A

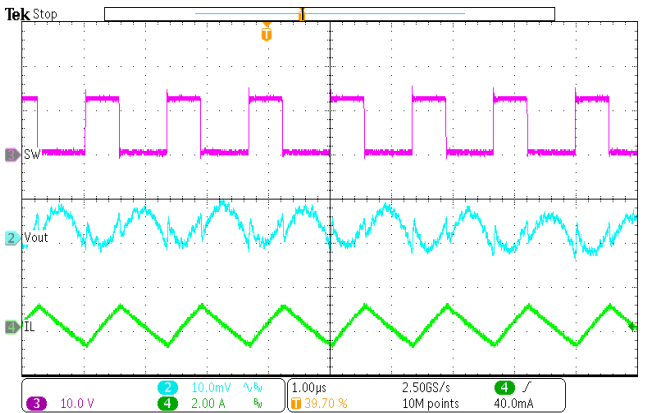


Figure 10. SW node Waveform and Output Ripple
VIN=12V, IOUT=10mA

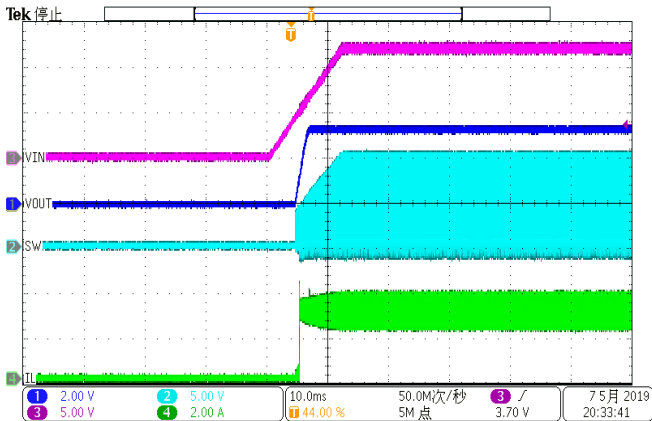


Figure 11. Power Up
VIN=12V, VOUT=3.3V, IOUT=3A

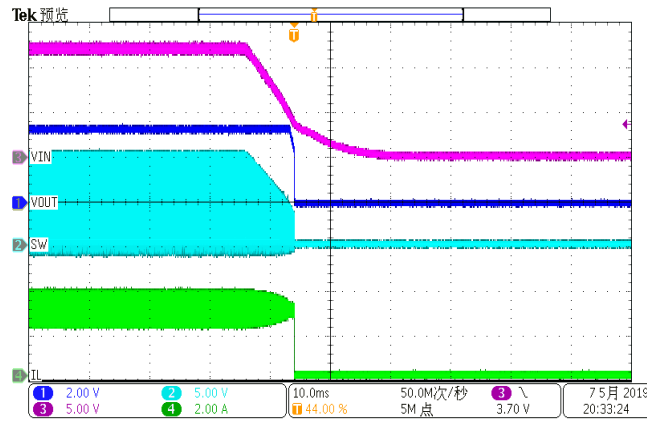


Figure 12. Power Down
VIN=12V, VOUT=3.3V, IOUT=3A

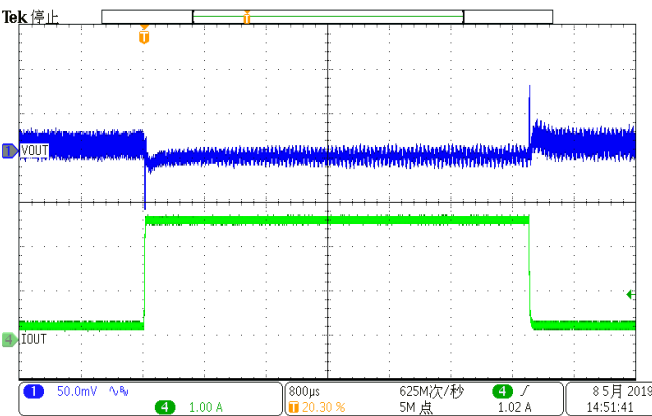


Figure 13. Load Transient
VOUT=3.3V, IOUT=0.3A to 2.7A, SR=250mA/us



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

Layout Guideline

F B54 D

7

EI

F H 9 6

B 8 # H B54 E5F %# EI

F 3

F

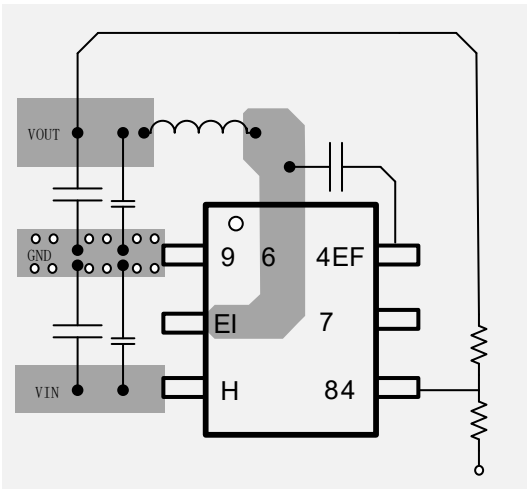


Figure 15. PCB Layout Example

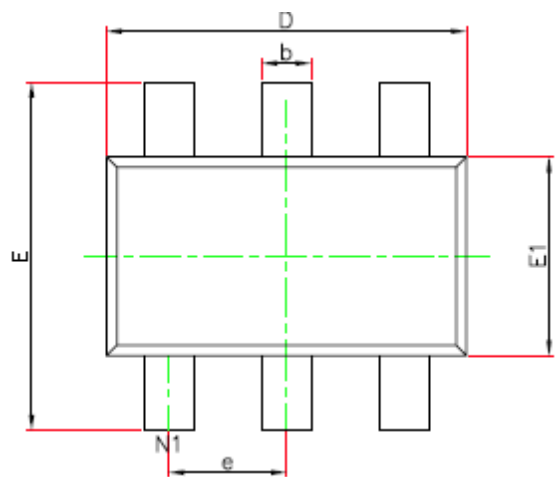
Thermal Considerations

5 # ' 5 5

B₆ 7 *

F₃ B₆ F *

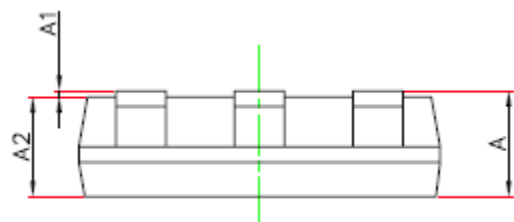
() = $\frac{125 -}{\theta_{JA}}$



FEAF % (FAB H 7I



FEAF % (4AFFA H 7I



FEAF % (E 67 H 7I

NOTE:

6 <7675 A

6

% 3

& F

' 6

(5 B54

SYMBOL	Unit: Millimeter		
	MIN	TYP	MAX
3			# #
3 #			#
3	)		#
6	* '		+'
7	('		+'
7 #	# ' '		# ('
	%		'
	*		
	+' 4E5		
	%		(
	o		* o

