

SCT2334U

SCT2334U

REVISION HISTORY

1 2 7 (3 DJH QXP EHUXIRUSUHYMRXV UHYLMRQ/P D GIUHUURP SDJH QXP EHUX/LQVHFXUJHQ/YHUMRQ
5HYLMRQ &XWVPHU6DP SGN

DEVICE ORDER INFORMATION

ORDERABLE DEVICE	PACKAGING TYPE	STANDARD PACK QTY	PACKAGE MARKING	PINS	PACKAGE DESCRIPTION	MSL
6&7 877 5	7DSH 5HHO		8		) &627	7%

ABSOLUTE MAXIMUM RATINGS

2 YHURSHUDUJ I UH DUWP SHUDMUH XQBWRWHUZH CRWG

) %		, QYHUV LQSWVR VH WDV FRQGFVQFH HUIRUDP SQUHU 7KH WVS RI H WUDDHGHEDFN UHMLVRUGYGHUIURP VH RXSWVR * 1 VHV VH RXSWVRUHU 7KH GHYFH UH XDWV) %YRUUH VR VH LQNUDDUHUHUQH YDOH RI 9 WSEDO
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RECOMMENDED OPERATING CONDITIONS

2 YHURSHUWU IUH DLUMP SHUDMUH WDUH XQWVRWHUZ LVH QVNG

PARAMETER	DEFINITION	MIN	MAX	UNIT
9 ₁	, QSWVRUHUHU WDUH			9
9 ₂₈₇	2 XSWVRUHUHU WDUH			9
7-	2 SHUWU MKFVRQWP SHUDMUH			&

ESD RATINGS

PARAMETER	DEFINITION	MIN	MAX	UNIT
9 ₍₆	+ XP DQ%RG 0 RGHO+ %0 SHU 16, -((& -6 VSHFIEDVRQ DQSLQ/			N9
	& KDQHG GHYFH 0 RGHO& 0 SHU 16, -((& -6 VSHFIEDVRQ DQSLQ/			N9

(1) -((& GFXP HQW(3 WDWVWDW 9 + %0 DQZ VVDHP DQDFWUQ ZLV D WQDUG(6 FRQVRSURFW

(2) -((& GFXP HQW(3 WDWVWDW 9 & 0 DQZ VVDHP DQDFWUQ ZLV D WQDUG(6 FRQVRSURFW

THERMAL INFORMATION

PARAMETER	THERMAL METRIC	FCSOT583	UNIT
5 -	- XCFVRQVR DP EHQVWHUP DQHMWDQFH		& :
-7	- XCFVRQVR VRS FKUDFWUL DMRQ SDUP HNU		
-%	- XCFVRQVR ERDUG FKUDFWUL DMRQ SDUP HNU		
5 - & VRS	- XCFVRQVR FDMH WHUP DQHMWDQFH		
5 - %	- XCFVRQVR ERDUG WHUP DQHMWDQFH		
5 - B(90	- XCFVRQVR DP EHQVWHUP DQHMWDQFH (90		
-7B(90	- XCFVRQVR VRS FKUDFWUL DMRQ SDUP HNU (90		

6&7 SURYGHV 5 - DQG 5 -& QXP EHV/RQ DV UH HUHQH VR HMP DW MKFVRQWP SHUDMUH VR VH GHYFHV 5 - DQG 5 -& DUH QRWD FKUDFWULMVR RI SDFNUH LVHO EXVR PDQ RMHUV WNP GHYHFKUDFWULMVR VFK DV VH GHMJQDQG D RXVR VH SUQNG FLFXW ERDUG 3&% RQZ KFK VH 6&7 8 LV PRQNG DQGH WUDDHQYURCP HQWDFWU 7KH 3&% ERDUG LV D KDWLQ VDWV VROHUG VR VH QDGVR VH 6&7 8 & KDQIQ VH GHMJQRURRQXUDVRQ VH 3&% ERDUG FKUDFWUL VH HIEHQF RI VH KDWLQ DQDQ

WHUHUH VH DFWDC5 - DQG 5 -& 0 HDVXHG RQ- (6 0 HU3&% 7KH YDOHV JLVHQIQWV DQGH DUH RQ YDQGRURFP SDUVRQZ LV RMHUSDFNUHV DQGFDCQRW EH XVHGIRUG-MJQ SXSRVH 7KH VH YDOHV ZHUH DQXONG LQDFRUGDQFH ZLV - (6 DQGVIP XQNGRQD VSHFIEHG- ((& ERDUG 7KH GR QRWVSHUHQVH SHURUP DQFH REVHQGH LQDQDFWDCSSQDVRQ 0 HDVXHG RQ 6&7 WQDUG(90 6&7 8 HPR%RDUG 2 XNUO HU R DQGLQHUO HU R FRSSHUHQHW PP 0 HU3&%

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ELECTRICAL CHARACTERISTICS

9,1 9 7- &a & WSEDOYDOH LV/VWNG XQGHU &

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
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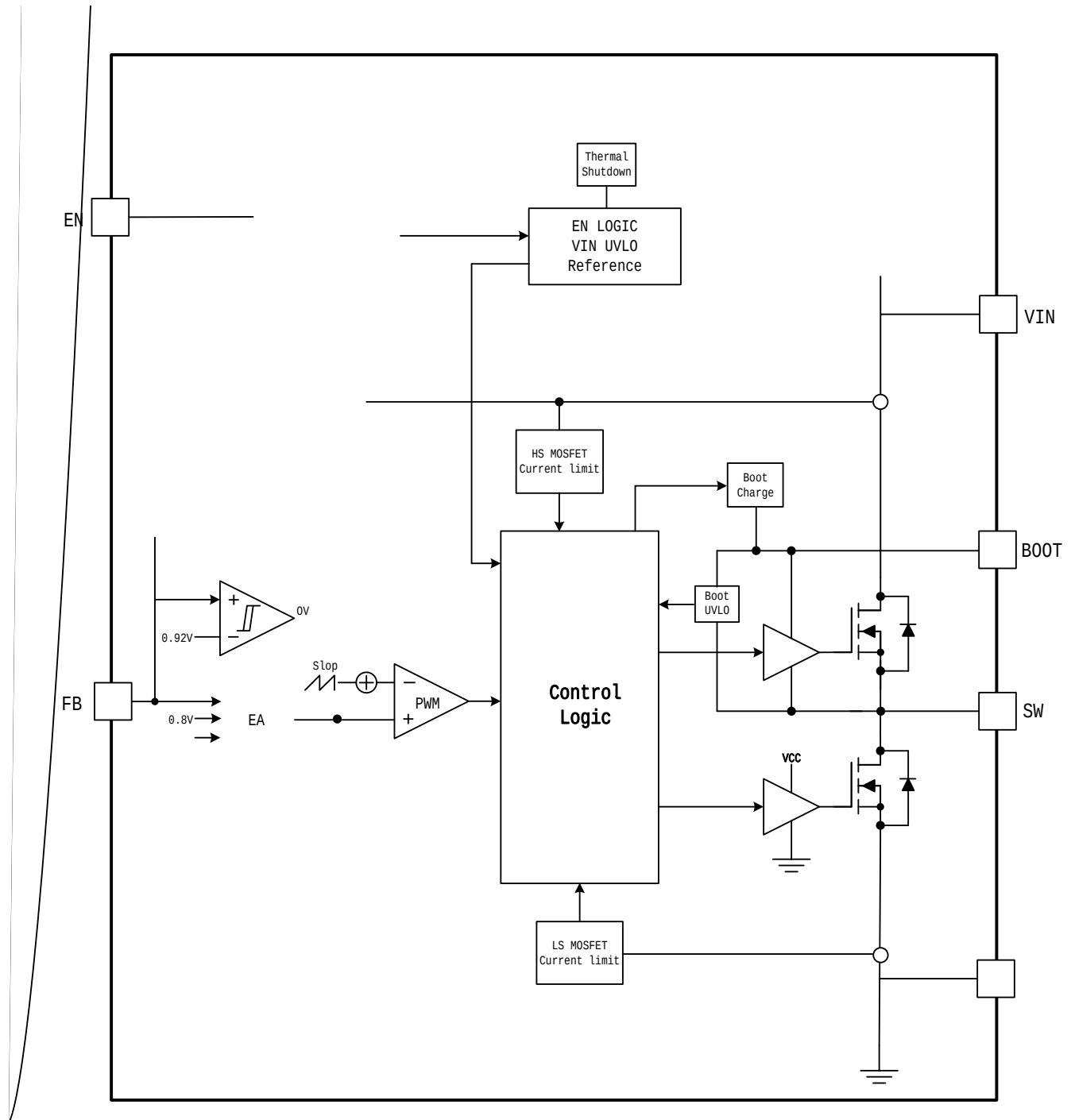
Power Supply

9,1 2 SHUDUJ LSXWROUH 9

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
V _{B0} ,1	0 I _Q P _{XP} V _Z V _{IK} I _{HT} X _H Q _F I _Q 860 P _{RGH}					N+
V _{B0} ,1	0 I _Q P _{XP} R _Q V _P H					QV
V _{B0} ,1	0 I _Q P _{XP} R _I V _P H					QV
V _{B0}	0 D R _Q V _P H					XV
Power Good						
9 3* B89	3RZHUJRRGI OJ XG HUYR OJ H WISSLOJ WUHKRC	POWER GOOD (% of FB voltage)				
		POWER BAD (% of FB voltage)				
9 3* B29	3RZHUJRRGI OJ RY HUYR OJ H WISSLOJ WUHKRC	POWER BAD (% of FB voltage)				
		POWER GOOD (% of FB voltage)				

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FUNCTIONAL BLOCK DIAGRAM



) L J X U H) X C F M R O D O / B F N I D J U D P

OPERATION

Overview

7KH6&7 8 LV D 9 9 LQSW RXSXW(0 , I U H G G O V Q F K U R Q R X V E X F N F R Q Y H U N U Z L W E X L W Q P 5 G V R Q K U J K V G H D G G P 5 G V R Q Q Z V G H S R Z H U 0 2 6) (7 V , V I P S O P H Q W F R Q M D Q M U H T X H Q F S H D N F X U H Q P R G H F R Q M R O V R U H J X O W R X S X W Y R O U H S U R Y G L Q H F H Q W O H D G G B D G W D Q M H Q M H V S R Q M D G G V I P S O L Q V H H W U D O I U H T X H Q F F R P S H Q D M R Q G H M J Q

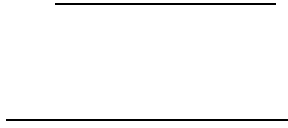
7KH VZ L W K L Q I U H T X H Q F L V D G M D E G I U R P N + V R 0 + W U R X J K U H M V R U V R S V P L H H U M H U V H S R Z H U H I I E I H Q F R U V H H W U D O F R P S R Q H Q V L L H V 7 K H 6 & 7 2 3 3 4 8 I H D M U H V P V V R W M D U W P H V R D Y R L G O U H L Q U V K F X U H Q W 7 K H G M E H D O R V X S S R U W P R Q R O M E W D U X S Z L W S U H E I D V H G R X S X V F R Q G V R Q

7KH (1 S L Q Z L W D S U H F L M R Q W U H V K R G W D W F D Q E H X V H G V R D G M W M H L Q S X W Y R O U H G F N R X W M U H V K R O V Z L W V R H W U D O U H M V R U V R P H M D F F X U D W K U J K H U 8 9 / 2 V W M P U H T X U H P H Q V

6&7 8 D F K I H Y H V U D Q R P V S U H D G V S H F W P P R G X O M R Q H S D Q M R Q F H Q M U H G R Q V H V M W Z L W K L Q I U H T X H Q F 7 K H S X S R V H R V S U H D G V S H F W P L V R H Q P L Q W S H D N H P L M R Q V D W S H F I I E I U H T X H Q F I H V E V S U H D G L Q W M H H P L M R Q V D F U R W D Z I G H U D Q H R I U H T X H Q F I H V U D W H U W D Q D S D U V Z L W I L H G I U H T X H Q F R S H U D M R Q

The SCE g 8 I X O S U R M F V R Q I H D M U H V L C F O G H W H L Q S X W X G H U Y R O U H G F N R X W M H R X S X V R Y H U Y R O U H S U R M F V R Q R Y H U F X U H Q S U R M F V R Q Z L W F F O I E F F O I F X U H Q M P W Q D G G K I E F X S P R G H R X S X W K D U G V K R U S U R M F V R Q D G G W H U P D O K X X R Z Q S U R M F V R Q

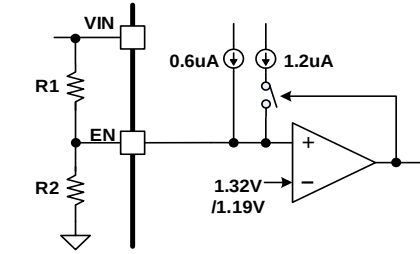
Peak C v 2 i ! nclude i i sprê ú hMhard ò ã



: KHUH

9_{UMH} LVUMQJ WUHKRGR 9LQ89/2

9_{IDQ} LVIDQJ WUHKRGR 9LQ89/2



)LXUH 6 VWP 89/2 E HQDEG YLGH

Output Voltage

7KH 6&7 8 UHJXONV VHIQNUDDUHHUHQFYROUJHDW 9 ZLW VROUDQFHYHUMHRSUDWQJ WHP SHUDVUH
DQG YROUJH UDQIH 7KH RXSXWYROUJH LV VHWE D UHMLRU GYLGHUURP VHI RXSXWQRGH VV VHI) % SLQ ,WLV
UHFRP PHQG HG VV XH VROUDQFHYHUMHRSUDWQJ 8 VH (TXDNRQ VV FDQXON UHMLDQFHYHUMHRSUDWQJ
7R

SCT2334U

MQFRQWP SHUWUHDQEHZ & WHGMEH UHWDWZLNQUDORWWDVSKDVH

APPLICATION INFORMATION

Typical Application

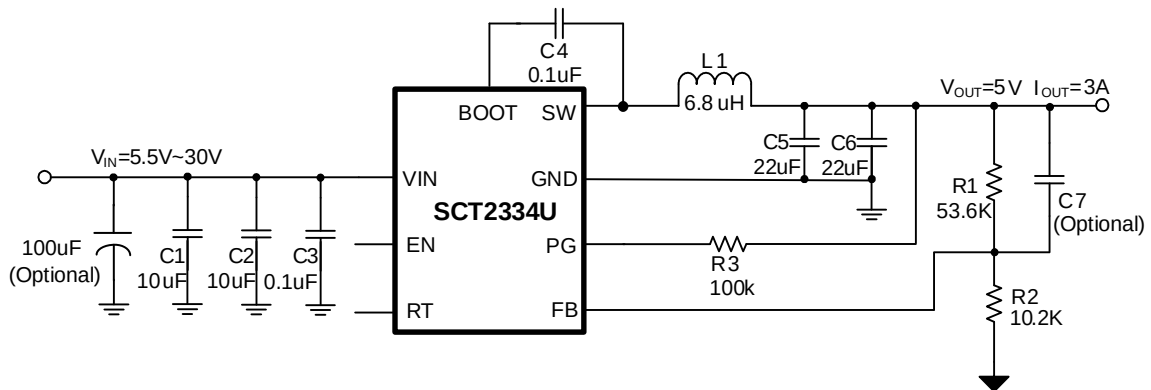


Figure 11. SCT2334U Design Example, 5V Output

Design Parameters

Design Parameters	Example Value
Input Voltage (VIN)	9.1V
Output Voltage (VOUT)	9V
Output Current (IOUT)	9A
Inductor (L1)	6.8uH
Capacitor (C1)	10uF
Capacitor (C2)	10uF
Capacitor (C3)	0.1uF
Capacitor (C4)	0.1uF
Capacitor (C5)	22uF
Capacitor (C6)	22uF
Capacitor (C7)	Optional
Resistor (R1)	53.6K
Resistor (R2)	10.2K
Resistor (R3)	100k

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Output Voltage

7KH RXSWROUH LV VHE DQH WUDQVSRUWV RUGYLGHU
5 DQG 5 LQ WSEDO DSSOLFDWLRQ VFKHP DME
5HFRPH HQGHG 5 UHVLGHQFH LV N 8VH TXDNRQ
WFDXOW 5

) , !

V _{OUT}	R ₁	R ₂
9	.	N
9	.	N
9	.	N

ZKHU

9₅() LV WHHHHGDFN UHHHQFH YROUH WSEDO
9

Switching Frequency

+LJKHUVZ LFKLQ IUTXHGFHV VSSRUWP DQUSURLEVR RXSWWGXFWLV DGRXSWWFDSDFLRV UHVXOW LQ EZHU
YROUH DQG FXUHQWUSSEV +RZHYHU WH KJKHU VZ LFKLQ IUTXHGF FDXHV H WD VZ LFKLQ QW ZKFK
GRZ QJUDGV FROHUV RYH DSRZHU H IELHF DQG WHUP DSHURUP DQFH ,Q WLV GHMJQ D P RGHUW VZ LFKLQ
IUTXHGF R N+ LV VHGFWG WDFKHYH ERW VP DQVORQV L H DQG KJK H IELHF RSHUVRQ

Inducto , resultin

7KH VWDQF XUHQVGR LQJ WURXJK WH LQGXFRULV WH LQGXFRULSSH FXUHQA/SDV WH RXSXVFXUHQA: KHQ VHOFWLQJ DQ LQGXFRUL FKRRVH LW UDNG FXUHQA/VSHFDQ WH VDMXMRQ FXUHQA/DUJHUVLQJ LW SHDN RSHUDMRQ FXUHQA/DGG 506 FXUHQA/DOR GRWEH H FHGHG 7KHUHUH WH SHDN VZLWKLQJ FXUHQA/R LQGXFRUL ,/3(. DGG ,/506 FDQ EH FDGXONGDV LQJ(TXDMRQ DGG(TXDMRQ

: KHUH

,/3(. LV WH LQGXFRULSHDNFXUHQA
 ,287 LV WH & GDGFXUHQA
 ,/33 LV WH LQGXFRULSHDN R SHDNFXUHQA
 ,/506 LV WH LQGXFRUL506 FXUHQA

,QRYHURDGLQJ RU GDG WDMHQVFRQMRQV WH LQGXFRULSHDNFXUHQA/FDQLFUDVH XS R WH VZLWKLQJ FXUHQA/DP LVR WH GHMEH ZKFK LV WSEDO 7KH P RWFRQHUJWH DSSURDFK LV R FKRRVH DQ LQGXFRULZ LW D VDMXMRQ FXUHQA UDQJ UHDMUWDOQ %HDXVH R WH P D LP XP ,/3(. DP LQGE GHMEH WH P D LP XP RXSXVFXUHQA/NDV WH 6&7 8 FDQGHQHUDOR GHSHQVFRQ WH LQGXFRULFXUHQA/VSSH 7KXV WH P D LP XP GHMUGRXSXVFXUHQA/DOR DIIHFW WH VHOFRQR LQGXFRULGH 7KH VP DQ LQGXFRULH/XOV LQ DUJHULQGXFRULFXUHQA/VSSH GDGLQ R D GZHU P D LP XP RXSXVFXUHQA

Input Capacitor Selection

7KH LQGXVFXUHQA/R WH VWS GRZ Q & & FRQHUJULV GLFRQMRQV WHUHUH LWHTXUHV D FDSDFLULV VSSO WH & FXUHQA/R WH VWS GRZ Q & & FRQHUJULZ KLP DQDGLQJ WH & LQGXVROUJH 8VH FDSDFLULV ZLW GZ (65 IRUEHWHUHUHURUP DQFH &HUDP IF FDSDFLULV ZLW 5 RU 5 GHOFWIEV DUH XVDO VJHWHGEHDXVH R WHUHGZ (65 DGGVP DQMP SHUDVUH FRH IIFHQV DQGLVW WRQJO UFRP P HQGHG R XH DQRWHUGZ HUJDOH FDSDFLULV H J X) ZLW VP DQSFNDJH VLH R LQMUJUL IUTXHQ VZLWKLQJ GRVH 3DFH WH VP DQMLH FDSDFLULDV FORV R 9,1 DGG * 1 SLQ/DVSRMEH

7KH YROUJH UDQJ R WH LQGXV FDSDFLULV XWEH UHDMUWDOQ WH P D LP XP LQGXVROUJH GG WH FDSDFLULV XW DOR KDYH D USSH FXUHQA/UDQJ UHDMUWDOQ WH P D LP XP LQGXVFXUHQA/VSSH 7KH 506 FXUHQA/LQ WH LQGXV FDSDFLULVFDQEH FDGXONG XMQJ (TXDMRQ

7KH ZRUWFDVH FRQMRQRFFXU/DV ,1 9287 ZKHUH

) RU VP SDIEDMRQ FKRRVH DQ LQGXV FDSDFLULVZ LW DQ 506 FXUHQA/UDQJ UHDMUWDOQ KDOR WH P D LP XP GDG FXUHQA

: KHQ VHOFWLQJ FHUP IF FDSDFLULV LWQHGV R FRQGHUWH HIFHWH YDOH R D FDSDFLULVGHFUDVH DQ DV WH & EIDV YROUJH DFURWD FDSDFLULVGHFUDVH

7KH LQGXV FDSDFLULVGH YDOH GHMUP LQHV WH LQGXVSSH YROUJH R WH UHJXORU 7KH LQGXVROUJH USSH FDQEH FDGXONG XMQJ (TXDMRQ DGG WH P D LP XP LQGXVROUJH USSH RFFXU/DV GXWF FQ

) RU VLV H DP SBI VZR) 5 FHUP IE FDSDFLUV UDNG IRU 9 LQ SDUDODUH XVHG QG D) IRUKJK IHTXHF IONUQ FDSDFLUV SDFHG DV FGVH DV SRWEDV VVH GHYEH SLQ

,I RXZDQV P DNH VVH 860 ZRUN PRUH VDEI XQGHU GURS RXWKJK GXWF FQ I VVU UFRP P HQGHG VV DGG D OUH HGFWRV FDSDFLUV VVH LQSVV VDELO H VVH LQSVVROUH

Bootstrap Capacitor Selection

) FHUP IE FDSDFLUV XWEH FRQFHNG EHVHHQ %2 2 7 SLQ DQG 6: SLQ IRU SURSHURSHUDV RQ FHUP IE FDSDFLUV LK 5 RUEHVVUJUDGH GHGFVIE LV UFRP P HQGHG 7 KH FDSDFLUV KRXC KDYH D 9 RUKJKHU YROUH UDVQ

Output Capacitor Selection

7 KH VHFVRQ RI RXSV FDSDFLUV LQ I HVRXSVYROUH USSBI LQ VWDG VDV DQG GQG VDCMHQVSHURP DQFH

7 KH RXSVUSSBI LV HWHQDQ FRP SRVHGR VZR SDUV 2 QH LV FDXVGE VVH LQGFVRUFXUHQVUSSBI JRQJ VURXJK VVH (TXLDQV HUH V5H VDCFH (6 5 RI VVH RXSV FDSDFLUV DQG VVH RVHULV FDXVGE VVH LQGFVRUFXUHQVUSSBI FKDUJLQ DQG GLVKDUJLQ VVH RXSV FDSDFLUV 7R DFKIYH VP DQ RXSVYROUH USSBI FKRVH D QZ (6 5 RXSV FDSDFLUV QH FHUP IE FDSDFLUV) RU FHUP IE FDSDFLUV VVH FDSDFVQFH GRP LQNV VVH RXSVUSSBI) RU VP SLEDV RQ VVH RXSVYROUH USSBI FDQEH HVP DWGE (TXDV RQ GHVHG

: KHUH

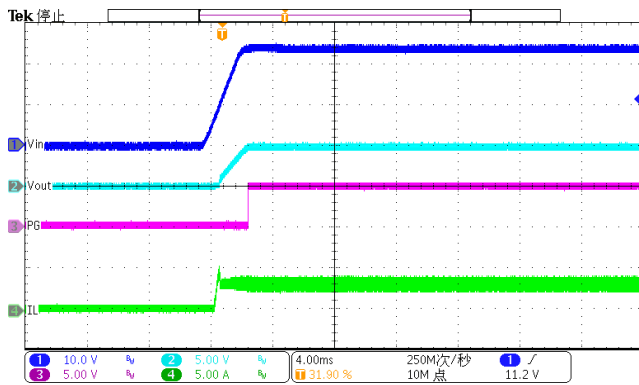
LV VVH RXSVYROUH USSBI
I6: LV VVH VZLVKIQ IHTXHF
/ LV VVH LQGFVQFH RI LQGFVRU
&287 LV VVH RXSV FDSDFVQFH
9287 LV VVH RXSVYROUH
9,1 LV VVH LQSVVROUH

XH VV FDSDFLUV GHJUDQJ XQGHU & EIDV VVH EIDV YROUH FDQ VJ QLEDQ UHGXFH FDSDFVQFH & HUP IE FDSDFLUV FDQ GVH P RVV VVH LQ FDSDFVQFH DWUDNG YROUH 7 KHUH RUH QDYH P DUJLQRQ VVH YROUH UDVQ VV HQXUH DGHTXDW HIFV VVH FDSDFVQFH 7 SIEDQ VZR) FHUP IE RXSV FDSDFLUV ZRUNIRUP RVDSSEFMRQV

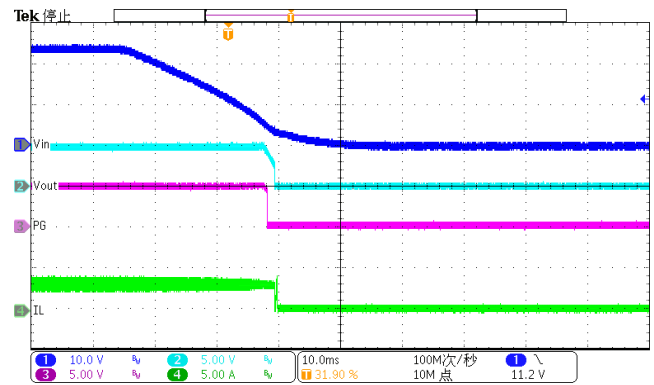
Table 3: Typical External Component Values

Application Waveforms

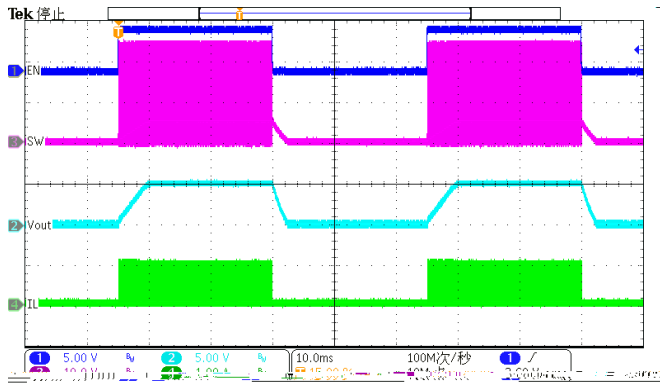
9,1 9 9 2 8 7 9) 6: N XQBW/RW/ILZ/LVH QVWG



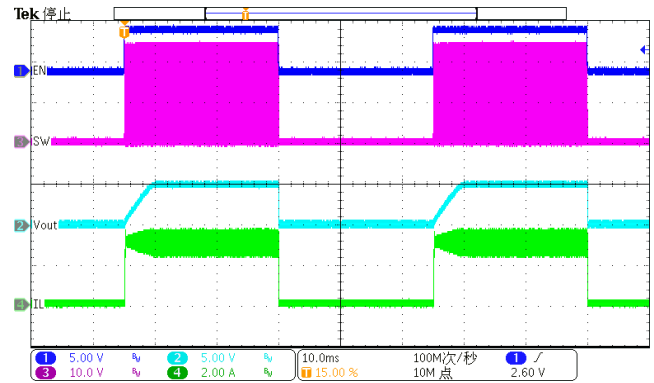
) LJXUH 3RZHUXS ,/2



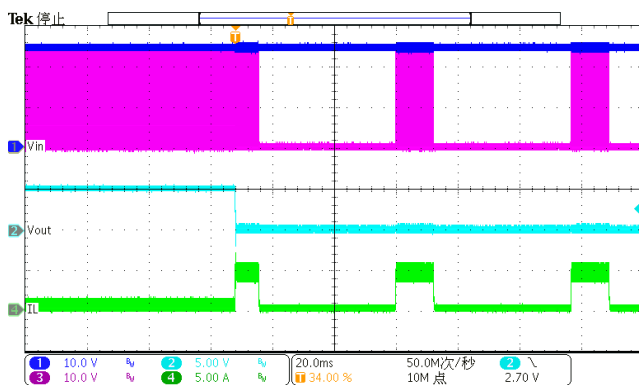
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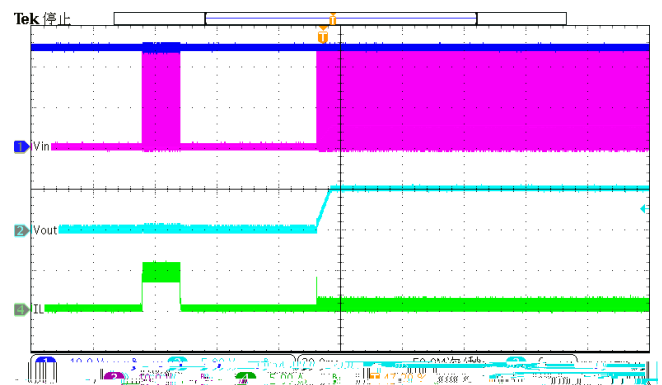
) LJXUH (1 WJJC ,/2



) LJXUH (1 WJJC ,/2



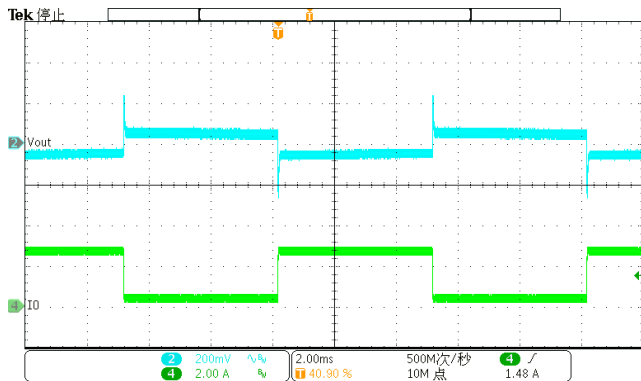
) LJXUH 2 YHU&XUHQ/V URNFWRQ WKDUG VKRUW



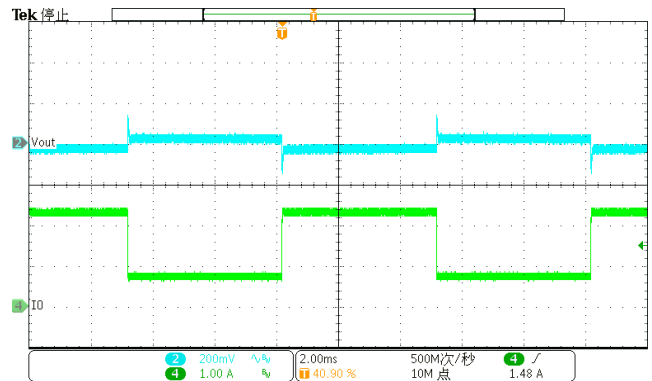
) LJXUH 2 YHU&XUHQ/V HQDVH KDUG VKRUW

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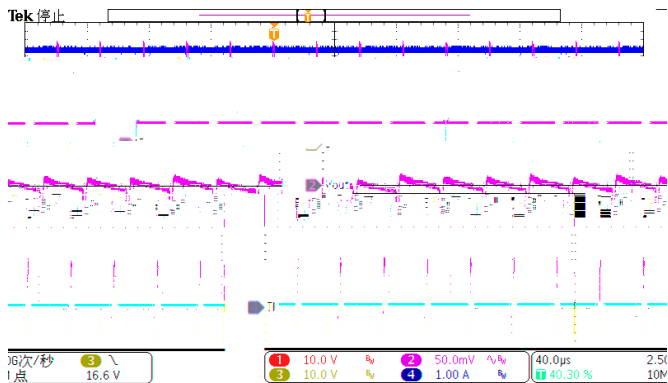
Application Waveforms



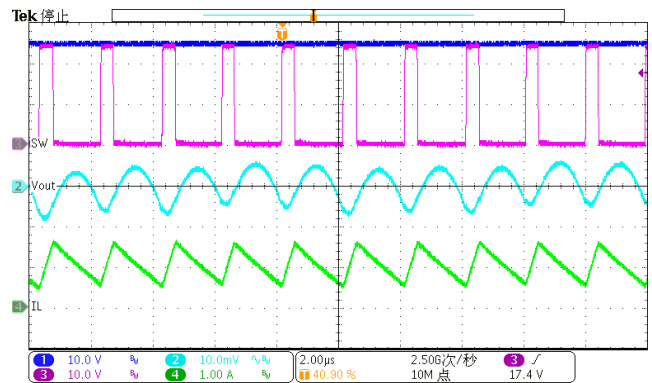
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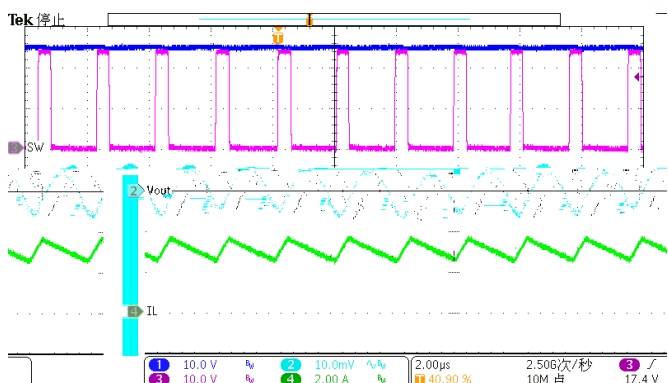
) LJXUH /RDG7UDQM HQW a XV



) LJXUH 2 X5XV6 ISS0 ,/2



) LJXUH 2 X5XV6 ISS0 ,/2



) LJXUH 2 X5XV6 ISS0 ,/2



) LJXUH 7KHUP DO 9,1 9 287

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TAPE AND REEL INFORMATION

