



Wide Vin 50V Non-synchronous Boost/Flyback/SEPIC Controller

FEATURES

x < L_{WPOQ}, Z_{XZ} $\bar{b}$ P, V_{ML} $\bar{Z}$ Y
x , 0. < < L_{WPOb} $\bar{T}$ S $\bar{S}$ P 1Z_{Wb} $\bar{T}$ R=P W%
/ Pa $\bar{T}$ P PX PL_ P2 LOP % . Z
, XMPY: PL $\bar{T}$ R PX PL_ P=L $\bar{Y}$ RP
/ Pa $\bar{T}$ P 3- 8 0>/. W $\bar{T}$ QL $\bar{Z}$ Y 7PaPV $\bar{b}$
/ Pa $\bar{T}$ P. / 8 0>/. W $\bar{T}$ QL $\bar{Z}$ Y 7PaPW -
x B $\bar{T}$ P 4' $\bar{A}$ Z $\bar{W}$ RP=L $\bar{Y}$ RP% A A
x 7Z $\bar{b}$ >S $\bar{O}$ Z $\bar{b}$ Y. PY_
x 7Z $\bar{b}$ < P NPY: PL $\bar{T}$ R. PY%
x 1PPO $\bar{M}$ LV=PQ PYNP AZ $\bar{W}$ RP
x , QJ $\bar{L}$ MP>b $\bar{T}$ NST $\bar{R}$ 1 P PY $\bar{N}$ d% 63e $\bar{Z}$
8 3e
x 4'PRL $\bar{P}$ O1 P PY $\bar{N}$ d / $\bar{T}$ SP $\bar{Q}$ 08 48 $\bar{T}$ RL $\bar{Z}$ Y
x 0c $\bar{P}$ $\bar{Y}$ LW P PY $\bar{N}$ d>d $\bar{N}$ S $\bar{Z}$ YN
x 0c $\bar{P}$ $\bar{Y}$ LWZX PY L $\bar{Z}$ Y
x WP>VT $\bar{T}$ R 8 ZOP
x > Z_ $\bar{L}$ OOT $\bar{Z}$ YLW $\bar{W}$ P. ZX PY L $\bar{Z}$ Y
x X 4'P $\bar{Y}$ LW $\bar{Z}$ Q $\bar{L}$ $\bar{T}$ KP
x 4'PRL $\bar{P}$ O ZPN $\bar{Z}$ Y1PL_ P
. $\bar{Z}$ Y $\bar{L}$ Y PLV. PY_ ZPN $\bar{Z}$ Y SP SZ $\bar{W}$
: aP 4' $\bar{A}$ Z $\bar{W}$ RP
: $\bar{L}$: aP aZ $\bar{W}$ RP ZPN $\bar{Z}$ Y
, QJ $\bar{L}$ MP YOP aZ $\bar{W}$ RP 7Z $\bar{N}$ Z $\bar{L}$
3 $\bar{T}$ N : aP 7ZLO ZPN $\bar{Z}$ Y
SP XLW $\bar{S}$ $\bar{O}$ Z $\bar{b}$ Y ZPN $\bar{Z}$ Y% .
x 8>: 7 XX XX

APPLICATIONS

x 8 W $\bar{Z}$ $\bar{L}$ $\bar{V}$ MLNV
x 70/ - $\bar{T}$ > W
x Z $\bar{L}$ MP> PLVP > W
x -L Pd Z $\bar{b}$ PPO-ZZ $\bar{L}$ MLNV>0 4 L $\bar{V}$ ML $\bar{Z}$ Y

DESCRIPTION

SP >. < CPa $\bar{T}$ P $\bar{T}$ L b $\bar{T}$ P $\bar{T}$ Y $\bar{L}$ Y
d $\bar{N}$ S $\bar{Z}$ Y $\bar{Z}$ MZZ $\bar{N}$ ZY Z $\bar{W}$ W SP CPa $\bar{T}$ P $\bar{N}$ LY MP PO
 $\bar{T}$ Y-ZZ $\bar{L}$ >0 4 LY01 $\bar{V}$ MLNV $\bar{Z}$ YaP $\bar{P}$

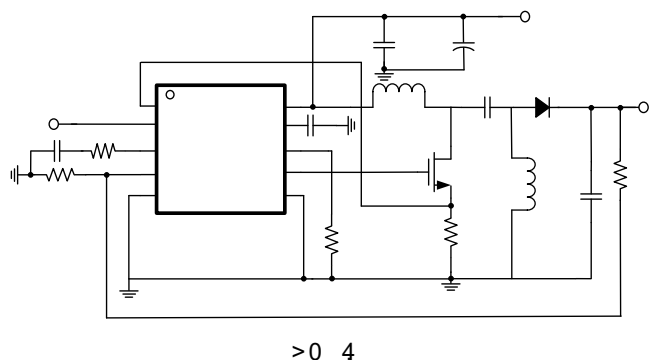
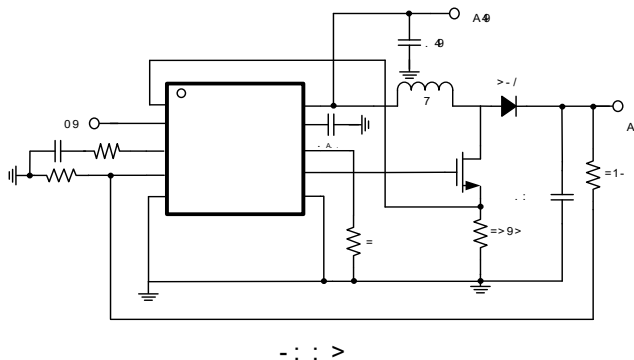
SP b $\bar{T}$ NST $\bar{R}$ QP PY $\bar{N}$ d ZQSP>. < CPa $\bar{T}$ P $\bar{N}$ LY
MPLQJ $\bar{P}$ O $\bar{Z}$ LYd aLWP MPb PPY V3e LY0 8 3e
M $\bar{d}$ $\bar{T}$ RL $\bar{T}$ RW $\bar{P}$ c $\bar{P}$ $\bar{Y}$ LWP $\bar{T}$ $\bar{Z}$ Z M $\bar{d}$ d $\bar{N}$ S $\bar{Z}$ Y $\bar{b}$ $\bar{T}$ R
 $\bar{T}$ $\bar{Z}$ LYPc $\bar{P}$ $\bar{Y}$ LW $\bar{W}$ W. PY_XZOP $\bar{N}$ ZY ZW Za $\bar{T}$ P
 $\bar{P}$ $\bar{Z}$ MLY $\bar{b}$ $\bar{T}$ S LY0 $\bar{L}$ Y $\bar{P}$ Y $\bar{P}$ $\bar{Z}$ Y $\bar{P}$ $\bar{T}$ Y $\bar{L}$ OOT $\bar{Z}$ Y
 $\bar{Z}$ Nd $\bar{N}$ W M $\bar{d}$ Nd $\bar{N}$ W $\bar{N}$ PY_ $\bar{V}$ W $\bar{T}$ YR. PY_ $\bar{V}$ W $\bar{T}$ $\bar{T}$
LQJ $\bar{L}$ MP $\bar{S}$ Z RSLYPc $\bar{P}$ $\bar{Y}$ LWP $\bar{T}$ $\bar{Z}$

SP >. < $\bar{T}$ LY 0 $\bar{V}$ W $\bar{N}$ ZXLRYP $\bar{T}$ $\bar{N}$ 4'P $\bar{Q}$ PYNP
08 4 QPY $\bar{O}$ W $\bar{N}$ ZY Z $\bar{W}$ W b $\bar{T}$ S $\bar{T}$ K WXPY $\bar{T}$ R $\bar{Z}$ $\bar{T}$ K $\bar{b}$ P
OP $\bar{R}$ Y $\bar{Q}$ 08 4 $\bar{P}$ O $\bar{N}$ ZY SP>. < $\bar{Q}$ $\bar{L}$ $\bar{P}$
1 P PY $\bar{N}$ d > $\bar{P}$ LO > $\bar{P}$ N X 1>> b $\bar{T}$ S $\bar{U}$ $\bar{T}$ P $\bar{T}$ R
LY ZQSP b $\bar{T}$ NST $\bar{R}$ QP PY $\bar{N}$ d LY0 XZO W $\bar{Z}$ Y $\bar{L}$ $\bar{P}$
ZQ b $\bar{T}$ NST $\bar{R}$ QP PY $\bar{N}$ d $\bar{Z}$ $\bar{P}$ O $\bar{N}$ P $\bar{S}$ P $\bar{N}$ ZY0 $\bar{N}$ P
08 4

SP>. < CPa $\bar{T}$ P $\bar{S}$ L M $\bar{W}$ Y $\bar{Z}$ PN $\bar{Z}$ Y $\bar{Q}$ $\bar{L}$ $\bar{P}$
 $\bar{N}$ SL $\bar{S}$ P XLWS $\bar{O}$ Z $\bar{b}$ Y $\bar{S}$ Z $\bar{N}$ TN $\bar{T}$ $\bar{Z}$ PN $\bar{Z}$ YLYO
Za $\bar{P}$ aZ $\bar{W}$ RP ZPN $\bar{Z}$ Y Z $\bar{b}$ P La $\bar{T}$ R $\bar{S}$ $\bar{O}$ Z $\bar{b}$ Y XZOP
 $\bar{P}$ O $\bar{N}$ P $\bar{S}$ P $\bar{Z}$ $\bar{L}$ W W $\bar{N}$ PY_ $\bar{Z}$, 4'PRL $\bar{P}$ O
 $\bar{N}$ PY_ $\bar{W}$ P $\bar{N}$ ZX PY L $\bar{Z}$ Y $\bar{T}$ K W $\bar{P}$ $\bar{S}$ P OP $\bar{R}$ YLYO
 $\bar{Q}$ YPP $\bar{O}$ $\bar{Q}$ $\bar{P}$ N $\bar{T}$ $\bar{L}$ $\bar{V}$ ML $\bar{Z}$ Y $\bar{N}$ LY MP $\bar{T}$ NPL $\bar{P}$ O
 $\bar{T}$ RL $\bar{T}$ RW $\bar{P}$ $\bar{T}$ $\bar{Z}$

SP CPa $\bar{T}$ P $\bar{T}$ LaL $\bar{W}$ MP $\bar{T}$ Y $\bar{L}$ 8>: 7 XX XX
LNLRP

TYPICAL APPLICATION



REVISION HISTORY

9: 0% LRP Y XMP QZ PaZ PaTZY XLd OQZ QZX LRP Y XMP TY_SPN PY_aP ZY
 =PaTZY %PWL PO_Z 8 L VP_
 =PaTZY % Z PN_ A7: P T_Z OQZ P L_ZY
 =PaTZY % CO- L AZWRP PN_ZY
 =PaTZY % QLP / PaTP: OP 4QZ XL_ZY
 =PaTZY % QLP, MZWP 8 LcTK X =L_TR LOO8>7 TY / PaTP: OP 4QZ XL_ZY QLP 1R P LYO

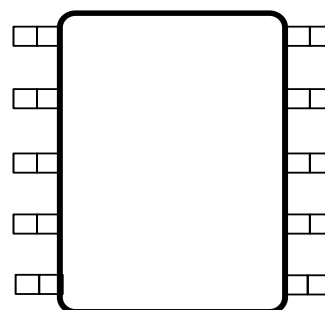
DEVICE ORDER INFORMATION

>.	<8=/=	L P =PPW		<		7PLO XX XX W_N8>:

ABSOLUTE MAXIMUM RATINGS

: aP Z PL TRQPLT PX PL_ P YW ZSP bTP YZPO			
A4 A7: J09			A
A. . / = / . aZWRP			A
A. . / = LY PY_Q ' Y			A
409 .: 8 1- 1, >D9. >/			A
PLV/ TP : _ _ PY_			,
5 YN_ZY PX PL_ P			.
> Z LRP PX PL_ P > 2			.

PIN CONFIGURATION



> P P MPdZYO SZ P WPO YOP , MZWP 8 LcTK X =L_TR XLd NL P OPaTP P XLYPY_QLXLRP SP OPaTP T YZ_R L LLYPPO_Z
 QYN_ZYZ _TP ZQT =PNZXXPYOPO: PL_ZY. ZYOTZY
 2 LLYPPOMI OP TY YZ_P PO TY ZO NZY
 SP 4 TMMOP ZaP PX PL_ P ZPN_ZY Z ZPN SP OPaTP O TR ZaP WLO NZYOTZY 5 YN_ZY PX PL_ Pb TWPcNPO
 bSPYZaP PX PL_ P ZPN_ZYT LN_TP . ZYTY Z Z PL_ZYLMZaP SP PNQOXLcTK X Z PL_TRUYN_ZY PX PL_ Pb TW
 PO NP WTP

PIN FUNCTIONS

409		. PY PY P TY _ TY . ZYYPN_Z_SP Z TP TP ZQSPN PY PY P P T Z SZ RSL SZ LS
A7: J09		YOP aZWRP WNV ZRLXXTR TY SP NZYaP P L LYO S QZb Y WpWNLYMP ZRLXXPOMINZYYPNTR ST TY Z SP WaZWRP SZ RSL P T Z OQZP ST TYX YZ MP WQZL TR . ZYYPN ZA4 TY QYZ PO
.: 8		: _ ZQ SP TY P YLW_LYNZYONLYNP P Z LX WP . ZYYPN SP WZ NZX PYL ZYNZX ZYPY MPbPPY ST TYLYORZ YO
1-		4aP TR TY _ZQSP P Z LX WP . ZYYPN_L aZWRP OQZP QZX SP Z _ Z ST TY Z P_Z _ aZWRP SP OPaTP PR WP 1- aZWRP Z SP TY P YLW PQ PYNPaLWP ZQ A d TLW
, 29/		, YL WRRZ YO TY

PIN FUNCTIONS (continued)

1, >D9. >/		>b TINSTYR QP PYNd P TYR TY SP b TINSTYR QP PYNd T ZRLXXPO M L TYRW P T Z MPb PPY ST TYLYO, 29/ SP TY P YLWZNVNLYMP dYNSZYEP O ZLYPc P YLWZNV, SRS WbPVZY ST TY QZ b TW _ Y SP OPaTP ZQ LYO SP OPaTP b TWSPYOLb , QZX SP W/d TLW
29/		Zb P R Z YO TY
/ =		9 NSLYPW8: >10 RL P O TP Z _ _ . ZYYPN OTPN W Z SP RL P ZQ SP 9 NSLYPW8: >10 SZ RSL SZ Wb TYO NL YNP L S
A. .		: _ _ ZQ SP TY P YLVA. . PR WZ LYO W aZW RP TY ZQ SP 8: >10 O TP . ZYYPN L NPLXNM L L NL LNTZ QZX ST TY Z 29/
A4		Zb P W TY _ TY. ZYYPN L NPLXNM L L NL LNTZ QZX ST TY Z 29/

RECOMMENDED OPERATING CONDITIONS

: aP Z PL TYRQPPLT PX PL P LYRP YW Z SP b TP YZ PO

A4	4Y aZW RP LYRP			A
A. .	A. . aZW RP LYRP			A
5	: PL TYRU YN ZY PX PL P			.

ESD RATINGS

A0>/	3 XLY- ZQd 8 ZCPW8 - 8 P , 0. <			VA
	. SL RPO / PaTP 8 ZCPW / 8 P , 0. <			VA

THERMAL INFORMATION

= 5.	5 YN ZY Z LXMPY SP XLWP T LYNP			. B
= 5. Z	5 YN ZY Z NL P Z SP XLWP T LYNP			
= 5-	5 YN ZY Z MZL O SP XLWP T LYNP			

>. ZaTP = 5 LYO= 5 Y XMP ZYW L PQ PYNP ZP XLPU YN ZY PX PL P ZQ SP OPaTP = 5 LYO= 5 L PYZ L
NSL LNP T NZQ LNL RP T P W M ZQXLYd Z SP d PX WbP WSL LNP T N NSL SP OP RYLYO WbZ ZQ SP TY PONTIN T
MZL O . - ZYb STS SP>. < T XZ YPO SP XLWLO TP LYOPc P YLWP YaTZYXPYL WQNZ SP . - MZL OT L SPL
TYV SL T ZOP PO Z SP WLO LYO SP XLWLO ZQ SP>. < . SL YRTYR SP OP RYZ NZYCR L ZY ZQ SP . - MZL ONSL YRP
SP PONTYND ZQ SP SPL TYVLYO SP PQ P SPLN LW 5 LYO= 5

ELECTRICAL CHARACTERISTICS

A₀(A 5(. i . d TLW₀LWP L P P PO YOP .

A ₀	: P L ₀ T ₀ R ₀ T ₀ _aZ ₀ W ₀ RP			A
A ₀ J A7:	4 ₀ _ A7: 3d P P T	A ₀ T ₀ R ₀		A XA
4 ₀	>S _OZ ₀ b YN PY_ ₀	A ₁ , >D. 9 >/ (A Z A A7: J09(		,
4 ₀	< P NPY_N PY_QZX A ₀	YZ W LO YZ b T ₀ N ₀ ST ₀ R A ₁ -(A		,
4 ₀ 7D	> W ₀ . PY_ ₀	=1, >D9. >/ (V b T ₀ N ₀ ST ₀ R YZ W LOLYO b TSZ _Pc P YL ₀ V ₀ : >10		X,

A ₀	4 ₀ P YLW ₀ W ₀ PL PR W ₀ Z	A ₀) A		A
A ₀ J a ₀ W				A
A ₀ J a ₀ W Sd				XA
A ₀	A ₀ . >Z N ₀ T ₀ R ₀ N PY_V ₀ K ₀ T ₀			X,

A A7: >09	YOP aZ ₀ W ₀ RP 7Z ₀ N ₀ Z _ P ₀ Q ₀ PYN ₀ P aZ ₀ W ₀ RP	A A7: LX T ₀ R		A
4 A7:	A7: Z NPN PY_ ₀			,
A A7: >/	A7: S _OZ ₀ b YaZ ₀ W ₀ RP	A A7: LX T ₀ R OZ ₀ b Y		A

A=01	=P ₀ Q ₀ PYN ₀ P aZ ₀ W ₀ RP ZQ ₁ -			A
4-	1- T ₀ Y ₀ W ₀ L ₀ RP ₀ N PY_ ₀	A ₁ -(A		Y,
2 ₀	0 Z LX W P _LY NZYO N ₀ L ₀ YN ₀ P	A ₀ : 8 (A		>
4: 8 J>=.	0 Z LX W P XLc ₀ T ₀ X X Z NP N PY_ ₀	A ₁ -(A=01 XA A ₀ : 8 (A		,
4: 8 J>96	0 Z LX W P XLc ₀ T ₀ X X TV N PY_ ₀	A ₁ -(A=01 XA A ₀ : 8 (A		,
A: 8 J ₃	. : 8 SRSN W X	A ₁ -(A		A
A: 8 J ₇	. : 8 W D N W X	A ₁ -(A		A

=/>: 9J :	/ W P b T ₀ NSZY P T ₀ L ₀ YN ₀ P Z	4=(,		
=/>: 9J7: B	/ W P b T ₀ NSZY P T ₀ L ₀ YN ₀ P MZ_ZX	4=(,		

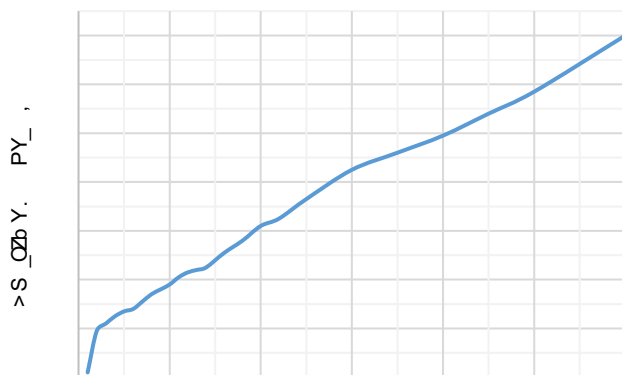
A PYP	. PY PY P SP SZ W			XA
A>7	4 ₀ P YLW ₀ ZX PY L_ZY=LX aZ ₀ W ₀ RP			XA
. 34. / 07	3 T ₀ N XZOP LN ₀ EL_ZYCP W d	. W N W N W N W b T ₀ SN PY_ V W K T ₀ YR MPQ P STN Z W T ₀ KPLN ₀ EL PO >>JQZYP		N W N W

ELECTRICAL CHARACTERISTICS (continued)

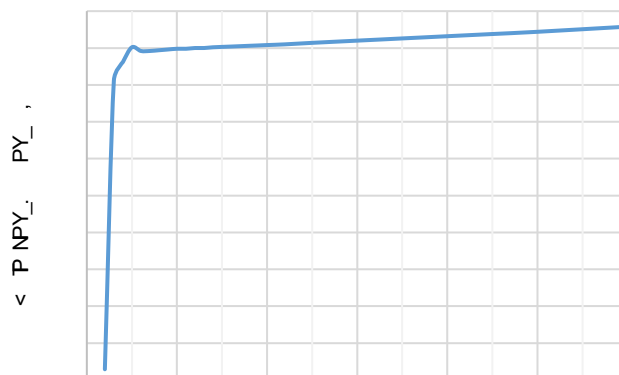
A₀(A₅(. i . d TLWLWP L P P PO YCP .

. 34 .	3 TN XZCP ZQ TKPLQ LN EL_ZY	. ZNVNINP b TS YZ b TINSTR QZb POMI >> PVL P		NdINP
>>	>ZQ L _ TKP			X
1>B	>b TINSTRQP PYnd	=1, >D9. >/ (V		V3e
1>>	1 P PYnd> PLO=L YRP			
V>D9J34	S P SZWQZ >d'NS ZYEL_ZYZY 1, >D9. >/ TY	>d'NS ZYEL_ZYaZW RP T TYR		A
V>D9J7:		>d'NS ZYEL_ZYaZW RP Q WWR		A
/ 8, c	8 LcTX X / _d. dNP	=1, >D9. >/ (V		
. 9J8 0	8 TYK X ZY TKP	1 b (V3e		Y
A>/J34	>S_QZb Y TYLWSP SZWZY 1, >D9. >/ TY	>S_QZb YaZW RP T TYR		A
A>/J7:		>S_QZb YaZW RP Q WWR		A
4/J762	1, >D9. >/ TY7PL ' ' 8			

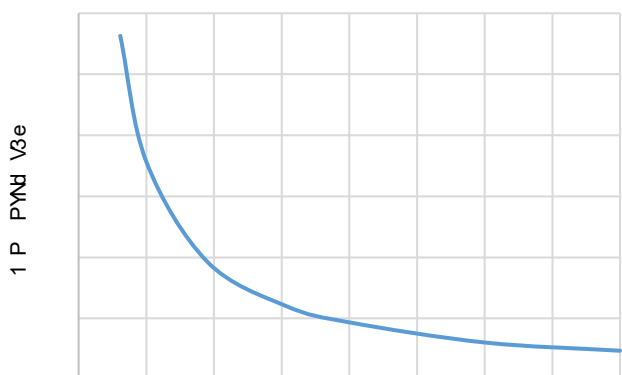
TYPICAL CHARACTERISTICS



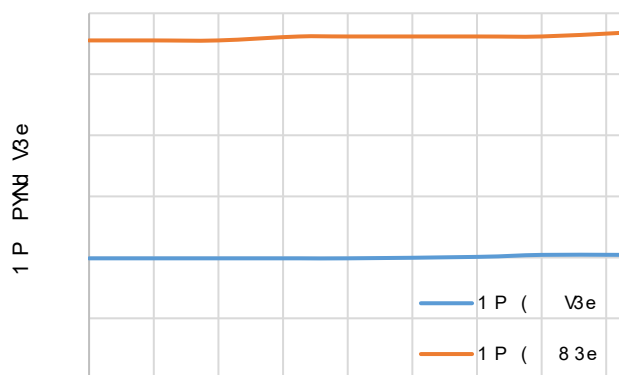
4Y _AZWRP A
1R P 4/ a 4Y _AZWRP



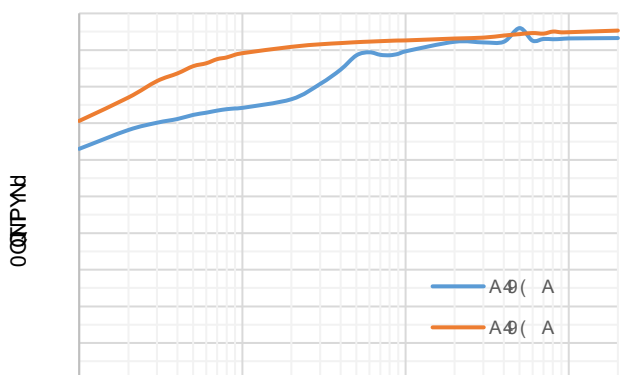
4Y _AZWRP A
1R P 4 a 4Y _AZWRP



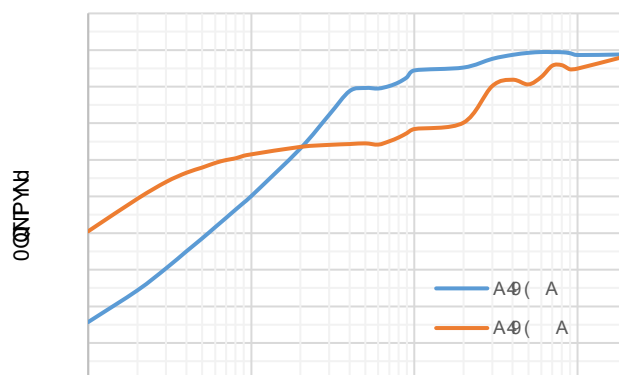
=P_TZ = V
1R P >b T_NSTR 1 P PYnd a =



PX PL_P°
1R P >b T_NSTR 1 P PYnd a PX PL_P

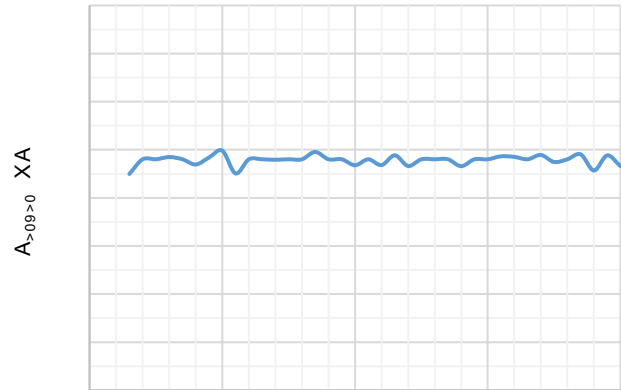


: _ _ PY_
1R P 00NPYnd a 7ZLO. PY_-ZZ_A (A

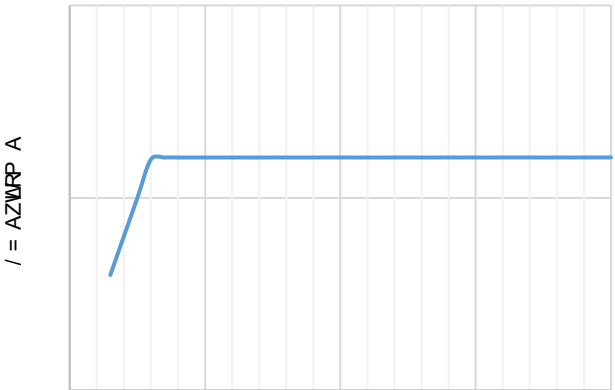


: _ _ PY_
1R P 00NPYnd a 7ZLO. PY_>0 4 A (A

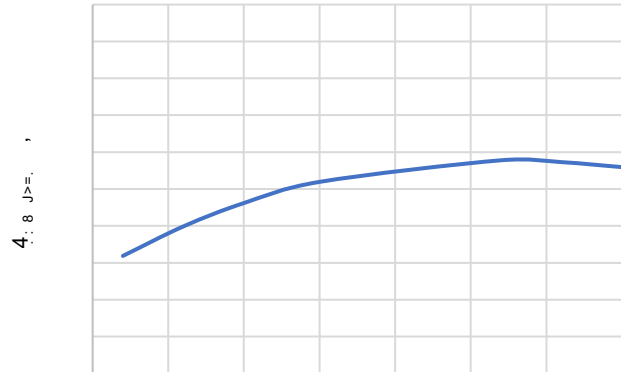
TYPICAL CHARACTERISTICS



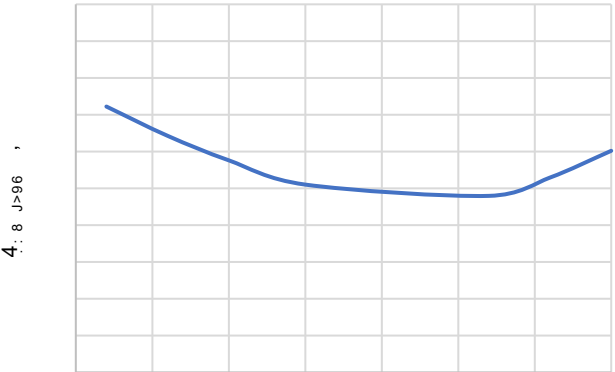
4/ _AZWRP A
1R P . PY_>PY P SP SZW a 4/ _AZWRP



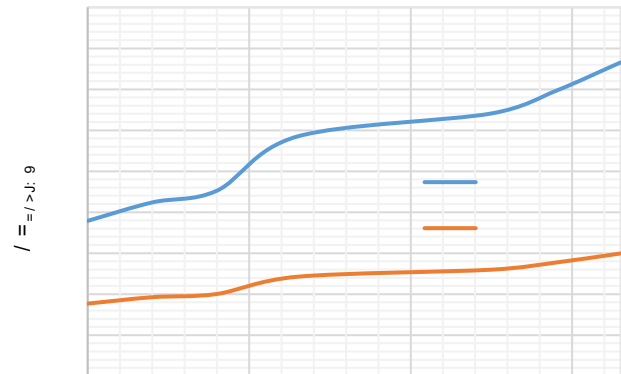
4/ _AZWRP A
1R P / = AZWRP a 4/ _AZWRP



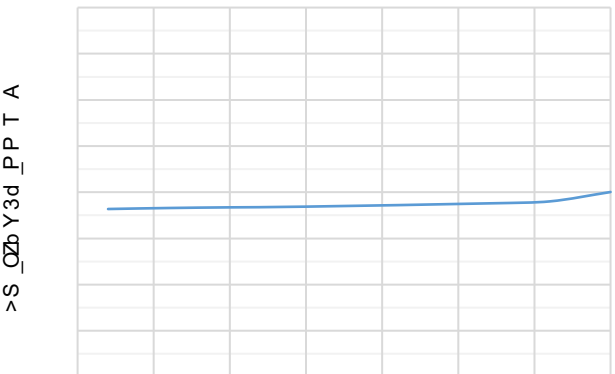
PX PL_ P °.
1R P . : 8 >Z NP. PY_a PX PL_ P



PX PL_ P °.
1R P . : 8 >TV. PY_a PX PL_ P

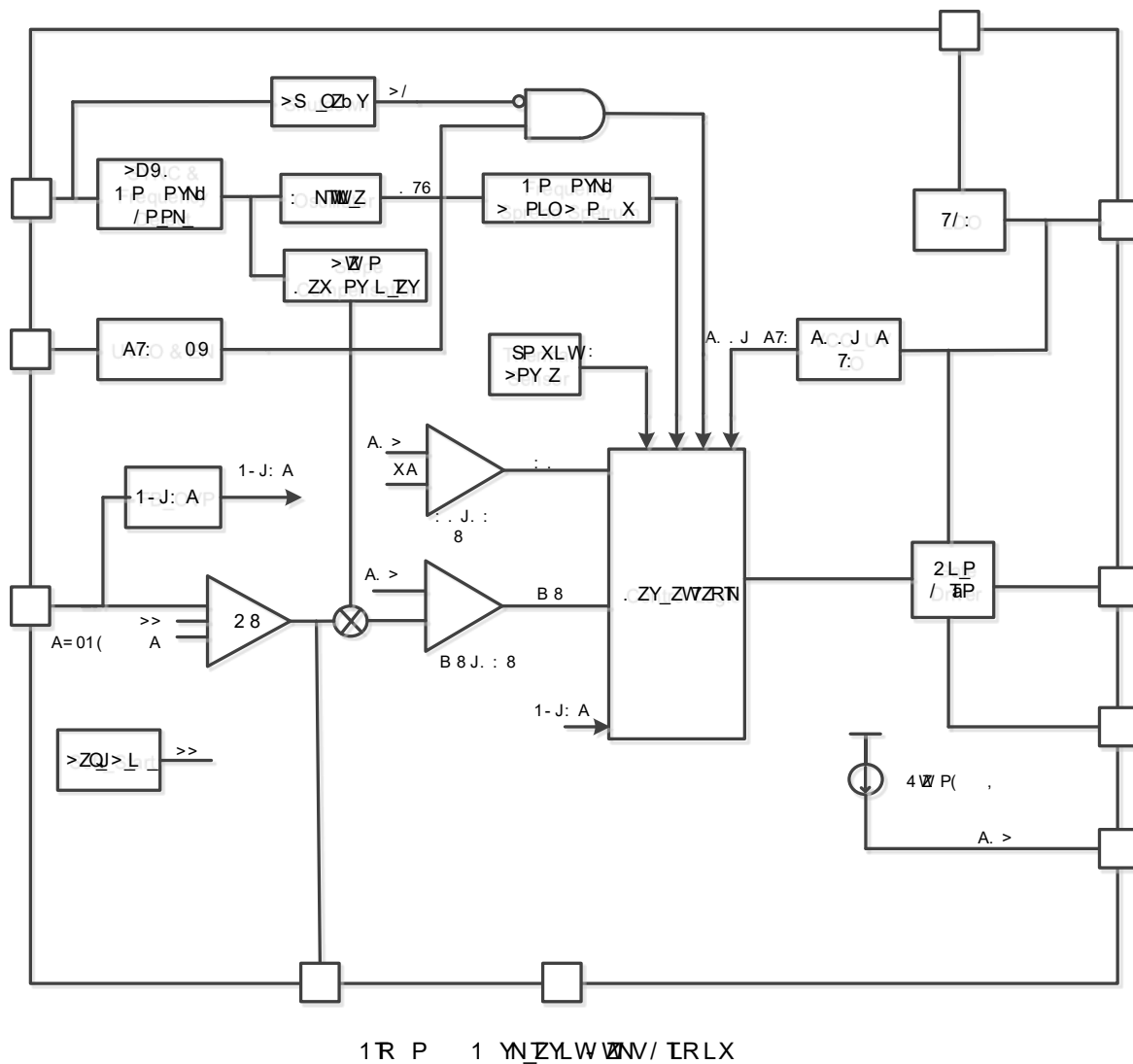


PX PL_ P °.
1R P / = =P T_LWP a PX PL_ P



PX PL_ P °.
1R P >S_Qb Y SP SZW 3d_PPT a PX PL_ P

FUNCTIONAL BLOCK DIAGRAM



OPERATION

SP>. < OPaTP T L b TP TY _LYRP YZY dVNSZYZ MZZ _NZY_ZWV SL_ P PLVN PY_XZOP
NZY_ZW SP OPaTP NLYMP POTVMZZ _>0 4 LYOOVMLNV_Z ZVZRP

4YL_d TLWV VML ZYNTN T SP PLVN PY_SZ RS SP P c_P YLV8: >10 T PY PO SZ RSLYP c_P YLWPY P
P T Z SP aZW/RP LNZ ST P T Z T QOTYZ SP 49> TY ST aZW/RP T QOTYZ SP Z TAP TY ZQ SP
B 8 NZX L L Z SP Z _aZW/RP T LWZ PY PO SZ RSLYP c_P YLV8 POMLV P T Z OaTP YP b Z VLYOQO
TYZ SP P Z LX WLP YPRL AP TY SP Z _ZQ SP P Z LX WLP : 8 TY T LOOPO Z SP W/P
NZX PY L ZY LX LYOQOTYZ SP YPRL AP TY ZQ SP B 8 NZX L L Z , SP L ZQLYd b TNSTYRNdNWP SP
Z NTW/Z P SP => WNS TYR SP b TNSVZTNMZN ST Q NP L SRS RYLWZY SP / = TY RL P ZQ SP P c_P YLW
8: >10 LYO SP P c_P YLV8: >10 Y ZY B SPY SP aZW/RP ZY SP Z TAP TY ZQ SP B 8 NZX L L Z
PcNPPO SP YPRL AP TY SP => WNS T P P LYO SP P c_P YLV8: >10 Y ZQ SP aZW/RP PY POLNZ
SP PY P P T Z RPYP L W/NZYLT TY Z YZTP TP SP P TP NLYQ NP SP B 8 NZX L L Z Z P P
SP => WNS PXL PW Z PaPY SP P TP QZX P P TYR SP WNS L MMYVZ NTN T TY TP SP 4 PaPY
SP B 8 NZX L L Z QZX P P TYR SP WNS Q L SZ O L ZYLQ SP WNS T P ST O L ZYT NLWNO SP
MMVYR TY P aLVYOT PNTPOL XTYK XZY TP TY SP 0VN TLW SL LNPT T N PNZY YOP Pc_PXPW
VRS VLOZ YZ VLO NZYOTZY SP PYP Rd CPWP PO Z SP Z _NL LNTZ b SPY SP P c_P YLV8: >10 TY ZY
O TYR SP MMVYR TY P aLVYOT XZP SL Y b SL T CPWP PO Z SP VLO , Y ZaP aZW/RP NZX L L Z TY TP SP
>. < PaPY SP Z _aZW/RP QZX TYR YOP SP P NZYOTZY SP ZaP aZW/RP NZX L L Z PY P
SP QPOMLV 1- TY aZW/RP LYO P P SP => WNS SP WNS PXL TY TY P P LP YWSP Z _CPNd Z
SP YZX TLW VLP

SP>. < b Z V L_ WP VT XZOP Z Q SP TNPL P SP P ONPYNd TY VRS VLO NZYOTZY

SP P NPY_N PY_ZQ>. < T , d TLW YOP YZ VLO NZYOTZY LYO YZ b TNSTYR / TLMYR SP
OPaTP SP d TLW W S QZb YN PY_ZYA4 TYT ,

SP>. < SL ZaP aZW/RP ZPNZY: A Q SP Z _aZW/RP: A T PY POL SP QPOMLV TY 1-
4L LYd TP SP aZW/RP L SP QPOMLV TY TP Z A d : A T TRP PO: A b TML P SP / = TY Z
RZ Vb Q NTYR SP Zb P 8: >10 ZQB TS SP 8: >10 ZQ SP Z _aZW/RP b TMDZ SP>. < MPRTY
b TNSTYR LRL TY b SPY SP QPOMLV aZW/RP PLNSP A d

SP TY P YLVML ZQ SP>. < NZXP QZX PTSP SP TY P YLVML aZW/RP RPYP L Z Z OTPN V/QZX SP
aZW/RP L SP A4 TY , TY aZW/RP Vb P SL Y A SP TY P YLVML T SP TY aZW/RP LYOL aZW/RP
LMZaP A SP TY P YLVML aZW/RP RPYP L Z ZQ SP>. < ZaTP SP ML SP RL P O AP WaZW/RP
A . P TP LY P c_P YLVML L NL LNTZ =PNXXPYO A . NL LNTLYNP T 1 QZ YZ WNP NL LNTLYNP
PcNPPOTYR 1 / ZYZ ML SP A . TY ML LY P c_P YLVML aZW/RP Z NP

SP>. < P L N PY_XZOP NZY_ZWNSXP SP XLTYLOaLYLRP ZQN PY_XZOP NZY_ZW P TYSP PY
NdNWM NdNWN PY_VKTQ SP b TNSLYO TX W NZY_ZWVZ NSL LNPT T N 3Zb PaP N PY_XZOP NZY_ZW
SL L > MSL XZYNT: NTW ZYb SPYO d NdNWT RPL P SL Y Z PaPY SP> MSL XZYNTZ NTW ZY L
NZX PY L ZY LX T LOOPO Z SP NZY_ZWRYLW

SP NZX PY L_ZY LX SL MPPY LOOPO TYP YLW TYP SP >. < SP W P ZQ ST NZX PY L_ZY LX SL
MPY P W PO Z L T Q XZ L W L_ZY LYOT aLVP OP PYO ZY SP b T NSTR QP PYNH ST W P NLYMP
NLW W PO TYP SP Q X W %

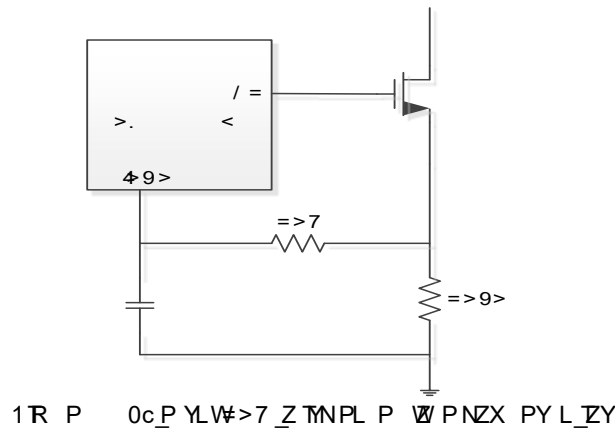
$$V \quad I_F \quad J$$

A>7 T SP LX W OP ZQ SP TYP YLW NZX PY L_ZY LX LYO 1> T SP NZY ZW b T NSTR
QP PYNH

1Z XZ P O P T M W P NZX PY L_ZY NLYMP TNPL POM L OOTR ZYP Pc P YLWP T Z =>7 TY SP 4 09 L S
1R P Sz b SP P SP Pc P YLW RPY L PO W P NZX PY L_ZY T SP Y LOOPO Z SP TYP YLW W P
NZX PY L_ZY ZQ SP >. < B SPY TR Pc P YLW W P NZX PY L_ZY SP Q X W Q 8 NMP NZXP %

$$V \quad I_F \quad E_F \quad J$$

, d TLW LWP Q QNZ 6 T ,



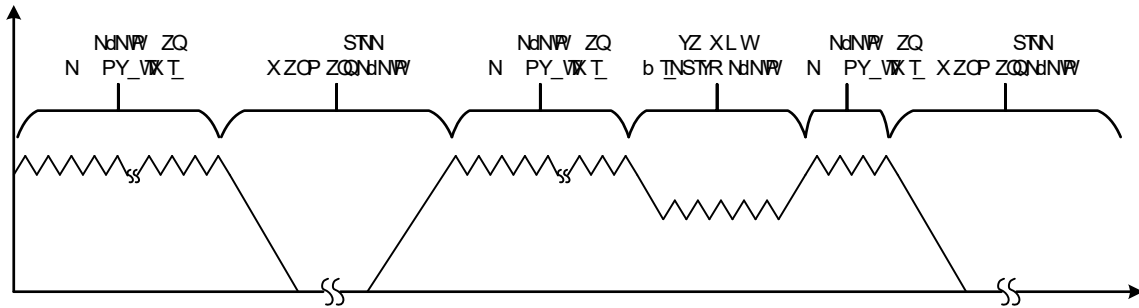
SP OPaTP ZaTP NdNW Md NdNW PLVN PY VXT ZPNZY SL__ Y ZQ SP 8: >10 b SPY SP X ZQ SP
TYO NZ N PY LYO SP ZRLX XLMP W P NZX PY L_ZY LX PLNSP SPN PY VXT SP SZW PLV TYO NZ
N PY VXT 40, 6. 7 TY PLOd LPT NLW W POL Sz b Y T %

$$C \quad \frac{I_{FAF} * uE_F u}{E_{FAF}}$$

B SP P

A>09>0 T 4 09 TY VXT TYP aZW RP d (XA
40, 6. 7 T SP TYO NZ PLVN PY VXT
=>7 T > W P NZX PY L_ZY P T Z
/ T / d NdNW
=>9> T SP 40 NLYNP PLVN PY OP PNZY P T LYNP

B SPY ZaP VLOSL PY SP NZYaP P NLYYZ ZaTP Z _N PY_Z L T Q VLOTR P TPXPY SP TYO NZ
N PY T NWX POL ZaP N PY VXT L_ZY S SP Z _aZW RP OZ MPVb PR WPOaZW RP b TS1- aZW RP
W SL Y TYP YLWP PYNP aZW RP NZY TY Z W SP TYP YLW : 8 aZW RP LX Z SRS B SPY . : 8
aZW RP T NWX POQ NdNW SP NZY ZW Z b Z VTR , QP PXLTYR : 11 Q NdNW SP OPaTP
P L QZX ZQ L TYR SL P QZaP VLOZ SL O SZ NZYOTZY TWPcT O TR ZQ L LYO XLVP . : 8
aZW RP NWX POL SRS LQP ZQ L TXPLYO . : 8 TWP SRS Q NdNW SP OPaTP PYP TYZ
YTR ZQXZOP LRLTY B SPY ZaP VLOZ SL O SZ NZYOTZY T PXZaPO SP OPaTP L ZXL TLW PNZaP Z
PYP YZ XLWPR W TYRZ P L_ZY



1R P 3TN 8ZOP ZPN_ZY

- PNL P / NLYMPaL TWP YCP OCP PY_ATY 4, 0, 6, 7 T YZ_LMP YCP OCP PY_ATYb SPY TRPc_P YLW/P NZX PYL_ZY P T_Z >Z Q LY LNN LP PLVN PY_VKT_Z PL_ZY ZaP SP TY W aZWRP >. PNXXPYO TRZYW_SP QPO W/PNZX PYL_ZY

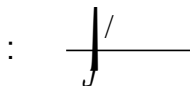
SPZ_aZWRPT P_MLYPc_P YLWP T_Z OCP =1- LYO=1- - TY_d TLW WML_ZY NSPXL_N, XTYX X N PY_ZQd TLW, Qb TRSZ RSOPMLNV P T_Z OCP R&P RZZOLNN LNdLYOYZTPNZaP TR SPaLWP ZQ=1- NLYMPNLW W/POMI 0 L_ZY

$$E_G \frac{I_{BHG} I_E}{I_E} E$$

b SP P%

A=01 T SP QPOMLV PQ PYNPaZWRP_d TLW A

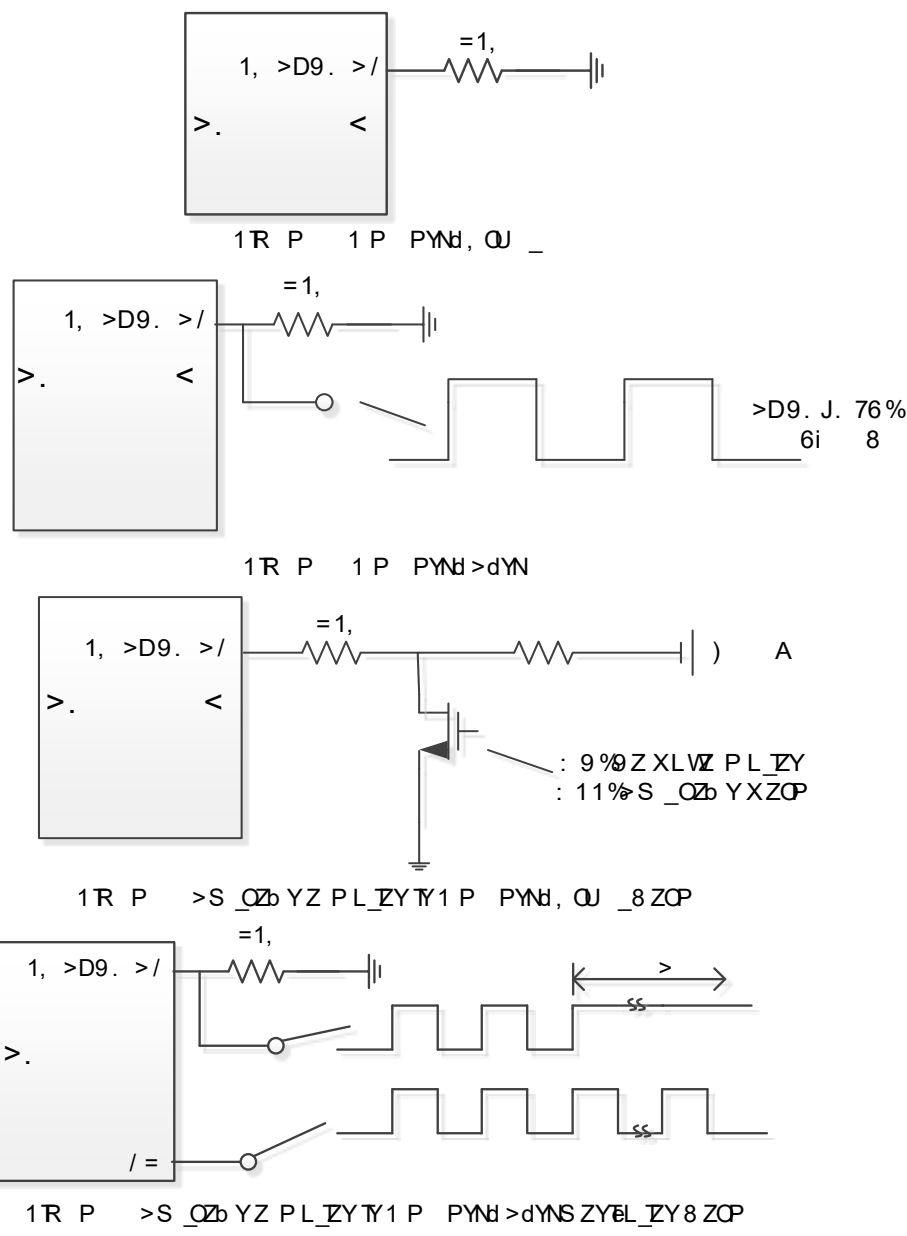
SP b TNSTROP PYNd ZQSP>. < NLYMLOU POMpbPPY V3eLYO 83e TRL TRWPc_P YLW P T_Z ST P T_Z X MPNZYPNPOMPbPPY SP1, >D9. >/ TYLYORZ YO 0 L_ZY NLYMP PO_Z P_XLP_SPQP PYNd LOU_P T_Z



SP>. < NLYLWZ MP dNSZY6PO_ZLYPc_P YLWZNV SP Pc_P YLWZNVX MPNZYPNPOMPbPPY SP1, >D9. >/ TYLYORZ YO L SzbYT1R P SPQP PYNd LOU_P T_Z XLd PXLTYNZYPNPO bSTW dNSZY6TRL RYLWSP PQ P QSPPTL W ZQ RYLWSP b TNSTROP PYNd b TWP P_Md SPQP PYNd LOU_P T_Z

SP1, >D9. >/ TYLWZQYN_ZY L L S_OzbY TY 4L SRS RYLW) A L PL_ZY SP1, >D9. >/ TY ZaP > SP>. < Z b TNSTRLYORZP TY_ZL Wb N PY_XZOP SP_ZLW W/N PY_ZQSP 4 PONP_Z, d TLW YCP SP PNZYOTZY

1R P LYO1R P Szb LYTK WXPYL_ZYZQ S_OzbYQYN_ZYbSPYZ PL_TRTYQP PYNd LOU_XZOP LYO dNSZY6L_ZYXZOP P PN&PW 4QP PYNd LOU_XZOP NZYPNTR SP1, >D9. >/ TY_ZRZ YO QNP SPNZNV_Z YL_L NP_LTYQP PYNd WWR ST TY SRS S_OzbY SP 4 4QP PYNd LOU_Z dNSZY6L_ZYXZOP L SRS RYLWZ XZP_SLY S_OzbY SP 4.



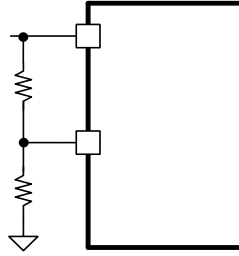
SP Pc_P YLWA7: P T_Z OaTP X _MP CP RYPO Z SL_SP aZW/RPL_SP A7: TYTRPL_P_SLY A
d TLWb SPY SP TY aZW/RP T TY SP CP TPOZ PL_TYR LYRP SP aLWP ZQ= LYO= NLYMP NLW W/POL
SZb YTY0 L_ZY LYO0 L_ZY

$$\frac{I_{A\ BA} \quad I_{A\ B}}{HI\ B}$$

b SP P

A₉: 9 T SP CP TPO L _ aZW/RP ZQ SP NZYaP P
A₁₁: 11 T SP CP TPO _ YZQaZW/RP ZQ SP NZYaP P

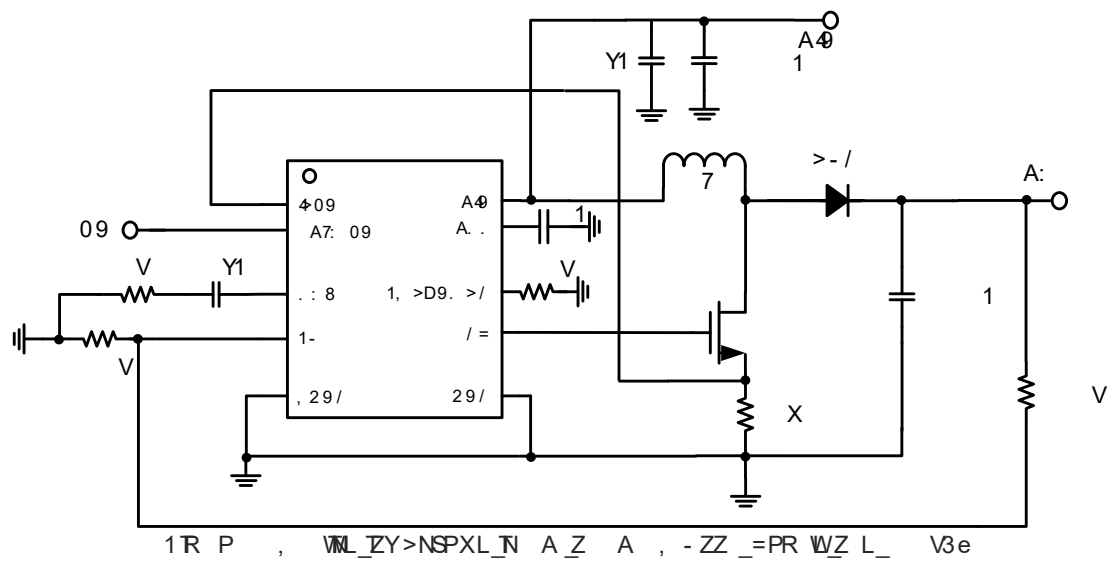
$$\left(\frac{I_{HI\ B\ A}}{I_{A\ BA} \quad I_{HI\ B\ A}} \right)$$



1 R P >d _PX A7: =P T_Z / 8CP

Z PO NP 08 4 _SP CPa TP TX WXPY_1 P PYNd > PLO> PN_ X 1>> SP 1>> NTN T_d STQ _SP b TINSTYR
 QP PYNd ZQ_SP PR W_Z P ZONL W/b TSTYL NP LTYQP PYNd LYRPL Z YO_SP LOU _PO b TINSTYRQP PYNd
 SPUTP TYR LYT ZQ_SP b TINSTYRQP PYNd b TS b TYRQP PYNd STQP PYNd OTSP TYRQYN_ZY
 TPCN TPQ MZSQ PYNd LOU _POM P T_Z WNPOL_1, >D9. >/ TYLYOLYPc_P YLWZWV dYNSZYEL_ZY
 L WL_ZY

APPLICATION INFORMATION



4/ AZW/RP	A 9Z XLWA Z A
: AZW/RP	A
8 Lc X: PY	,
>b TNSYR 1 P PYnd	63e
: aZW/RP T PLV Z PLV	XA 7ZLQ ,

SP PQ XLNPN ZQTYO NZ LCPN SP ZbP W PLOd LPZ PLZY LY PY MP SLaZ WZ LMMH
 LYOMZZ NZYaP P CONPNYnd SP TYO NZ aLWP /. P TLNPN LYO L LZY N PY TYQVNP MZ SP CONPNYnd
 LYO SP XLRYT CP ZQ SP Z _ aZW RP T W 7L RP TYO NLNPN aLWP PONP TYO NZ N PY T W LYO
 SP PQ P WLO Z WbP Z _ aZW RP T W 1Z L QPO /. P TLNPN L WRP aLWP TYO NZ dPW SRSP
 CONPNYnd aT PONPO=8> LYONZ P W P 3Zb PaP L WRP TYO NZ b TSTYL RbPY TYO NZ QX T Wb WRP YL W
 SLaPL RPLP P P P TLNPN SP PM NZ YPLN TR ST CONPNYnd LOaLYLRP

4YO NZ aLWP NLYSLaP Z PaPY ZWLYNP b TSYZN PY ML B SPY SP TYO NZ N PY L ZLNSP
 L LZY WbPWT TYO NLNPN NLYCPNPL P Z QZX SP aLWP L , N PY CP PYOTR ZY SZb SP
 TYO NZ aPYOZ CPQYP L LZY B SPY PWN TRLY TYO NZ NSZZ PT L PON PY P PNI W SP L LZY
 N PY WRP SLYT PLVN PYO TR SP Z PLZY

ZNLW WP SP N PY TY SP b Z NL P P SP XTYK X TY aZW RP XLcTK X Z _ aZW RP XLcTK WLO
 N PY LYOXTYK X b TINSTYRQP PYnd ZQ SP L WNLZY b STW NZY CP TR SP TYO NLNPN b TS ZWLYNP
 LYO Wb ZbP NZYaP ZYCONPNYnd

1Z L MZZ NZYaP P NLW WP SP TYO NZ /. N PY L TYO LZY

B SP P

A: T SP Z _ aZW RP ZQ SP MZZ NZYaP P
 4 T SP Z _ N PY ZQ SP MZZ NZYaP P
 A 4 T SP TY aZW RP ZQ SP MZZ NZYaP P
 T SP ZbP NZYaP ZYCONPNYnd

. LW WP SP TYO NZ N PY PLV Z PLV T W 4 L TYO LZY

B SP P

4 T SP TYO NZ PLV Z PLVN PY
 7 T SP TYO NLNPN ZQTYO NZ
 Qb T SP b TINSTYRQP PYnd
 A: T SP Z _ aZW RP
 A 4 T SP TY aZW RP

SP PQ P SP PLV b TINSTYR N PY ZQTYO NZ 4 0,6 TNLW WPOL TYO LZY

>P SP N PY WXTZQSP> . < SRSP SLY SP PLVN PY 4 0,6 LYO PWN SP TYO NZ b TS SP L LZY
 N PY SRSP SLY SP N PY WXT

/ P Z SP P PYNP ZQLY TYO NZ L SP TY ZQL MZZ NZYaP P SP TY N PY b LaPQX T NZY TY Z SP
 TYO NZ PY P SL SP TY NL LNTZ PP QTW Wb T WVN PY 3Zb PaP L SP TY NL LNTZ RP XLW
 SP TY T WRPZ SP=8> N PY TY SP TY NL LNTZ TRbPY TR O LZY

$$A \ E \ F \quad \frac{I_{BHG} \ I_A \ I_A}{\sqrt{(u_{BHG} \ u \ u)}} \quad \Bigg|$$

SP TY NL LNTZ SZ WMPNL LMWZQSLYOTR SP=8> N PY , WbZ RS SP TY NL LNTZ TYZ L N TNLWY
 L MZZ L WNLZY Wb aLWP NLYNL P TK POLYN TYPLNZY SP PQ P L RZZO LWNL LNTZ SZ WMP

NSZ PY TY SP LYRP ZQ 1 Z 1 QL aLWP VbP SLY 1 T PO SPY ZWAX b TS TK POLYNP
TYPLNZY Z b TINSTRYZTPNLYLON SP >. < Z TK ZaP PQ XLYNP P PNILW/b TS ATYMPVb
aZW TT PNZXXPYOPO Z PL : SX PTZ L SP TY Z ZaTPLY=. QVP SP PTZ T WNPOTY
P P b TS SPA0 TYb TSZYW/L Ml L NL LNTZ L LNSPO Z SPA0 TYOTPNW, 1 Z 1 NPLXTN
NL LNTZ TYNP L d TY STNZYQR L ZY SP M WTY NL LNTZ LYOTYONZ b WNZYYPN_ZY SP Z SP TP ZQ
SP PTZ L SP TY ZbP W

1Z XLWZ _ aZW RP T W NSZZ PL Vb 0>= Z _ NL LNTZ WPLNPLXTN NL LNTZ d TLW c 1
NPLXTNZ _ NL LNTZ bZVQ XZ L WNLZY, 1 NPLXTNMl L NL LNTZ T PNZXXPYOPO Z MP
WNPOL NW PL Z TW Z SP b TNSYZCP.3RSP NL LNTZ aLWP NLYMP PO Z TK ZaP SP VLO LY PY
P ZYP / P ZLNL LNTZ OPLTYR YOP /. ML SP ML NLY RYCNLYW PONP NL LNTLYNP . PLXTN
NL LNTZ NLYW P XZ ZQ SPTNL LNTLYNP L LPO aZW RP SP PQ P WLaP XL RTY ZY SP aZW RP L TYR Z
PY PLOP LPPONTP NL LNTLYNP 1ZX SP P TPOZ _ aZW RP T W P SP P LZY LYO Z
NLW WP SP XTYK X P TPOPONTPNL LNTLYNP .:

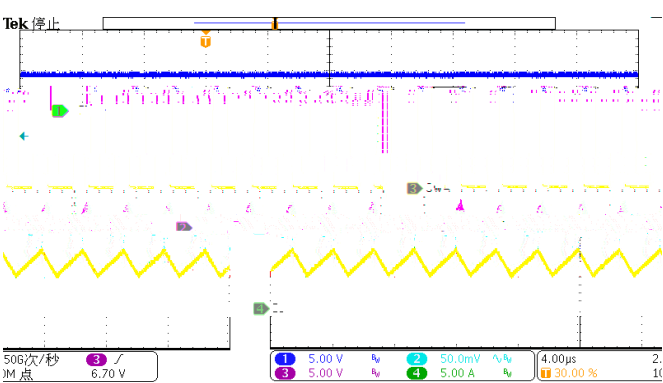
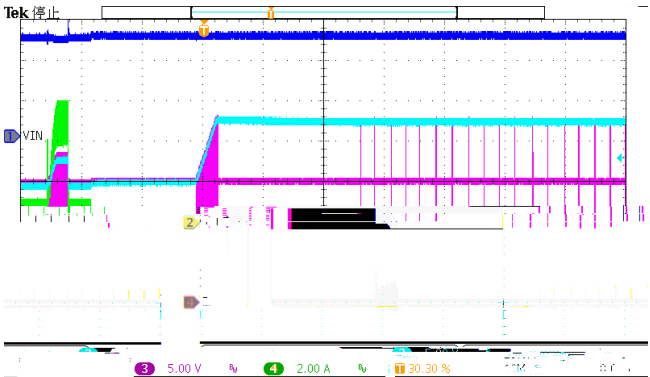
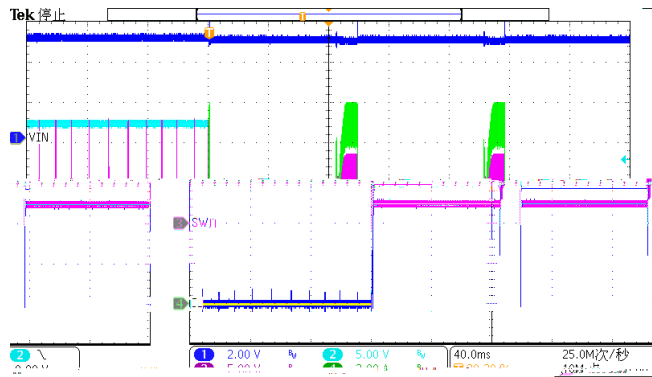
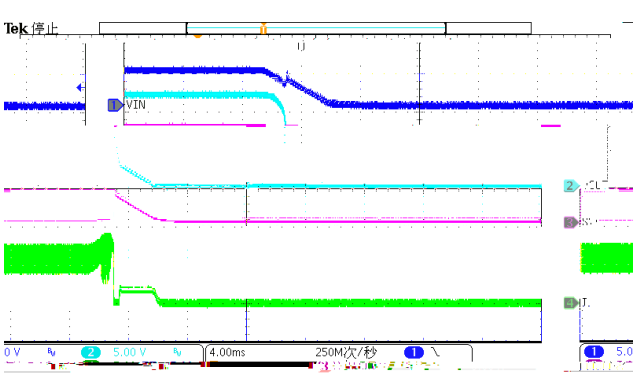
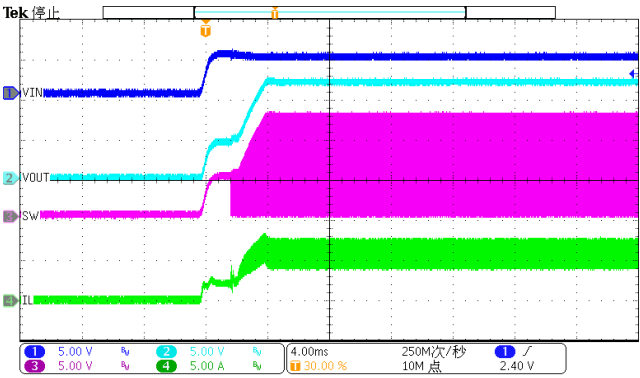
SP_ZLWZbP OT TL_ZYZQ8: >10 TMMCP NZYO NZYV L Szb YTY SP QT_P X LYO b TINSTYR V L
Szb YTY SP PNZYOP_X SP_ZLWZbP OT TL_ZY SZ WMPb TSTY LMLRP SP XLWL_TYR

: MP aL_ZYZQ SP MZZ_NZYaP_P NTN T Szb SL SP LaP LRP N PY_SZ RS SP OZOP T SP LaP LRP WLO
N PY_LYO SP PLVN PY_SZ RS SP OZOP T SP PLVN PY_SZ RS SP TYONZ SP OZOP SZ WMP L_PO
ZSLYOWXZP_SLYT PLVN PY_ SP PLVOZOP N PY_NLYMPNLW WPO TYR0 L_ZY

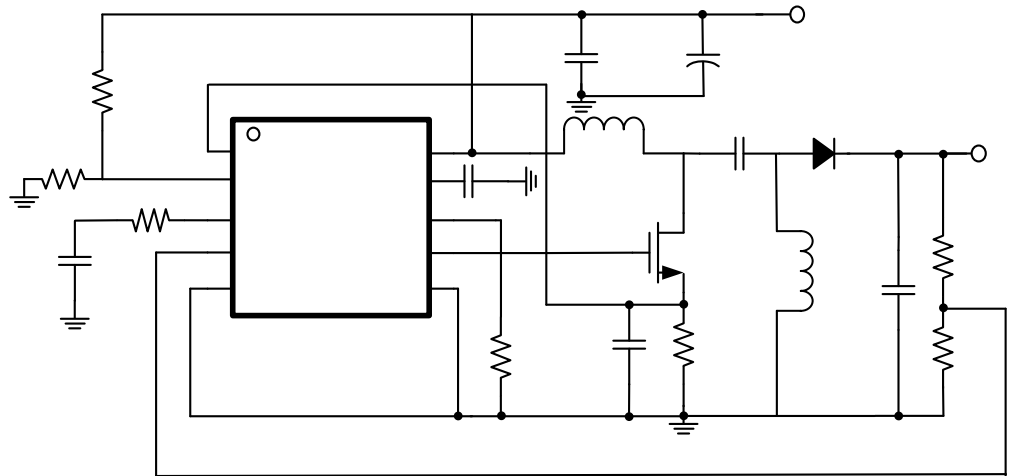
C BHG ,

SP XLWV SP OZOP X MPLMV_ZSLYOW SP XLcTK X LaP LRP N PY_CPVW PO_Z SPZ _ SP PLV PaP P
aZVWRP Q MZZ_NZYaP_P TP LWZ SP PR WPOZ _ aZVWRP SP OZOP X MP NL LMPVZQSLYOWR_ST
aZVWRP ZTK ZaPPONPYnd L Vb QbL O OZ NSZ_Vd OZOP T PNZXXPYQPO

ATY(A AZ _ A YW Z_SP b TP YZ_PO



APPLICATION INFORMATION



1R P , VML_ZY>NSPXL_N A_Z A , >P N=PR W_Z L_ V3e

4/ _AZW/RP	A 9Z XLWA_Z A
: _ _AZW/RP	A
8 LcK X: _ _ PY_	,
>b TINSTYR1 P PYNd	63e

, RZZO ~~WQ~~ CP_PXTYTR_SP TO NL_YNP_Z P T_Z L~~Wb~~_SP TO_NZ PLV_Z PLV T ~~WN~~ PY_Z MP
L_ZcXL_P~~W~~_Z ZQSP_XLcX X TY_N PY_L_SPXTYK X TY_aZW~~RP~~ SPN PY_T ~~WQb~~ TR
TY TO_NZ_7 LYO7 TR~~RPYMI~~%

$$' \quad \quad \quad A \quad u^* \quad \quad \quad B \quad u \frac{I_B}{I_A \quad A} \quad u^*$$

$$' \quad \quad \quad (\quad B \quad u^* \quad \quad \quad B \quad u^*$$

9ZXL~~Wb~~P_NLY_P~~W~~_P L~~W~~L~~W~~P_Q SP TO_NZ_7 LYO7 CP ~~RPOL~~ %

$$(\quad \quad \quad \frac{I_A \quad A}{F \quad u} \quad u \quad K$$

B SP P

>B T_SP b ~~TNSTRQP~~ PY~~N~~

9Z_P_SL_SP L_L_ZYN PY_ZQTO_NZ SZ ~~WMPRPL_P~~_SLY PLVN PY_~~Qb~~ TR TY TO_NZ TR~~RPYMI~~%

$$C \quad \quad \quad A \quad \frac{I_B}{(\quad B \quad u \frac{I_B}{I_A \quad A} \quad u \quad \frac{*}{(}$$

$$(\quad C \quad \quad \quad B \quad \frac{*}{(\quad B \quad u \quad \frac{*}{(}$$

~~Q7~~ LYO7 LP~~b~~Z YO~~T~~Y LXP_NZ PL LN_Z ~~W~~TO_NZ SP TO_NL_YNP P TPO~~b~~ ~~TMP~~SL~~Q~~ P_Z SP X_LW
TO_NZY NL~~W~~ ~~WPOMI~~%

$$(\quad \quad \quad \frac{I_A \quad A}{(\quad u \quad u_F} \quad u \quad K$$

SP ~~QWb~~ TR LLXPP SZ ~~WMP~~ LV~~Y~~TY_ZNY TP_L_ZYQ 8: >10 %SPZY P T_LYNP = />J: 9 SPXTYK X
RL_P_SP SZ~~W~~aZW~~RP~~A _{3J8 4} SP_ZL~~VR~~L_PNSL RP <_R SP PaP P_LY ~~Q~~ NL LN~~L~~YNP. =>> LYO SP_XLcX X
OLT_Z_Z NP~~a~~ZW~~RP~~A<_{J8, C} SP PLV b ~~TNSTRaZW~~RP MP~~b~~PPYOLT_Y_Z_Z NP TYL>0 4 TR~~RPYMI~~%

$$I_F \quad C \quad \quad \quad I_A \quad I_B \quad I$$

SPY_SP A<_{J8, C} ZQ_Z~~b~~P 8: >10 SZ ~~WMPRPL_P~~_SLY_SP PLV b ~~TNSTRaZW~~RP

SP PLV b ~~TNSTRN~~ PY_~~Qb~~ TR_SZ RS_SP 8: >10 TR~~RPYMI~~%

$$D \quad C \quad \quad \quad C \quad \quad \quad (\quad C$$

SP=8>N PY_SZ RS_SP 8: >10 4 NL~~W~~ ~~WPOMI~~%

$$D \quad E \quad F \quad \quad \quad B \quad \sqrt{\frac{I_B \quad I_A \quad A \quad I \quad u \quad I_B \quad I}{I_A \quad A}}$$

SPY_Z~~b~~P OT TL_ZYTY 8: >10 NLYMP_P_XL_POMI%

$$C \quad F \quad \quad \quad (\quad D \quad E \quad F \quad u \quad E \quad F \quad B \quad A \quad u \quad K \quad \quad \quad I_B \quad I_A \quad A \quad \quad \quad u \quad D \quad C \quad \quad \quad \frac{D \quad u \quad F}{u}$$

B SP P

2 T_SPRL_POT~~RP~~N PY_

SP_ZLWZbP OT TL_ZYZQ8: >10 TMMCP NZYO NZYW L SzbYT SPQT_PXLYO bTNSTYR W L
SzbYT SP PNZO_PX SP_ZLWZbP OT TL_ZY SZ WMPbTSTY LNLRP_SPXLWL_TR

SPOTZOL_SPZ _ _ TPX _bTS_LYO_SP PaP PaZW_RPbSPY_SP8: >10 T _ YPOZY SP PLV PaP P
aZW_RP T RPYM%

$$I_C \quad I_A \quad K \quad I_B \quad K$$

SPOTZOP SZ WLVZMPNL LMP_ZQb bTNS PLVN PY_4j 0, 6

SP_ZbP OT TL_ZYZQSPOTZOP TP LWZ_SPQbL OaZW_RPOZ X WWP Z _ _N PY_>NSZ_WiOTZOP
LP PNXXPYCOPSP_P_ZXTYKTP_SP_ZbP W

1Z NPLXTNL LNTZ bTS W 0>= _SP PLV_Z PLVaZW_RP T WZYNZ W_RNL LNTZ TP_TKL_POM%

$$I_F' \quad \frac{B \quad U \quad K}{F \quad U \quad F}$$

SPXLcTK XaZW_RPLNZ _SPNZ W_RNL LNTZ T XLcTK XT _aZW_RP SPaZW_RP L_TRZQSPNZ W_R
NL LNTZ X _MPRPL_P_SLYT

SP=8>N PY_ZQNZ W_RNL LNTZ T RPYM%

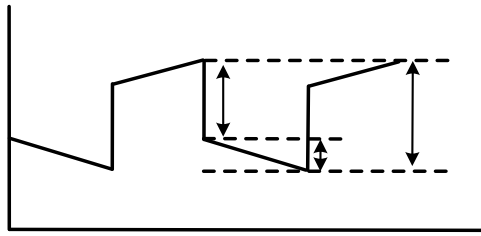
$$F \quad E \quad F \quad B \quad \sqrt{\frac{I_B \quad U \quad I}{I_A \quad A}}$$

SPPTL WRP=8>N PY_SZRSNZ W_RNL LNTZ PWTP_ZZ _ _ZbP 0Y P_SPNZ W_RNL LNTZ
NLYbTS_LYOTbTSRZZOSPL_RPYPL_ZY_ZSLaP ZP_SPXLWPQ_XLYNP

SP>0 4 SL LYTONZ_LTY _ TP RPY >)) - 5

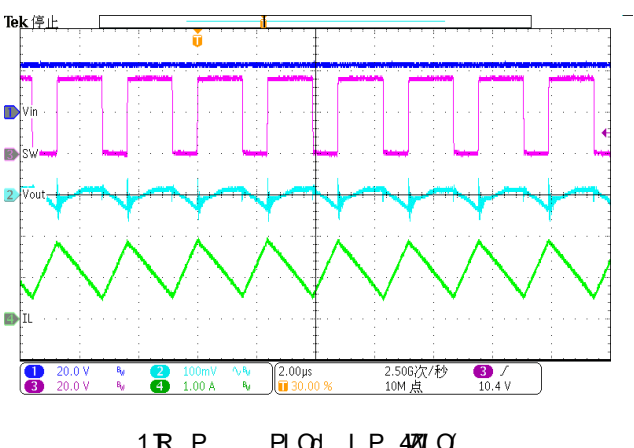
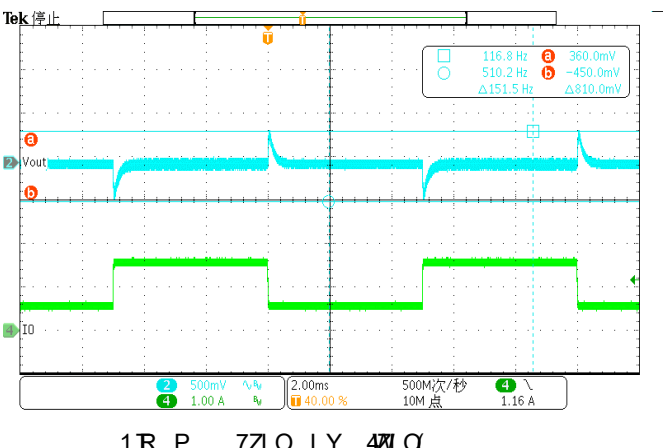
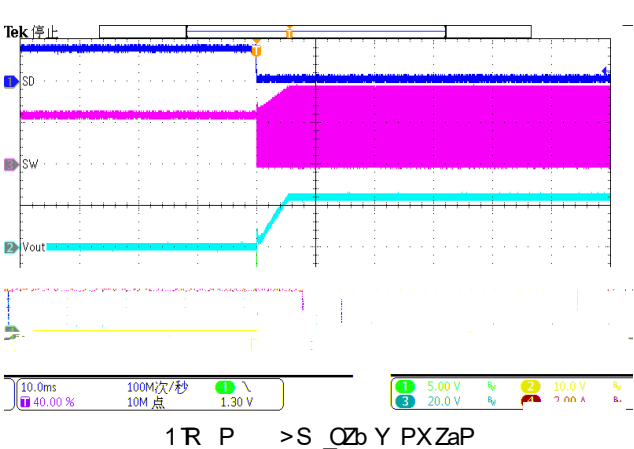
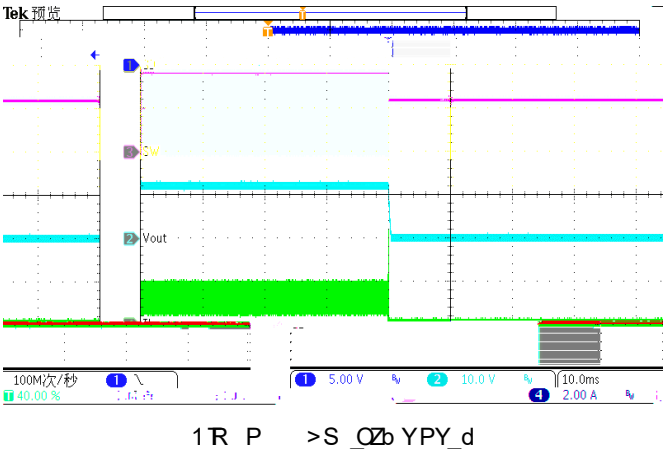
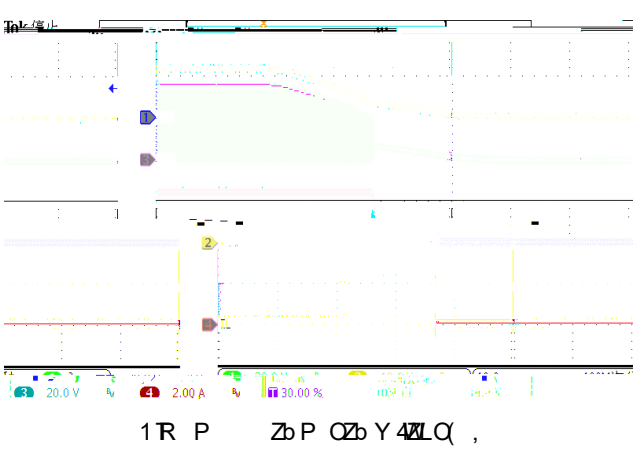
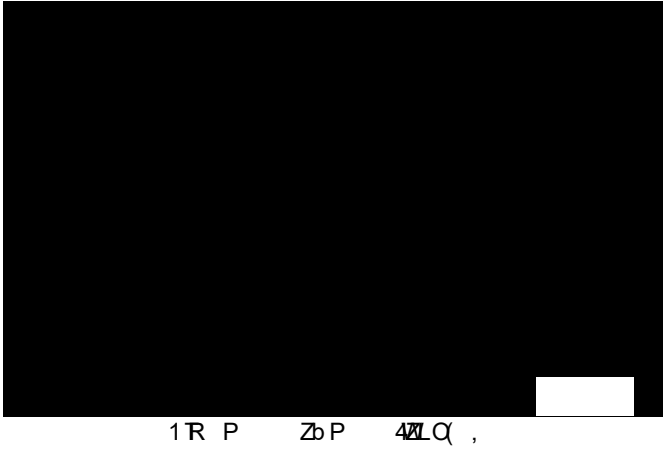
X R_ N > LY'' 8. 4

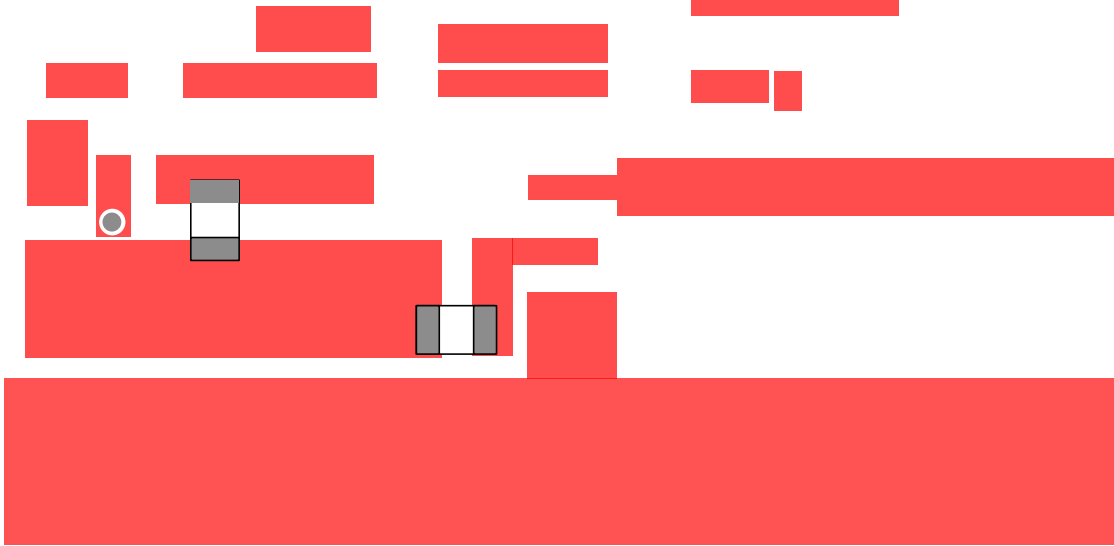
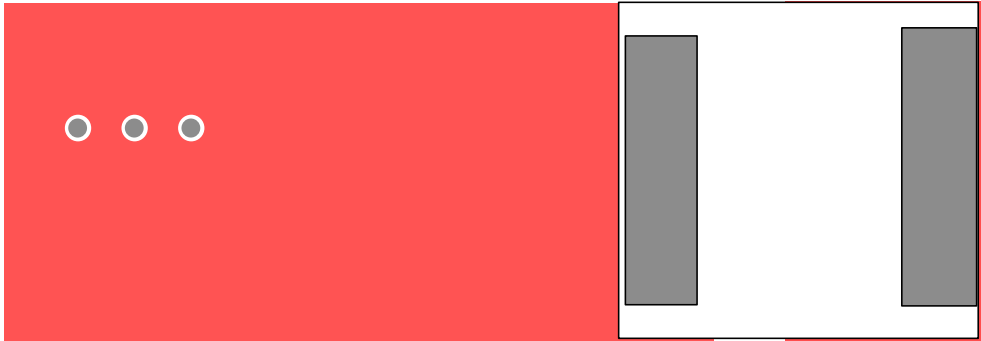
PB



1 R P : _ _AZW\RP =T W

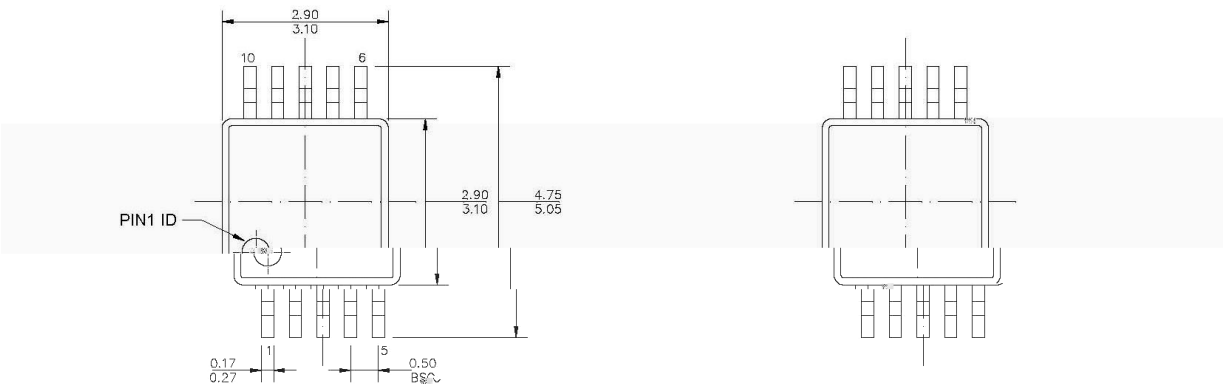
AT(A AZ (A YW Z_SP b TP YZ_PO





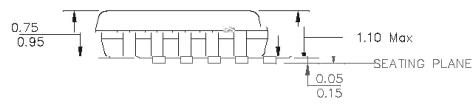
1R P -:: > . - 7LdZ _

PACKAGE INFORMATION

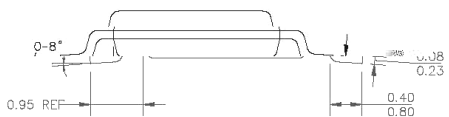


TOP VIEW

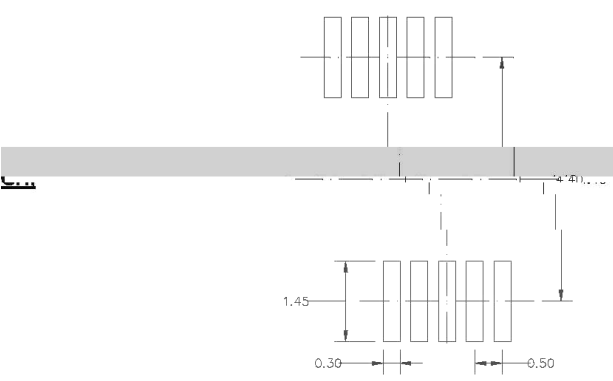
BOTTOM VIEW



FRONT VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN

NOTE:

- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) PACKAGE LENGTH DOES NOT INCLUDE MOLDED FLASH.
- 3) DRAWING MEETS JEDEC MO-187, VARIATION RA.
- 4) DRAWING IS NOT TO SCALE.

SCT
SILICON CONTENT TECHNOLOGY

