

GHM 3I Z gnf K_hki k olnl k olnl f Zr b_k_khf i Z gnf K_hk na nkk gmo K_hk
 K olnl *) 3I kh n rthg
 K olnl * *3 LP r_kgl b gm L I i
 K olnl * +3Ni Zm G hg_bnk NOEH k Zm
 K olnl * , 3Ni Zm b nk *+
 K olnl * - 3Ni Zm = OB HK= K BG HKF: MBIG

LP	/	Lp lna l g h h _ra n d h g o k m k
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Ho khi kZrtg _k 8Zkmf i kZmk kZg ngell hra l p b ghm

O _{EG}	Bji nmoheZ kZg	- .	-)	O
Mc	Hi kZrtg ang rthg mf i kZmk	&)	*+.	<

O _{L=}	Anf Zg h r F h e A F % k: GL _{BC} = <8CL 8) * & +) *- li bb Zrtg % Zei l g l *	& *	+	dO
	< aZk = ob F h e < = F % k: GL _{BC} = <8CL 8) + & +) *- li bb Zrtg % Zei l g l *	8 .	) .	dO

- (1) C = < h nf gmC l * . l nZml raZm)) O A F Z e p l l Z _ f Z g n Z m k g p l a Z l n Z g Z k L = h g r h e i k h l l
(2) C = < h nf gmC l * . O l nZml raZm .) O < = F Z e p l l Z _ f Z g n Z m k g p l a Z l n Z g Z k L = h g r h e i k h l l

K _c	Chg rthg rh Zf b gma kf Zek l b n Z g *	12	< (P
K _{ox}	Chg rthg rh Zl ra kf Zek l b n Z g *	, 2	

* L < M i k h o b l K_c Zg K_{ox} g n f k h g e Z l k _ k g r h l r f Z m a n g r t h g m f i k Z m k l h _ra o b l K_c Zg K_{ox} Zk g h m Z
a Z k m k b r b h j Z d Z b h e % n n h _ f Z g r h r a k l r l m f e o e a Z k Z m k b r l l n a Z l r a l b g Z g e Z h n n h _ra i k g m k n l n
h Z k l < h g p a b a r a L < M + -) * b f h n g m % a k f Z e i Z l b % Z g q m k g Z e g o l t h g f g r a Z e Z r h k M a l < h Z k b Z a Z r l t g d
r a Z r t b l h e k r h r a e Z l Z g r a k f Z e i Z h _ra L < M + -) * < a Z g t g r a l b g h k h g b n k Z r t h g h _ra l < h Z k a Z g l r a
_ b b g r h _ra a Z r l t g d Z g r a k _ h k r a Z m Z e K _ c Z g K_{ox}

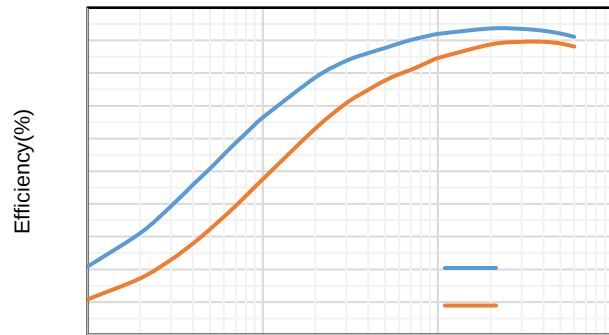
O_{EG} 6 * + O % M b 6 &) < * + . < % n i b Z e o Z e n b m l m n g k + . <

--	--	--	--	--

O _{EG}	Hi kZrtg l g i n m o h e Z		- . -)	O
O _{EGXNOEH}	Bji n n N O E H A r l m k l b	O _{EG} k b t g	- , --)	O f O
B=	L a n m h p g n k k g m		* .	n:

$B_{XAL} =$	$AL = i \cdot Z_d \cdot n_k \cdot g_{mf} \cdot \ln$		$) \cdot 0 \cdot) \cdot 2 \cdot * \cdot *$	:
$B_{XEL} =$	$EL = oZ_{er} \cdot n_k \cdot g_{mf} \cdot \ln$	$khf \cdot l \cdot hnk \cdot rh \cdot kZ_{lg}$	$) \cdot 1$	:
$B_{XEL} = G$	$EL = g \cdot Z_{r0} \cdot n_k \cdot g_{mf} \cdot \ln$	$khf \cdot kZ_{lg} \cdot rh \cdot l \cdot hnk$	$) /$	:
LP	$Lp \cdot \ln a_{lg} \cdot _k \cdot j \cdot n \cdot g \cdot r$	$O_{B6} \cdot * + O \% O_{HNM6} \cdot O$	$2 /) \cdot * +) \cdot * - -)$	dA
$m_{GXF} \cdot B$	$F \cdot \lg l \cdot f \cdot nf \cdot hg_{df}$		$1)$	gl
m_L	$B_{gmkg} \cdot Z_{el} \cdot h \cdot _n \cdot _r \cdot _Z \cdot k \cdot m \cdot f$		*	f l
O_{HOI}	$Z \cdot d \cdot h \cdot o \cdot k \cdot o \cdot h \cdot e \cdot _Z \cdot p \cdot \ln \cdot a \cdot k \cdot l \cdot i \cdot m \cdot h$	$O \cdot (O_k \cdot k \cdot b \cdot \lg$	$**)$	
	$k \cdot _k \cdot g \cdot o \cdot h \cdot e \cdot _Z$	$O \cdot (O_k \cdot _Z \cdot e \cdot \lg$	$*) \cdot$	
$M_{=}$	$Ma \cdot k \cdot f \cdot Z_{el} \cdot anmhp \cdot g \cdot rak \cdot l \cdot a \cdot he$ $Ar \cdot l \cdot m \cdot k \cdot l \cdot b$	$M \cdot c \cdot k \cdot b \cdot \lg$	$* 0)$ $+$	<

= $k \cdot b \cdot _khf \cdot g \cdot a \cdot aZkZ \cdot m \cdot k \cdot b \cdot Z \cdot \ln \cdot g$

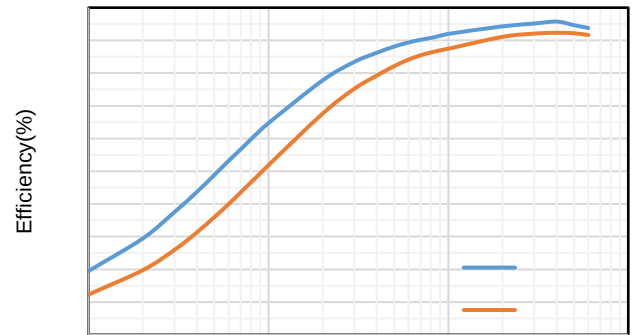


Efficiency (%)

IOUT (A)

b nk * _b b g r o l E h Z < n k g r f O h n n 6 . O

b nk + _b b g r o l E h Z < n k g r f O h n n 6 * + O

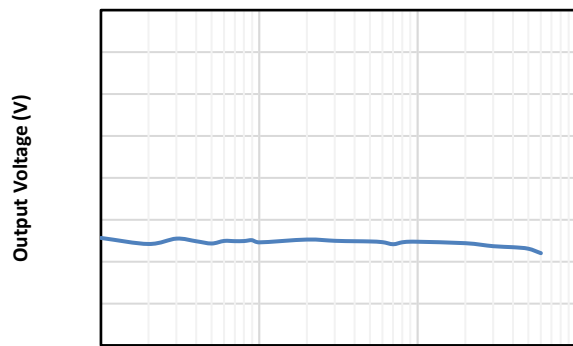


Efficiency (%)

IOUT (A)

b nk * _b b g r o l E h Z < n k g r f O h n n 6 . O

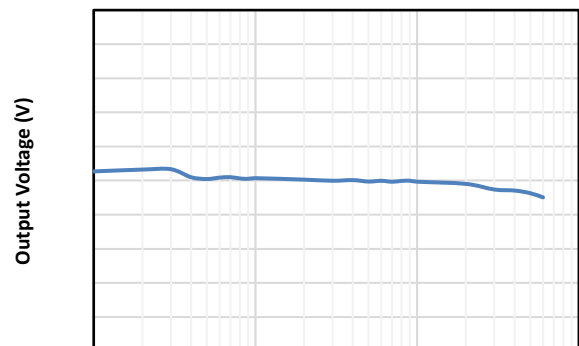
b nk + _b b g r o l E h Z < n k g r f O h n n 6 * + O



Output Voltage (V)

IOUT (A)

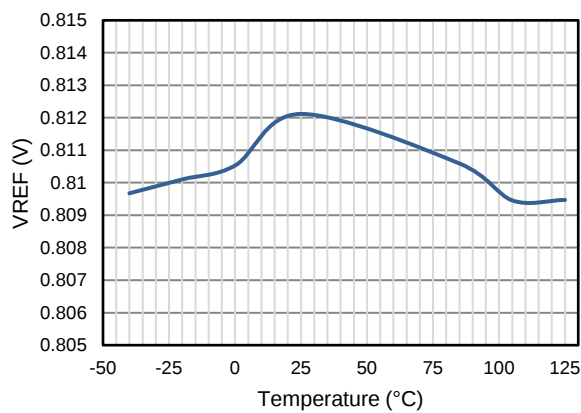
b nk , E h Z K n e z h g O h n n 6 * + O % O g 6 + - O



Output Voltage (V)

IOUT (A)

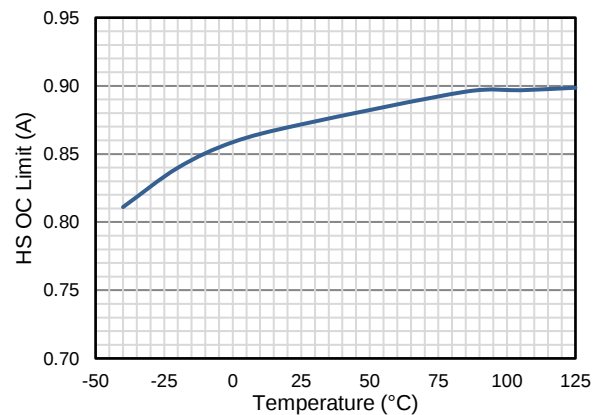
b nk - E h Z K n e z h g O h n n 6 . O % O g 6 + - O



VREF (V)

Temperature (°C)

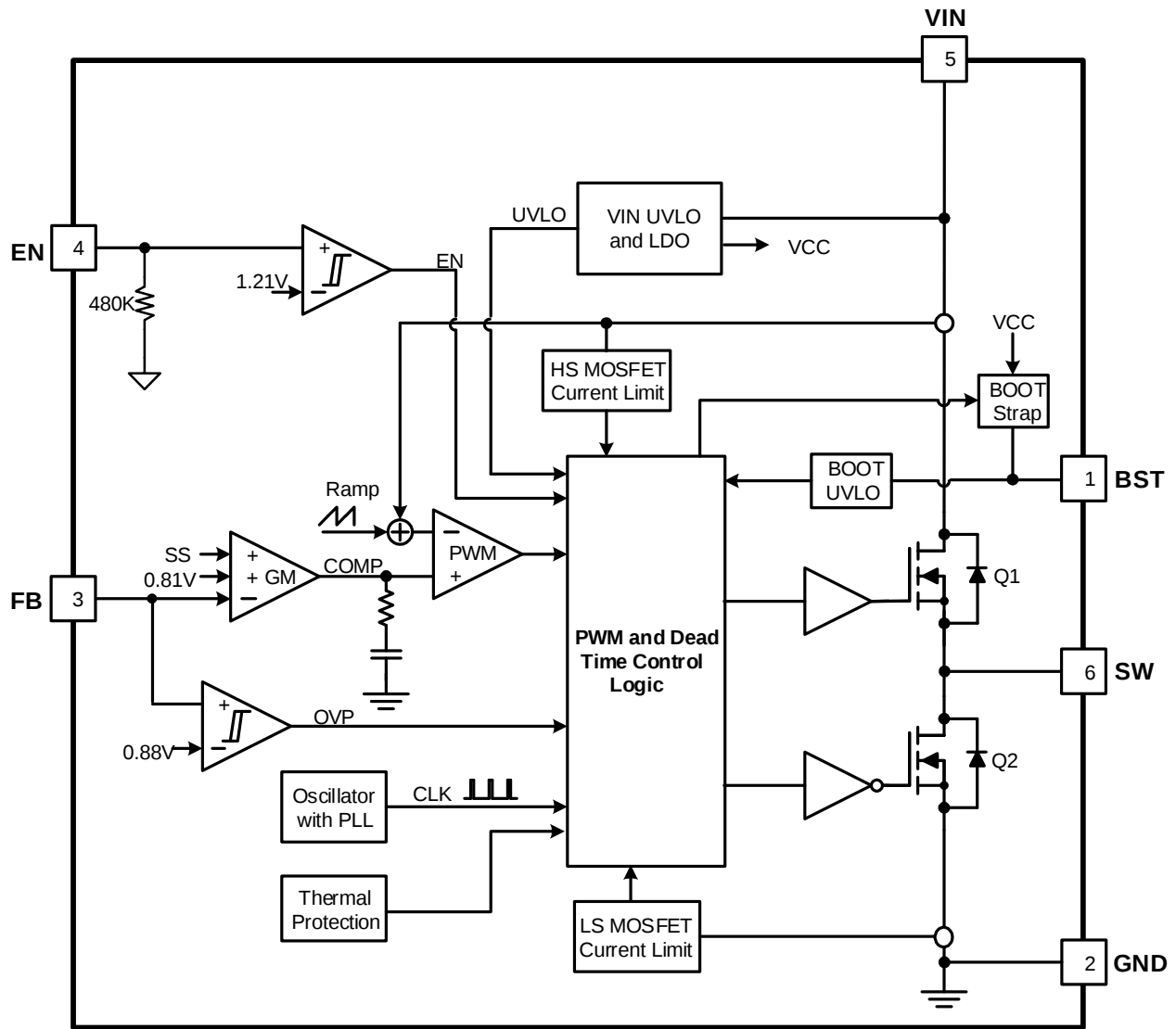
b nk . K _ k g O L M f i k z m k



HS OC Limit (A)

Temperature (°C)

b nk / A L < n k g r f O h n n 6 . O % O g 6 + - O



bnk *, ng rthgZe d=lz kf

Ma L<M+-)* ob b-.O&)O tji nr%))f: hnrnrrfne tgm kZm lrg akghnl n d hgo kmk Ma ob
fi erl t k j n g r i Z d n k k g m f h h g r t h e: g t g m k g Z e d d p l a * + F A k j n g r t g m k g l g h g
n a t g m k Z m a b a & b i h p k F H L M J * t g Z a r e % n a g t g n r h k n k k g m k b l d g Z k e Z g n a h g o k m k
a Z k l h n r n m Z i P a g l g l o h e z h g a b a & b F H L M i Z d n k k g m k b l g Z h o n a o h e z h t g m k g Z e
< H F l l _ n g r t g Z e d d i z k z f % n a o b m k g l h _ a b a & b F H L M J * Z g m k g l h g d p & b F H L M
J + M a t g n r h k n k k g m k Z l p a g F H L M J + b H G t g n a g q m k b l g h _ d d r e % n a d p & b
F H L M J + m k g l h _ M a b k i Z h h g r e & r & r e Z

Ma i Z d n k k g m f h h g r t h e p n a n a t g m k g Z e h i h f i g l Z r t g g r p h k d Z g n a n t g * f l l h _ n k n i b f i e r
n a L < M + -) * h n r n k g r h Z g f t g f b n a h _ & a b h f i h g m h n g r h F Z g p a t e % n k n l n a q m k g Z e i Z l d
h f i h g g r h l b Z l p e

P a g b Z t g n a o b % n i n i e l a n m h p g n k k g m b h g e * : M a L < M + -) * p h k d l Z m h k l n e P b n a
F h n e z t g I P F f h r h Z a b o l f Z e h n r n n k i e Z m e a m e Z f h

Ma L<M+-)* fi erl t k j n g r i Z d n k k g m f h h g r t h e: g t g m k g Z e d d t g m k g l g h g n a
t g m k Z m a b a & b i h p k F H L M J * t g Z a r e % n a g t g n r h k n k k g m k b l d g Z k e P a g n a n k g m a k h n a
a b a & b F H L M k Z a l n a n a k l a h e e o e l m r n a < H F l o h e z h _ n a t g m k g Z e k k k Z f i e b k % n a a b a &
l b F H L M m k g l h _ M a l r g a k g h n l d p & b F H L M J + m k g l h g r t n a g q m d r e t g l

Ma k k k Z f i e b k l k o l n a < H F l g h r h f i Z k t g n a o h e z h _ n a i t g p n a Z g t g m k g Z e) 1 * O k _ k g
o h e z P a g n a d Z n k k g m t g k Z l % z k n r t g t g n a _ Z d o h e z k e z n o r h a k _ k g k Z b l < H F l
o h e z n e n a Z o k Z t g n r h k n k k g m f Z m a l n a t g k Z l d Z n k k g m M a b _ Z d e h i p e k n e z m l n a
h n r n m o h e z r h n a k _ k g M a o b Z e h t g m k Z m l Z g t g m k g Z e i h f i g l Z r t g t k n k r h i k o g m n &
a Z k f h g b h l t e z t g p a g n m r e b k Z m k n a Z g .) _ h k Z t k j n g r i Z d n k k g m f h h g r t h e

Ma L<M+-)* hi kZml t g h k l n e P b n a F h n e z t g I P F f h r h Z a b o l f Z e h n r n n k i e Z m e a m e Z
f h r h i k h o b n a d p k h n r n n k i e t g d e a m e Z h g t g t g

Ma L<M+-)* b l b g r h h i k Z m k h f Z g t g i n m o h e z l n i i e k Z g r p g - . O r h -) O % Z m e Z l m) * n
h n i t g k z f b Z i b k h f f g r h r i Z l n a l n i i e g h b B r a t g i n r n i i e d Z m l f h k n a Z g Z _ p
t g a l k h f n a h g o k m k % Z g Z t g t g Z e e r t h e r b h k r Z g n e f n e l Z i Z b h k h k p b a k h f f g *) n f Z r
k j n k t g Z t g t g r h n a d Z e k z f b r i Z l Z i Z b h k

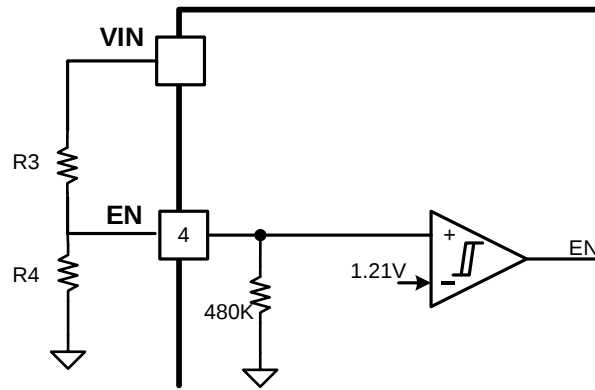
Ma L<M+-)* Ng k O h e z E h d H n m N O E H Z n e l n k m i n a k l a h e b m i b Z e - , O p n a O B G k b t g Z g
l a n m h p g n a k l a h e b , 1 O p n a O B G _ d e g M a f h k Z n k Z m N O E H n a k l a h e Z g i k k z f f n a k h n a n a
i k t g t g g Z e n a k l a h e h _ G i t g

P a g Z i e t g Z o h e z a b a k n a Z g n a G a b a n a k l a h e m i b Z e * + * O (k t g % n a L < M + -) * g Z e l Z e e
_ n g r t g l Z g n a o b l n k r h l h _ n k n i a Z l M a L < M + -) * a Z l n a n t g * f l l h _ n k n i b r h i k o g m a
h n r n m h o k a h m Z g t g n l a n k k g m P a g G i t g b i n e d p % n a t g m k g Z e l l g n p l e b a Z k r h k n g
n d h i k Z r t g b b Z e p a g G o h e z _ Z e d p t h d p n a k l a h e m i b Z e * + * O (_ d e g

: g t g m k g Z e - 1) d i n e h p g k l b r h k f Z d G i t g d Z r t g l a n m h p g n a L < M + -) * h k n a Z i d Z r t g k j n k
a b a k O B G N O E H o h e z n a Z g n a Z n e l m i % h g g m Z g q m k g Z e k l b r h k l o b k K , Z g K - l a h p g t g b n k

*- hf OG rh G Ma NOEH k b g Zg Zg rak lahe Zg Zene m r jnZrhg * Zg jnZrhg +
kli r e B ra k b gh k j n k f g m h k r a OG NOEH i k k f % h g g m a G rh OG rh l f i e r na q m k g Z e
k n b k

Gi b b Z a b a o h e z i b g Zg Zg k n e h g g m r h OG rh Z n r h f Z n b Z e l n k m i n a o b p n a OG k b g
r h b h g m k g Z e N O E H r a k l a h e



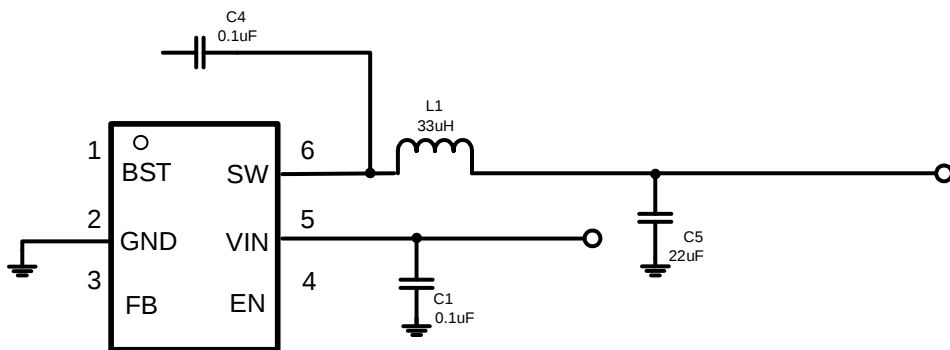
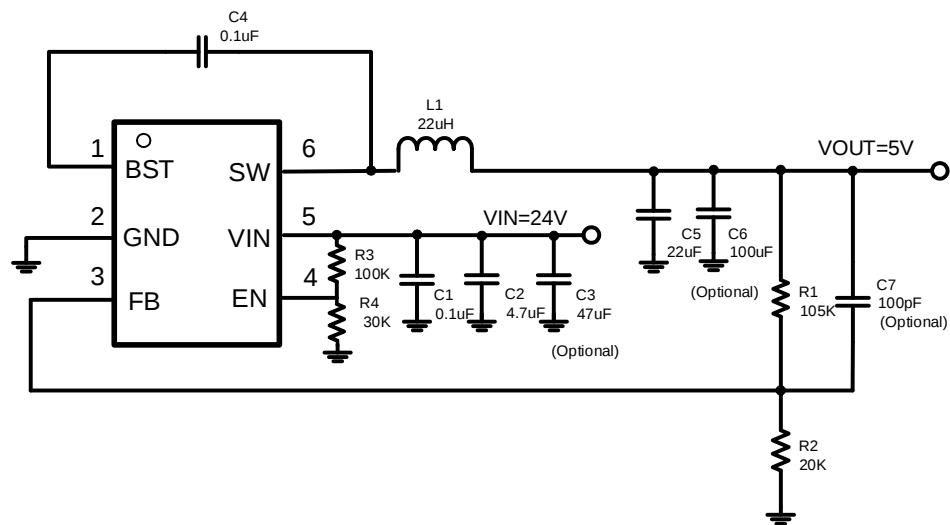
b n k *- : m l n z e OG NOEH

(1)

(2)

P a k 3
O b

Hg na ng ng mfi kZmk lg na L<M+)* q l *0) °<% na na kf Zel gl lg k nlnl rhil hgo kmk
 l p naly Zg klnZhp na na ng ng mfi kZmk Zlg ep *- . °< Ma kf Zel anmhp gi k o grh na Zf Z
 hg ob nkg q ll a ZnZg i hp k bl bZng hg blng



Design Parameters	Example Value
Input Voltage	24V
Output Current	0.6A
Switching Frequency	1.2MHz
Start Input Voltage (rising VIN)	5.5V
Stop Input Voltage (falling VIN)	5V

Ma hnrnmohēz b l m r Zg qmkgZek l b r h k l o b k
K* Zg K+ tū mibZe Ziē Zrthg l a f Zr
K h f f g K+ k l b r z g b +) D Nl j n Zrthg -
rh Zēzē m K*

Table 1. R₁, R₂ Value for Common Output Voltage
(Room Temperature)

* 1 O	+ - 2 D	+) D
+ . O	- + + D	+) D
, , O	/ + D	+) D
. O	*) . D	+) D
* + O	+ 1) D	+) D

p a k 3

Ok b r a _ Z d k _ k g o h e z % m i b Z e
) 1 * O

: g qmkgZeohēz l o b k g r p h k d h _ K , k h f r a tū j n m r h G i tū Zg K - k h f G i tū r h r a k h n g Z g l m a
tū j n m o h e z l N g k O h e z E h d H m N O E H r a k l a h e M a N O E H a Z l r p h r a k l a h e l % g h k i h p k n i p a g
r a tū j n m o h e z b k b tū Zg r a h r a k h k i h p k h p g h k k h p g h n r h p a g r a tū j n m o h e z b Z e g h k r a
q Z f i e l b g % r a l n i i e l a h n e m k g h g Z g l n z k l p l o n a tū h g r a tū j n m o h e z tū k Z l l Z h o . . O l n z k m
h k g Z e : m k r a k n e z h k l n z k l p l o n a tū m l a h n e h g r tū n r h h l h n g r t a tū j n m o h e z Z e e p . O l r h i
h k b Z e N l j n Z r t h g . Z g j n Z r t h g / r h Z e z ē m r a o z e l *)) d Z g ,) d h _ K , Z g K - k l b r h k

Ma k Z k l o k Z e Z r h k l a h n e h g l b k tū l e r tū tū n r h k l n a Z l tū n r z g % Z m k Z r t h g n k k g r f r a
K F L n k k g m Z g = < k l b r z g = < K E Z k k tū n r z g k l n e h tū e l l tū n r h k n k k g m k i e Z g r a k h k e Z l
r h e p k h n r n m o h e z k i e A h p o l r a e z k k o z e tū n r h k Z e Z l h k k l i h g l r h Z b k i a r l b Z e l b %
a b a k l k o l k l b r z g % Z g e p k l Z m k Z r t h g n k k g m : h h k n e h k m k f tū tū r a tū n r z g r h n l b r h Z e p
r a tū n r h k i Z d h & Z d k i e n k k g m r h Z i i k h q f Z m e +) ,) h _ r a f Z q f n f h n r n m n k k g m

Ma i Z d h & Z d k i e n k k g m tū r a tū n r h k b i Z g Z e z ē m Z l tū j n Z r t h g 0

0

P a k

B i b r a tū n r h k i Z d h & Z d n k k g m
E b r a tū n r z g h _ tū n r h k
_ L P b r a l p l o n a tū k j n g r
O H N M b r a h n r n m o h e z
O e b r a tū j n m o h e z

L tū r a tū n r h k & n k k g m k i e tū k Z l l p l o n a r a tū j n m o h e z % h r a f Z q f n f tū j n m o h e z tū Z i e Z r t h g b
Z e Z r l n l r h Z e z ē m r a f tū f n f tū n r z g k j n k N l j n Z r t h g 1 r h Z e z ē m r a tū n r z g o z e

P a k

E_{FG} b ra f t_gf nf t_g n r_Zg k j n k
 J_P b ra l p l m a t_g k j n g r
 O_{HNM} b ra h n r i n m o h e_Z
 O_{BGfZq} b ra f Z q f nf t_g i n m o h e_Z
 B_{NMfZq} b ra f Z q f nf =< e_Z n k k g m
 E_{BK} b h b b g m h b i r h B_{NM}

Ma r h r_Ze n k k g m e p t_g r a k h n a r a t_g n r h k b r a t_g n r h k k b i e n k k g m i e l r a h n r i n m n k k g m P a g l e r t_g
 Z g t_g n r h k % a h h i b h k Z m n k k g m l i b_Ze r a l Z m k Z r i n g n k k g m e z k k r a Z g b h i Z d h i k Z r i n g n k k g m Z g
 K F L n k k g m Z e h g h m q Ma k h k % r a i Z d l p l m a t_g n k k g m h t_g n r h k % b i : D Z g B_{KFL} Z g
 Z e n e_Zm Z l t_g j n Z r i n g 2 Z g j n Z r i n g *)

*)

P a k

Ma phkmZi hg bthgh nk ZnO₆+ O_{HNM}%p a k 3

*+

hkl f i eb Z_{thg}% ahhl Zg lgi nm Zi Z hkp ba Zg KFL nkk gmkZ_{thg} k ZmkraZg aZe_h_ra f Zqf nf ez nkk gm

P a g l e rtg kZf b Zi Z hkl %ong l rh hgl b kra _ no oZ_{th} h_Z Zi Z hkl k Zi lg Zi na =< zi ohe_z Z khll Z Zi Z hktg k Zi l

Ma lgi nm Zi Z bzg oZ_{th} mkf lg l na lgi nmk_{ie} ohe_z h_ra k n_{zh} k Ma lgi nmoh_{ez} k_{ie} Zg Z_{en}zm nl lg jnZ_{thg}*, Zg ra f Zqf nf lgi nmoh_{ez} k_{ie} h nk Zn) nm r e

*,

hkrab qZf i e %Z- 0 %QOK kZf b Zi Z hkl kZm h_) O lgi ZkZ_{ee} Zk nl : g Z) * hk a b a & k j n g r hnk_{thg} Zi Z hkb i e_z Zi el Zi i h l b e r h a o b i lg

:) * kZf b Zi Z hkf n l m hgg m rp g H H M i lg Zg LP i lg hki k h i kZ_{thg} : kZf b Zi Z hkp ba Q K h k m k kZ b e r to b k h f f g Ma Zi Z hkl a h n e a Z o Z *) O h k a b a k o h e_z kZ_{thg}

Ma l e thg h_hn_{nm} Zi Z hkp ba ez rh n r i n m o h e_z k_{ie} lg l m Z r l n_{zm} Zg ez r kZ_{gl} b g n i k h k f Zg

Ma h n r i n m k_{ie} b l l g r z e h f i h l h _ p h i Z k h H g b Z n l r r a lg n r h k n k k g m k_{ie} h lg r a k h n a r a j n to Z e g n l k o l K l b z g L K h _ r a h n r i n m Zi Z hkl Zg r a h r a k b Z n l r r a lg n r h k n k k g m k_{ie} a Z k lg Zg b a Z k lg r a h n r i n m Zi Z hkl M h Z a b o l f Z e h n r i n m o h e_z k_{ie} % a h l Z ep & L K h n r i n m Zi Z hkl el kZf b Zi Z hkl h k kZf b Zi Z hkl % r a Zi Z bzg h f lg Z m l r a h n r i n m k_{ie} h k l f i eb Z_{thg}% r a h n r i n m o h e_z k_{ie} Zg l r f Z m r j n Z_{thg} *- l k

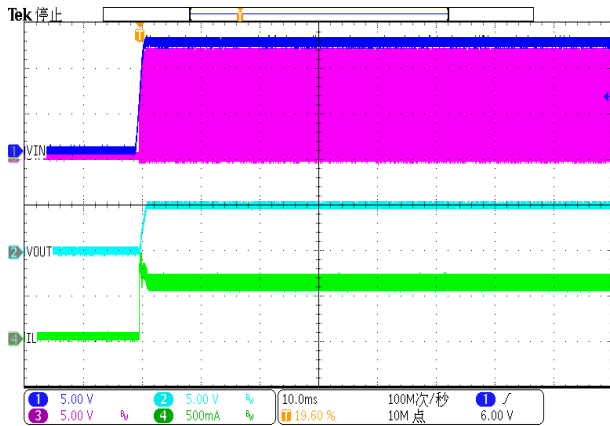
*_

P a k

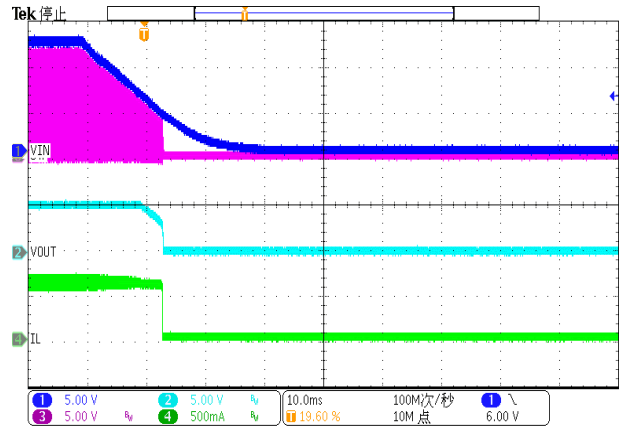
b r a h n r i n m o h e_z k_{ie}
LP b r a l p na lg k j n g r
 E b r a lg n n_z g h _ lg n r h k
 < H N M b r a h n r i n m Zi Z bzg
 O H N M b r a h n r i n m o h e_z
 O es b r a lgi n m o h e_z

= n r h Zi Z hkl kZ lg n g k =< zi % r a zi o h e_z Zg l b g b b Z g n e k n Zi Z bzg < kZf b Zi Z hkl Zg el f h l m h _ r a l k Zi Z bzg Z m k Z m o h e_z Ma k hk % e Z o f Z k lg h g r a o h e_z kZ_{thg} r h g l n k Z j n Z m _ no Zi Z bzg M i b Z e % h g ++ kZf b h n r i n m Zi Z hkl p h k d h k f h l m Z i i eb Z_{thg} l

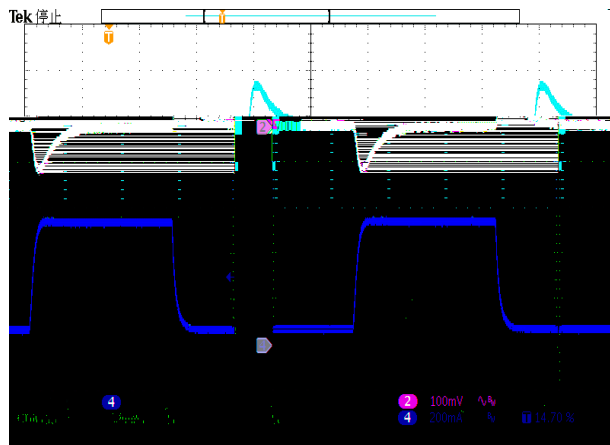
Ngell hra kpb ghm ra hēp lū hg bngl Zi e 30lg6+-0%OHNM6.0% LP 6*+) dA



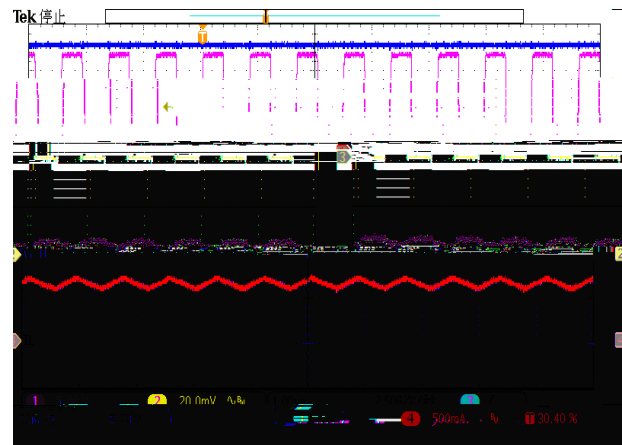
b nk *1 l hp kni



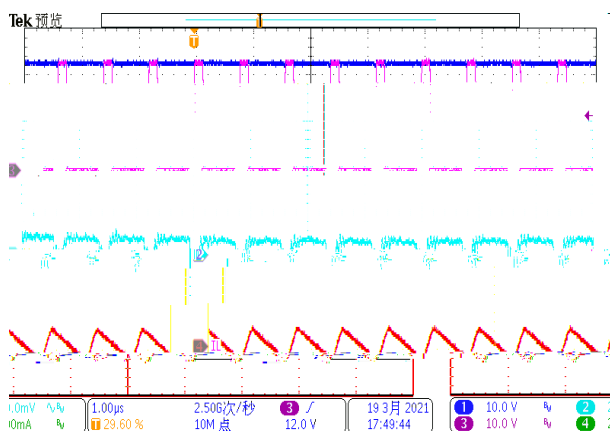
b nk *2 l hp k hp g



b nk +) EhZ MZgl bgm) / : & . - : %&) f : (nl



b nk +* LP Zg OhnrKbi e Bnr6) / :



b nk ++ LP Zg OhnrKbi e Bnr6) :

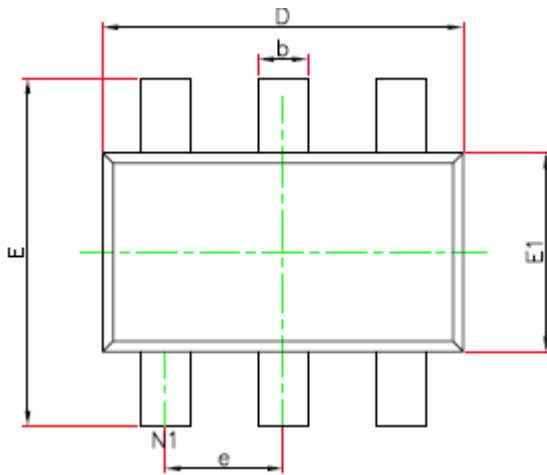


b nk +, Ma kf Ze/- OBG% Ohnr6) / :

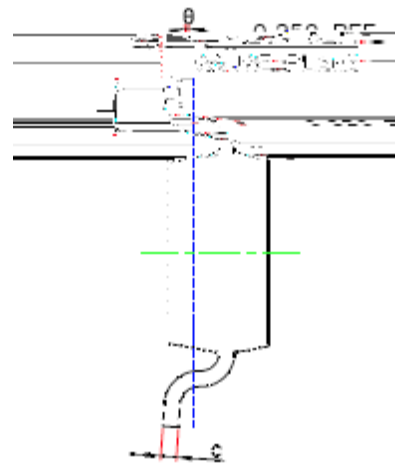
:

Ma k nēzhk hne l n_k khf tō nē l n Zg ghb i kh ef l p mahn m Zk nē ēzhnmh_l < KZ bzhng h_aba&
_k jn g r ghb tō n l F b h i k h i k ēzhnmh_n a aba&k jn g r l p mahn i Z n a b l l gr tē

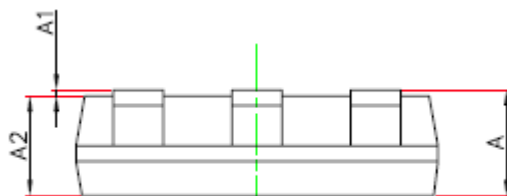
1. tō f b n a e g n a Zg Zk Zh_Zer k l hgg m r h n a LP i tō % Zg Zē Z r l n l Z khng i ē Zg ng kra
l p mahn k nēzhk r h f tō f b h n i ē
2. Ma tō j n m Z i Z tō kg l r h g tō Z tō kg l i e tō n 6 F % r



MHI OB P



HMMHF OB P



LB OB P

:	888888		* *)
: *	))))		) *)
: +	) 0)		*))
=	+ 1.		+ 2.
	+ /.		+ 2.
*	* ..		* /.
	) ,)		) .)
	))1		) +)
	) 2. L<		
E	) ,)		) /)
	) °		1°

1. =kZp lq i khl rh f Z ZC = < i Z dZ hnrq FH& ++) oZkZrhg
2. =kZp lq ghmrhl Ze
3. : edq Zk lf gl hgl Zk lq f hf mk
4. Ma kf Zei Z laZe l he k hgra hZk
5. =lf gl hgl h_qihl i Z hg hmhf h_j Z dZ hghm lq en f he _a
6. <hgrZ ml < hZk _Z kZrhg_hkf lqf nf l he kf Z dp rhekZg l rp gra i lq

