2.2V-5.5V Vin, 1A, 8uA I_Q, Low-Dropout Regulator

A OPM N

I [VW b DS YW H H
S [_ _ A b 5 dbW , 3
3V STWHa SYW *H H
A b Ha SYW3UU dSU ,
F</ , ±
F</ & , ±
>a C [WUW 5 dbW ,* 3
G dS >a EZ Va 5 dbW , 3
>a 6daba Ha SYW
&_H S _3 aSVU dbW
&%_H S _3 aSVU dbW
E bbad A b 5SbSU[ad DS YW
8 8
>a 7ED,
&_ Wd S EaX Sd F[_W
WYdS WWEZad 5[dU [Bda WU[a [ZA584
A Wd5 dbW 8a V TSU] 8WS dW
7 STWb[[S S[STW
A WdFW_bWdS dWBda WU[a
3U[WA b 6[UZSdYW
3 S[STWBSU]SYW68 %%*>

KKGD OD I N

4S Wd Ba WdWWE W_
3 a_a [W[Xa S[_W
S [YS[a W_
BadSTWSbb[S UW

N MDKOD I

FZWE5F) 3 bdaV U [S a Vdaba [WSd
dWY SadVW[Y WW aabWdS W [ZS [VW[b a SYW
dS YWXda_ H a H S V 3 a b U dbW [Z
WSTWUa da FZWE5F) 3 bdaV U [STW
[Z 8 8 a b USbSU[ad S V 8
UWdS_[UUSbSU[ad[dWUa__WVWW

A * 3 b[US c [WUW U dbW S [YZ aSV_S]W
ZWE5F) 3 bdaV U [VWS UZa[UW Xad badSTW
VW[UW [Z TS Wd ba Wd bb S V S ab[_S

RBS 0/0/ // Rd hdr

M DND I C DNO MT

AF7, BSYW _TWd XadbdW[a dW[[a _S V[XWdXa_ bSYW _TWd [ZWU dW Wd[a

DW[[a , DWWS Wa bdaV U[a

DW[[a , GbVS W ZW8[Y dW* S V 8[Y dW (S V ZWd_S bWdXad_S UWa bSYW

DW[[a , 3 VV E> WW[VW[UWadWd[Xad_S[a GbVS W SbWS V dWW[Xad_S[a

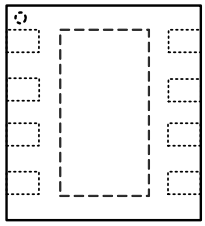
DW[[a %, GbVS W ZWbSU]SYW[Xad_S[a

DW[[a &, GbVS W ZWbSU]SYW[Xad_S[a S V ZW aX Sd [_W

D M MDI A MH OD I

N cd akd Cduhbd	Ntsots Unks f d	O b f d	O b f d L hmf	OHMR	LRK	S mr on sL dch Pt msks
E5F) 3 6F4D	3V	68 %%*>	3	*		FSbW DWW

KDI I ADBPM OD I



RBS 0/0/ //CSAQ

68 %%*>BSU]SYW

KDI API OD I N

AI G N O

M L D	M L D	OHMIETMBSHNM
	HAGF	DWY S WWa b a SYWb[
	HAGF	DWY S WWa b a SYWb[

+	FZWd_S BSV	5a WU ZWZWd_S bSV aS SdYWSdWS9 6bS WXad[_bda VW ZWd_S bWdXad_S UW

M HH I K M OD I B I DDD I N

A WdabWdS[YXdWWS[d W_bWdS dWdS YW W aZWd[W aVW

O Q L DSDQ	CDEHMHSHNM	L HM	L W	TMHS
H	b a SYWdS YW			H
HAGF	A b a SYWdS YW	*		H
H7	7 STW[b a SYW		H	H
5	b USbSU[ad			8
5AGF	A b USbSU[ad			8
7ED	A b USbSU[ad7ED dWc[dW_W			
F<	AbWdS[Y U[a W_bWdS dW	&		5

?N GPO H SDHPH M OD I BN

A WdabWdS[YXdWWS[d W_bWdS dWdS YW W aZWd[W aVW

O Q L DSDQ	CDEHMHSHNM	L HM	L W	TMHS
H	S[_ _[b a SYWdS YW	%	(	H
HAGF	S[_ _a b a SYWdS YW	%	(	H
H7	S[_ _ WSTW[b a SYW	%	H	H
F<	< U[a W_bWdS dWdS YW	&		5
F Y	E adSYW W_bWdS dWdS YW	(		5

(1) E dW W TWa V Za W[VW VWd3T a W S[_ _DS[Y_S US WVWW[UWbWd_S W VS_SYWFZWVWW[UW[a Y SdS WW a X U[a a [WWaX[DWUa_ _W VW/AbWdS[a 5a V[a

(2) FZW5[U VW a Wd W_bWdS dWbda WU[a abda WU ZWVWW[UWV q[Ya WdaSVUa V[a < U[a W_bWdS dW[WUWW 5 ZW a Wd W_bWdS dWbda WU[a [SU[W5a [a abWdS[a STa W ZW bWU[XW_S[_ _abWdS[Y U[a W_bWdS dW[dW UW[XW[_W

N M OD I BN

O Q L DSDQ	CDEHMHSHNM	L HM	L W	TMHS
H7E6	: _S 4aV aVW: 4 bWd3 E <7675 <E & bWU[XUS[a S b[			]H
	5ZSdYW W6W[UW aVW56 bWd3 E <7675 <E & bWU[XUS[a S b[			]H

(1) <7675 VaU _W <7B SW ZS H:4 Sa SXW_S XSU q[Y [ZS S VSdV7E6 Ua da bdaUW

(2) <7675 VaU _W <7B) SW ZS H56 Sa SXW_S XSU q[Y [ZS S VSdV7E6 Ua da bdaUW

OC MH GDI A MH OD I

FZW S WaXD <3 S VD <5 Y[W [Z[STW[a S[VXadUa_bSd[a [Z a ZWdbSU]SYW S VUS a TW WdXadVW[Y b dba W 4WUS WZW WdW[_ SW[SUUadVS UW [Z<7E6) FZW Va a dWbdWW ZWbWdXad_S UWaTS[W[S SU S Sbb[US[a 8adVW[Y [Xad_S[a WWBa Wd6[[bS[a S VFZWd_S BWdXad_S UW WU[a

FZW S WaXD <3Q7H [ZW W WdW TS W a a d7H S V[_adW WX Xad ZWd_S VW[Y 7 W [X[[Va a dWbdWW ZW ZWd_S bWdXad_S UWaXU a_Wd B54 VW[Y T [S S YaaV Sd[Yba[Xad ZWd_S bWdXad_S UWVW[Y

FZWB54 [Xad_S[a aXa d7H ,& S Wd a 5 [Wd a 5 __ %__ [W

FZW S W Y[W [Z[STWSdW a SUZSdSUWd[[UaXbSU]SYW[WX T aX_S a ZWd W_ WWUZSdSUWd[[U UZS ZWVW[Y S V S a aX ZWbd[WdU[dU [TaSdV B54 ZWd_S bSV [WS VW Wd S W [da _W S XSUad FZWB54 TaSdV [S ZWS [ ] ZS [a VWdW a ZW WSV S V ZWd_S bSV aX ZWVW[UW5 ZS Y[Y ZWVW[Y adUa X[Y dS[a aX ZWB54 TaSdVUZS YW ZWVX[U[WU aX ZWZWS [ ] S V ZWdWXadW ZWSU S S W aX ZWTWa STW

PARAMETER (4-layer)	SGDQL KL DSQHB	CEM2W2,7K	UNIT
D <3 (1)	< U[a a S_T[W ZWd_S dW[S UW	)*	5 I
<F	< U[a a ab UZSdSUWd[S[a bSdS_WWd	+)	
<4	< U[a a TaSdVUZSdSUWd[S[a bSdS_WWd	%(	
D <5 ab (2)	< U[a a US W ZWd_S dW[S UW		
R JA_EVM(3)	U[a a S_T[W ZWd_S dW[S UW	% +	

(1) D <3 [U[a a S_T[W ZWd_S dW[S UW TS WWa <7E6).

(2) D <5 [U[a a US W ZWd_S dW[S UW TS WWa <7E6).

(3) D <3Q7H [U[a a S_T[W ZWd_S dW[S UW Z[UZ[W WWa E5F 7H

G OMD G C M O MDNOD N

H /HAGF H 5AGF/ 8F</ & 5 5 b[US S W[W WV VWd 5

RBS 0/0/ // Rd hdr

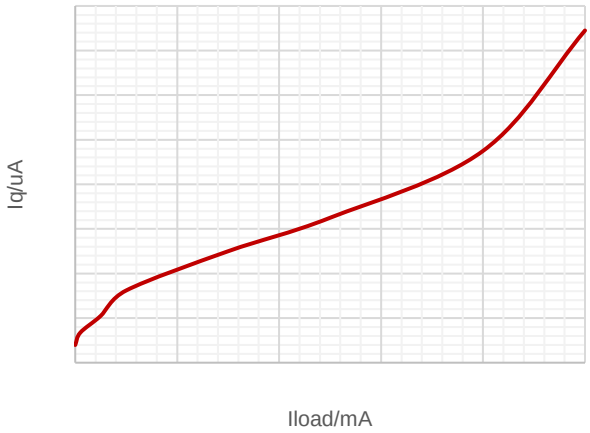
RXL ANK	O Q L DSDQ	SDRS BNMCHSHNM	L HM SXO L W	TMHS
7 Q H	7 STWb[U dbW	7 /		3
7 Q%%H	7 STWb[U dbW	7 /%%H		3
D7 Qb Va	WSTWb Va dW[ad		(&*	]
FEE	EaX Sd [_W		& &	_
Onv d Fnnc				
HB9QD	B9 d[[Y ZdWZa VbWdUW SYW	HAGF HAGF A ZW HAGF d[[Y	**	
HB9Q8	B9 XS [Y ZdWZa VbWdUW SYW	HAGF HAGF A ZW HAGF XS [Y	*	
HB9Q>Al	B9 a b a a SYW	B9 [ ] _3	*&	_H
DB9	B9 b Va dW[ad	DB9 / HB9Q>Al _3	(*	
B9Q>=9	B9 WS] SYWU dbW	B9 / H HAGF [dWY S[a		3
FVQB9D	B9 [Y S d a Z[YZ VWS	8da_ HAGF0 ** HAGF A a B9 d[[YWWYWVWS [_W	)	
FVQB98	B9 [Y S d a a VWS	8da_ HAGF. * HAGF A a B9 XS [YWWYWVWS [_W	**	
bshud Chrbg fd				
DV[UZSdYW	>a a b AE a dW[S UW	7 / H /%%H	%%	
Sgd l kO nsdbshnm				
FE6	FZWd_S Z Va ZdWZa V%	F< d[[Y : WdW[	)	5 5

(1) FZWVdaba a SYW[VWX[WS H HAGF ZW XadUWH [_H TWa ZW S WaXHAGF XadH /HAGF A H L

(2) BEDD [VWd[WdWXda_ TWUZUZSdSUWd[S[a a bdaV U[a W L

(3) FZWd_S Z Va ZdWZa V[VWd[WdWXda_ TWUZUZSdSUWd[S[a a bdaV U[a W

OTKD G C M O MDNOD N



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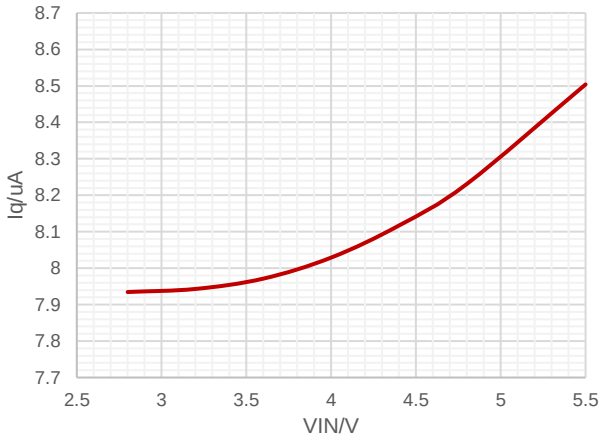
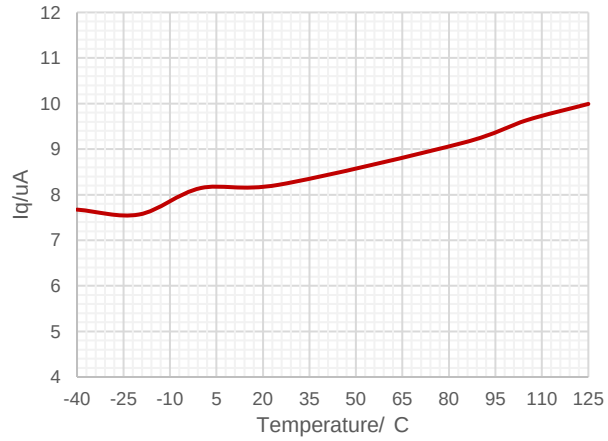
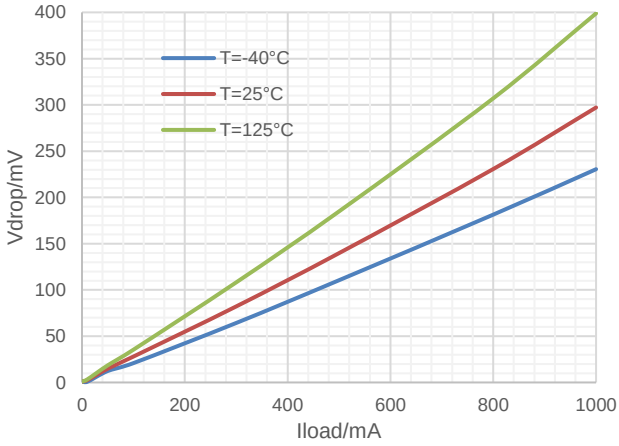


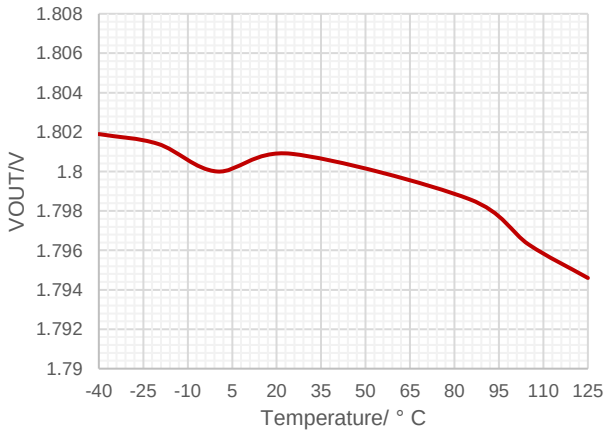
8[Y dW C [WUW 5 dbW b Ha SYW a aSV



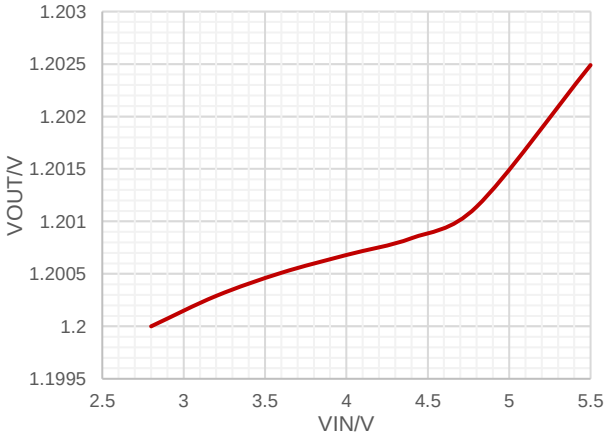
8[Y dW% C [WUW 5 dbW 3 _ T[W FW_bWdS dW



8[Y dW& 6daba Ha SYW A b 5 dbW

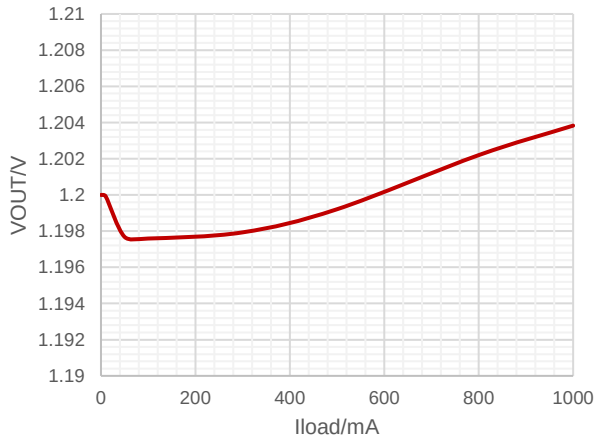


8[Y dW A b Ha SYW 3 _ T[W FW_bWdS dWS HAGF/ *H



8[Y dW(A b Ha SYW b Ha SYW

OTKD G C M O MDNOD N i od



8[Y dW) A b Ha SYW A b 5 dbW

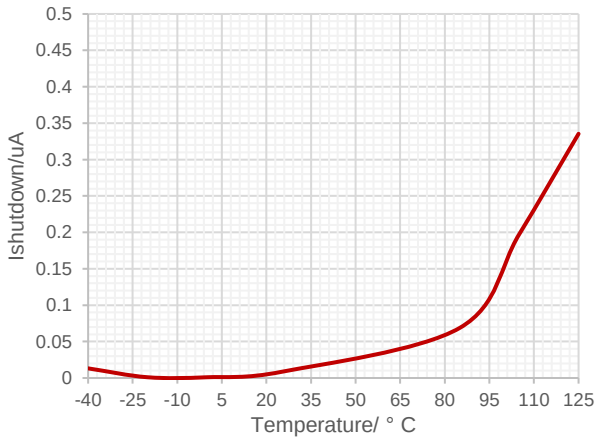


Figure 8. Shutdown Current vs Ambient Temperature

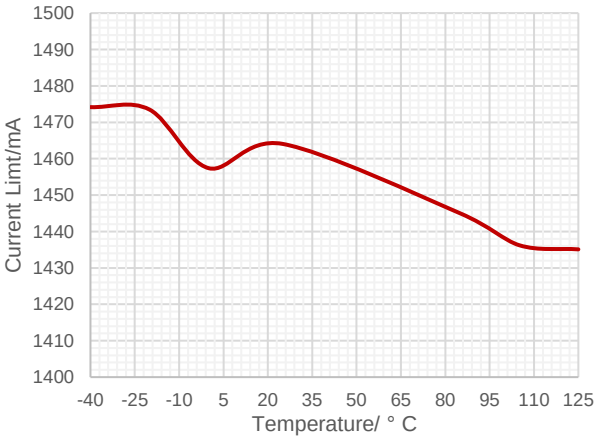


Figure 9. Output Current Limit vs Ambient Temperature

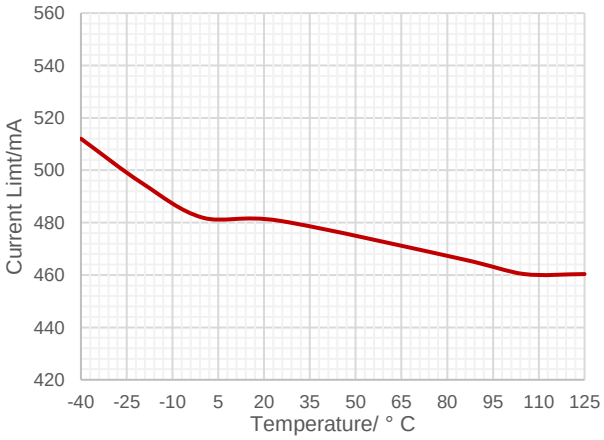
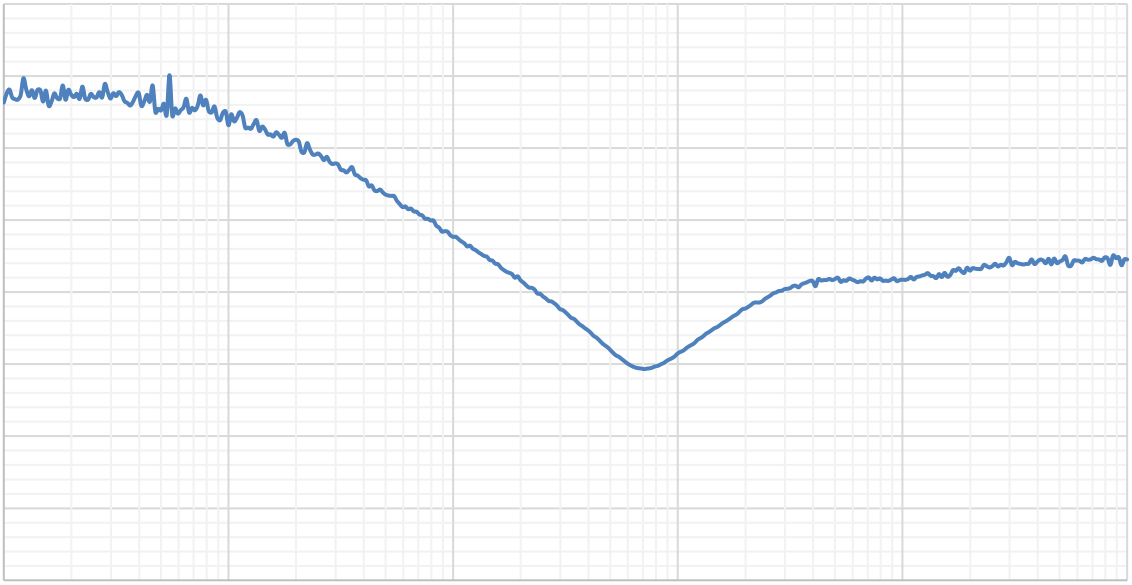


Figure 10. Short Current Limit vs Ambient Temperature

RBS

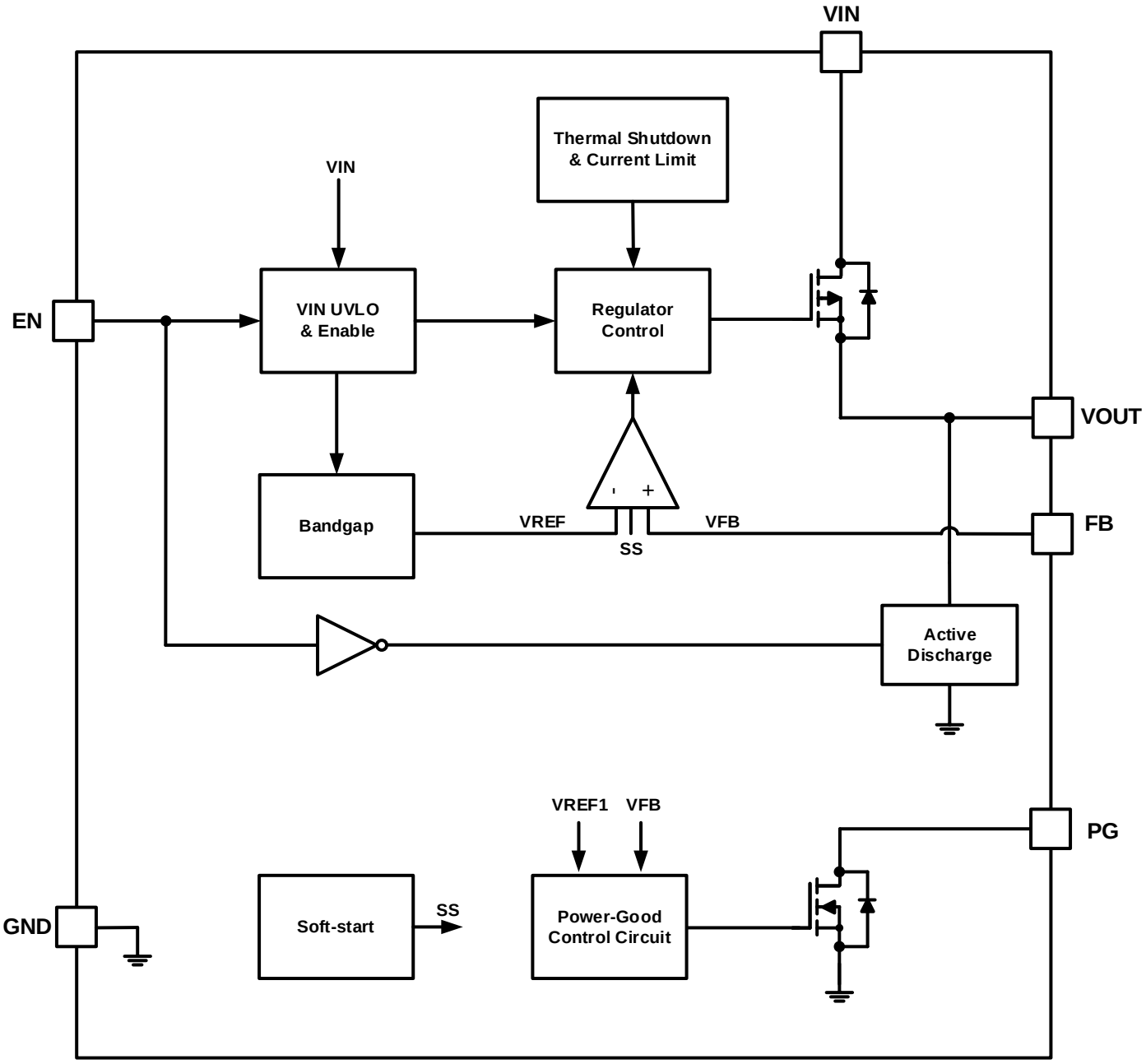
OTKD G C M O MDNOD N i od



8[Y dW %BEDD 8dWc WU
H /&%H 5X%%b85AGF/ 8 AGF/ _3

8[Y dW &BEDD 8dWc WU
H /%%HHAGF/ H5X%%b85AGF/ 8

API OD I G G F D BM H



8[Y dW 8 U[a S 4 aU] 6[SYdS_ aX3V A b HWd[a

K M OD I

Nud uhdv

FZWE5F) 3 bdaV U SdW 3 a b U dbW [WSddWY Sad [Z Wd a c [WUW U dbW FZWW a SYW dWY Sad abWdS WXda_ H a H65 [b a SYW [Z bbad[Y(H dS [W [b a SYWS VUa _W* 3 c [WUW U dbW S a aSV

FZWE5F) 3 bdaV U SdW STW [Z 8 8 a b USbSU[ad S V 8 UWdS_[U USbSU[ad [dWUa__WVWW 3 [Wd S &_ aX Sd [_WS a[V SdYW[d ZU dbW S V a b a SYWa Wd Zaa V q[Y Sd b

FZWE5F) 3 bdaV U S a bda [VWW STWUa da Z[UZ [Wd [STWXad ZWSbb[US[a WWW[Y Wc WUWUa X[Y dS[a A ZWd bda WU[a XWS dW [U VW ZWH [b VWd a SYW aU]a a Wd U dbW bda WU[a a b ZSdV Zad bda WU[a [ZA584 S V ZWd_S Z Va bda WU[a

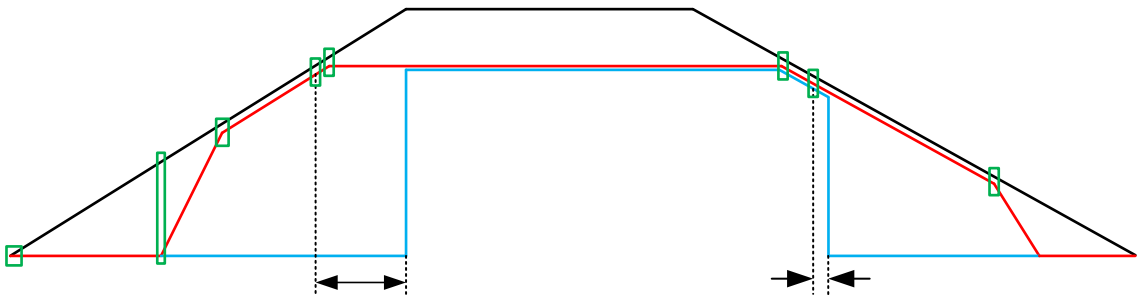
FZWE5F) 3 bdaV U SdWS S[STW[

RBS 0/0/ // Rd hdr

Onv d ,F nnc mc Onv d ,F nnc Cdk

FZWba WdYaaV B9 b[[S abW VdS[a b S VUS TWUa WUWW a S H ad a WdbS[Zda YZ S W WdS b b dW[ad FZWB9 a b [Z[YZ [_ bWWS UW ZW HAGF [YdWS WdZS ZWB9 qb ZdWZa V H_{B9QD}/** $H_{AGF\ A}$ XHAGF Vdab TWa H_{B9Q8}/* $H_{AGF\ A}$ ZWabW VdS[a b d a S Vb ZWB9 a b a Xa b a SYW_a [ad[Y[a WWWW ZWB9 b[US TWWXXaS[YadUa WUWW a 9 6

FZWba WdYaaV VWS [_ W FV$_{QB9D}$ [VWX[WW S ZW [_ WbWdaV Xda_ ZW H_{AGF} WUWWW ZWB9 qb ZdWZa V a SYW H_{B9QD} a ZW ZWB9 a b [Z[YZ FZ[ba WdYaaV VWS [_ W[WT S [WdS [_ W Z[UZ[ ) b[US FZWba Wd



8[Y dW E Sd b S VEZ Va 7 S_b W E5F) EWd[W

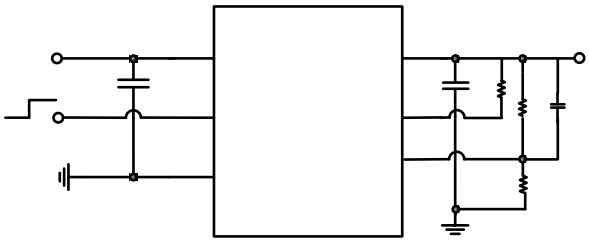
Sgd l kRgt scnv m

FZ[VW[UW[UadbadS W S ZWd_S Z Va F_{E6} U[dU [S S bda WU[a Xda_ a WdZWS[Y 8adUa [a ad_S abWdS[a ZW U[a W_bWdS dW Za V a WUWW ZWF$_{E6}$ d[b ba[FZW U[a W_bWdS dWWUWW[Y ZW F$_{E6}$ d[b ba[US W ZWa b a d aXXI ZW ZW U[a W_bWdS dWXS TWa ZWF$_{E6}$ d[b ba[_[ZWd_S Z Va Z WdW[ZWa b d a SYS[

RBS 0/0/ / / Rd hdr

KKGD OD I DI A MH OD I

S ohb k ookhb shnm0



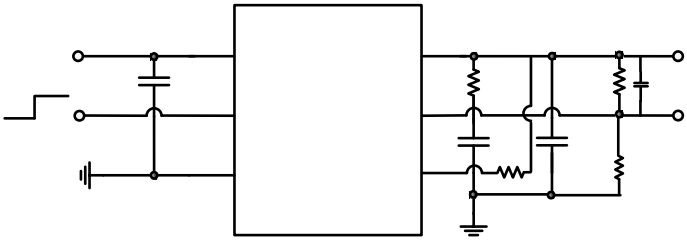
8[Y dW E5F) 3 F b[US 3bb[US[a EUZW_S[U

Cdr lf mO l dsd r

Cdr lf mO l dsd r	D l okd U kt d
b Ha SYW	H ad_S H H
A b Ha SYW	*H H
S [_ _ A b 5 dbW	3
A b 5 SbSU[adDS YW 5 AGF	8 8 dWUa_ _ W V 8
b 5 SbSU[adDS YW 5	0 8 dWUa_ _ W V 8

TSU] SdV Xda_ ZWHAGF a ZWH ZW ZWH Zad a ZW9 6 adWWd a _[[_[W ZWVS_SYW[UZ US W WSUSbSU[ad [ZSUSbSU[S UWW ZS 8 3 aT [Wd[YSdWWd Wba Sd[V[aVW[a ZWH [US bdWW dWWd WU dbW Xda_ dWWd WTS Wd Ua WU[a ad ZWUS W ZW ZWba[3 [Zad U[dU [WW 9 6 X ZWdW_S TWS ba [TWUS Wba[4 [Zad U[dU [WW a 9 6 WS a dWUa__WV [YSTbS V[aVW TW WW ZWH S V ZWHAGF

S olb k ookb shmm2



8[Y dW %E5F) 3 F b[US 3bb[US[a EUZW_S[U [Z>SdYWA b 5SbSU[ad

Cdr lf mO l dsd r

Cdr lf mO l dsd r	D l okd U kt d
b Ha SYW	H ad_S H H
A b Ha SYW	*H H
S [_ _ A b 5 dbW	3
A b 5SbSU[adDS YW5 AGF S V7ED	8 8 [Z7ED/
A b 5SbSU[adDS YW5 AGF	dWUa__WV 8 [Z a 7ED
b 5SbSU[adDS YW5	0 8 dWUa__WV 8

RBS 0/0/ / / Rd hdr

Nt sot sUnks f d

FZWa b a SYW[WT S W Wd S dW[adV[[VWdD S VD [b[US Sbb [US [a UZW_S [U DWUa_ _W VWW
D dW[S UW[ ] G WWc S [a a USU S WD

ZWdW,

HD78 [ZWXWWTSU] dWXWdW UW a SYW b[US * _H

S akd 0 Bnl odmr shnmU kt dr en S ohb kNt sot sUnks f d.B o bhsn Bnl ahm shnmr

Ha H	5AGF 8	5Xb8	D]	D]	5AGF 8 7ED ab [a S
		%%	&+ +		
*		%%	&		
&		%%			
%%		%%	% +		
		%%	%		

Hmot sB o bhsn mc Nt sot sB o bhsn

E5F dWUa_ _W V SVV[YS 8 adYdWS WdUSbSU[ad [ZS 8 T bS USbSU[ad[bSdS WS H b[a] WWb
ZW[b a SYW STW3 _[_ WWUda [U USbSU[adada ZWdUSbSU[ad [ZZ[YZ USbSU[S UW[YYW WW Xad
ZW W_ ba Wd [Z SdYW a Y 3R a

* 8ad_adW[Xad_S [a [[Ua W Ua_ % E[[Ua 5a W FWUZ aaY 5a > V 3 D[YZ DWWdWW
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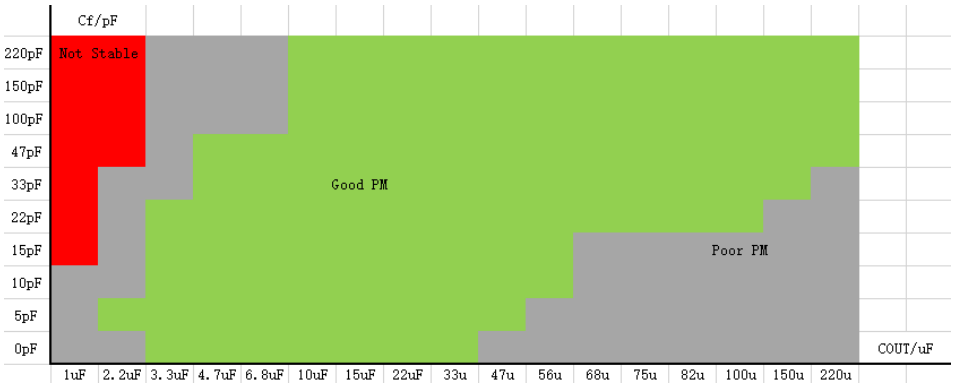

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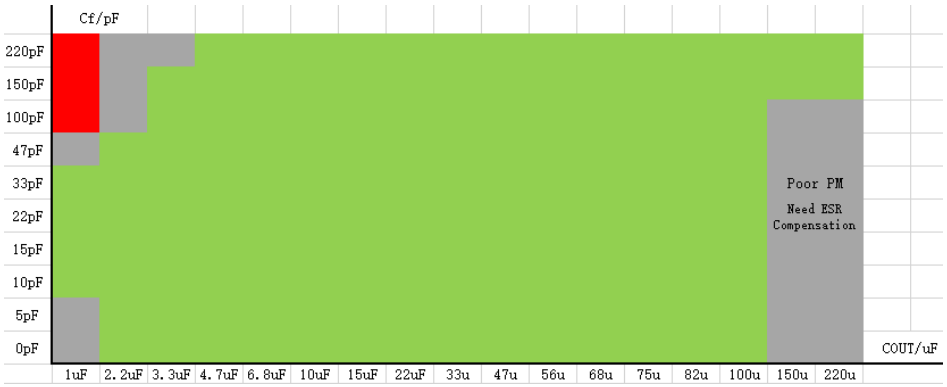

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WWW a TWV[[bS WW a Xda_ ZWUZ[b FZW_S [_ _ U[a W_bWdS dW[VWbW VW a ba WdV[[bS[a

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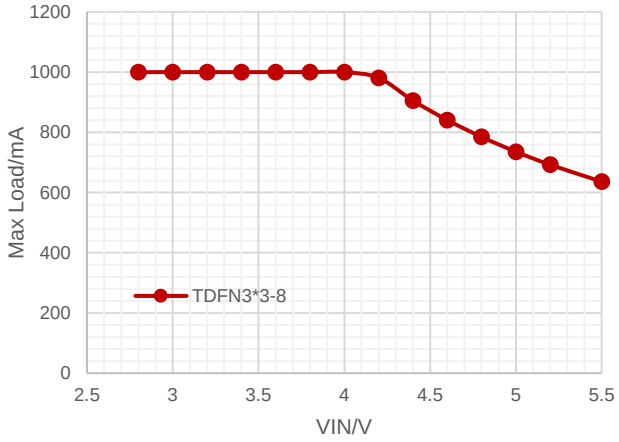

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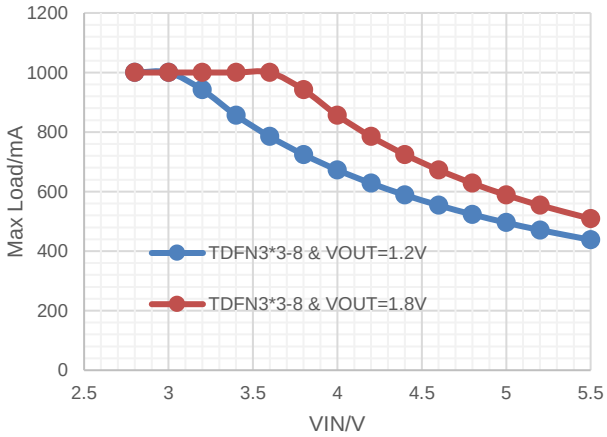

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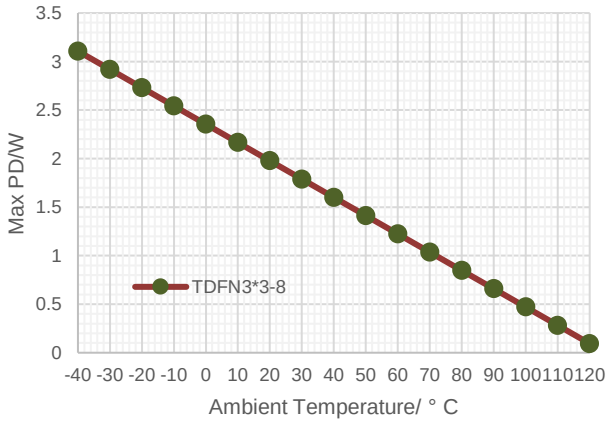

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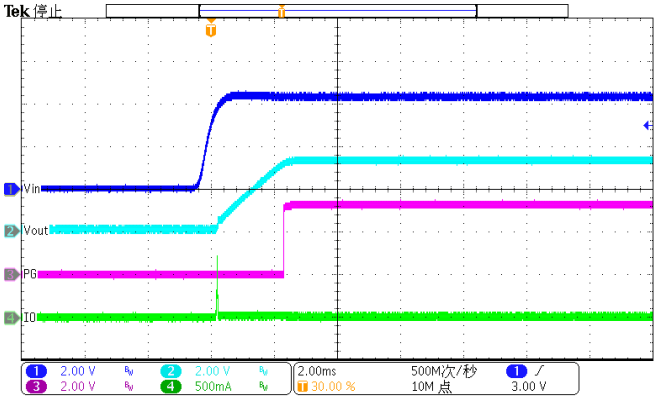

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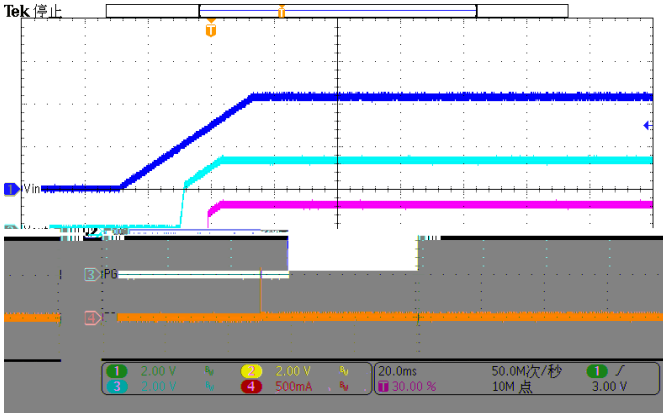

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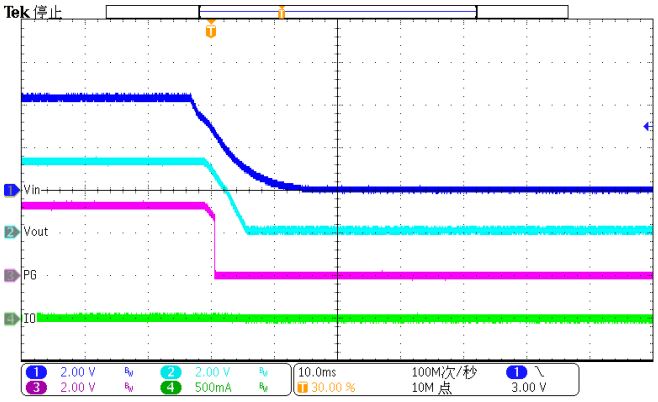

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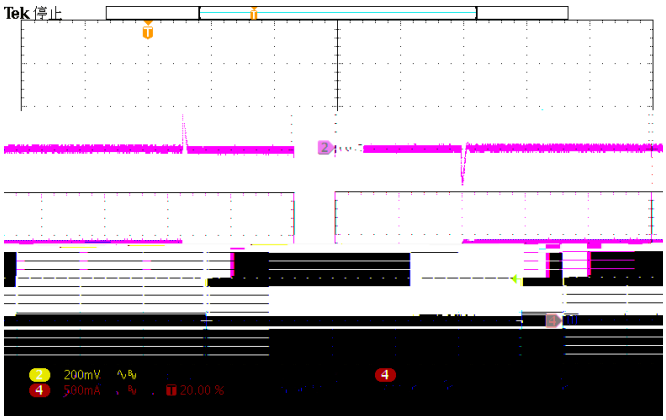

8[Y dW%% 65 65 >aSVFdS [W

_3 + _3 HAGF/%%H

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_3) _3 HAGF/%%H

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H[/Ha H W a ZWd [W a WW

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8[Y dW%

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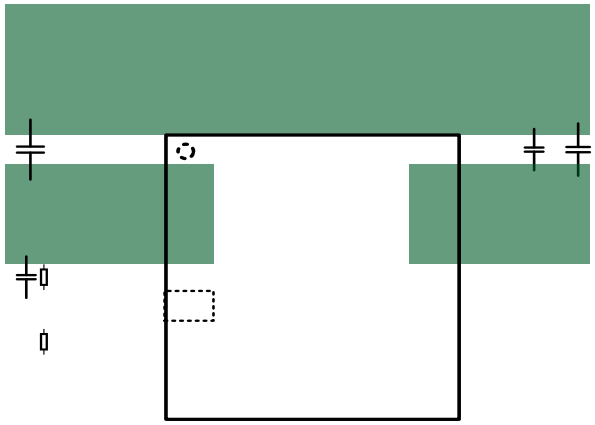
2. [dWUa_ _ WVWW a T bS ZW[b b[a Yda V [ZS 8 T bS USbSU[ad FZWaab SdWS Xad_WW T ZWT bS USbSU[adUa WU[a H b[S V ZW9 6 b[aX ZW W_ _ TWS _S S ba [TW
3. [dWUa_ _ WVWW a W [VWdSUWWYZ ad Z[U] UabbWd W[YZ a _[[_[W D Vdab S VZWS V[[bS[a
4. Fa[_bda WZWZWd_S bWdXad_S UWaXZWVWW[UWS V_S [_[WZWU dW a b S Z[YZS_T[W W_bWdS dW E5F dWUa_ _ WV bdWSV[Y ZWUabbWd VWd ZWZWd_S bSVS XSdS ba [TWS Vb SU[YWa YZ ZWd_S [S a ZWUabbWd VWd ZWZWd_S bSV
5. X [Y SdYWWWWUda [UUSbSU[ad [ZZ[YZ 7ED dW[ad E5F dWUa_ _ WV SVV[YS 8 a 7ED USbSU[ad bSdS WUa WU[a [Z ZWSdYWWWWUda [UUSbSU[ad



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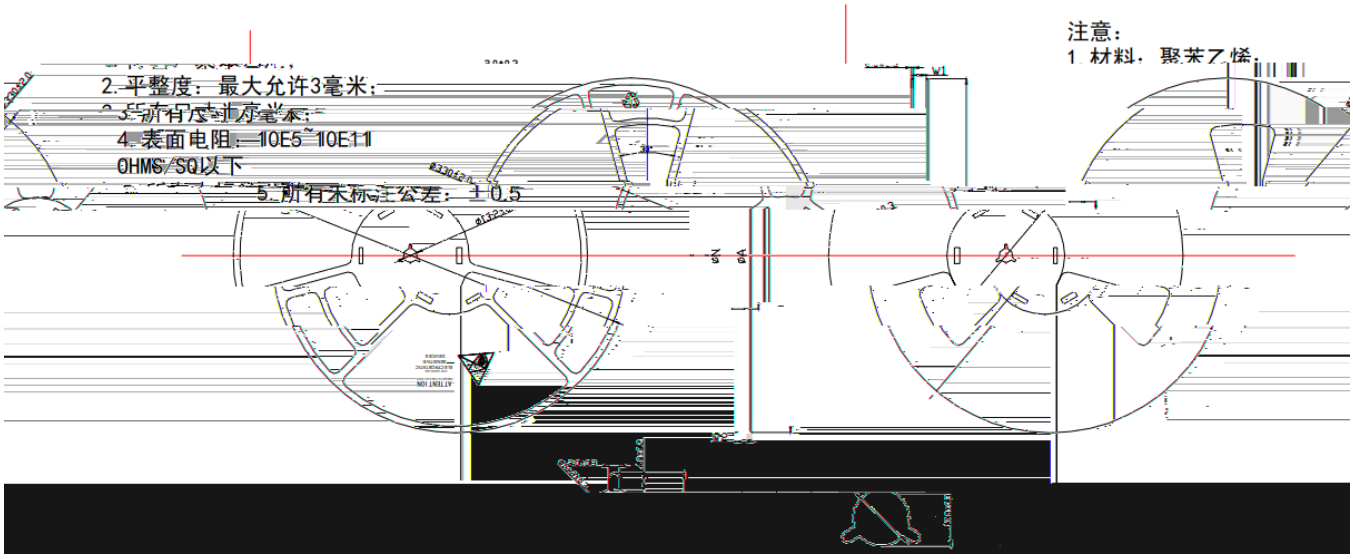

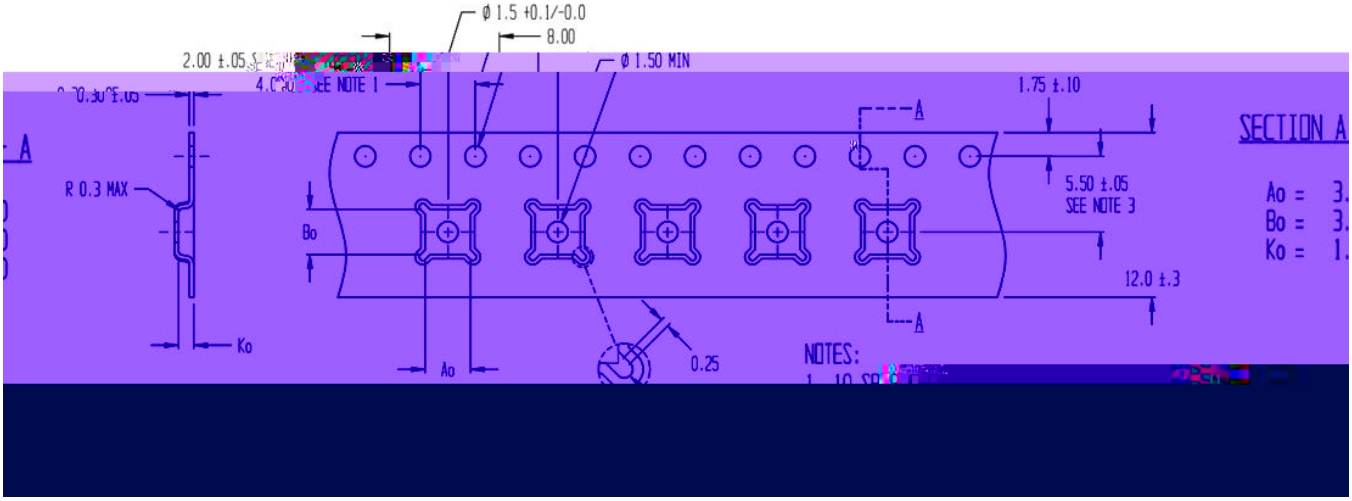

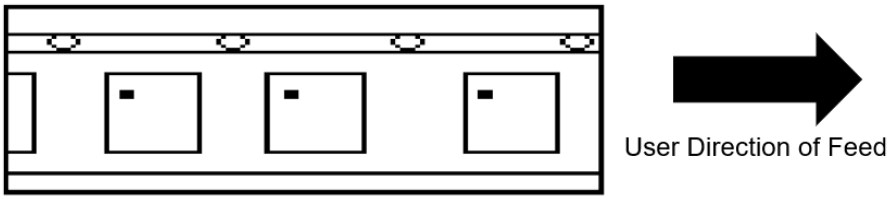

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