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

FEATURES

- T fab□Fkmrq□Sl iq db□O kdb70+S*2-S□
- I l t □Perqal t k□ rodbkq0+6r>□
- I l t □Nr fbp bkq□L mbo qfkd□ rodbkq71.2r>□
- (,*□+2" □Cbba_ h□Obdbdbk b□Sl iq db□
- >agrpq _ib□Pt fq efkd□Cdbnr bk v7□--hEw□q □ /+/JEw□
- Budpdk i□Cdbnr bk v□Pvk ed kf □
- Budpdk i□ l j mbkp qf k□
- Mr ipb□Phfmmfkd□J l ab□
- Pr mmi qp□ aafqf k i□Pil mb□ l j mbkp qf k□
- .1j p□Fkdpdk i□Pl oq*pq oq□Qfj b□
- Fkdpdo dpa□Mdo dp qf k□Cb qr db□
  - *□ l kpq kq□Mb h* rodbkq□Mdo dp qf k□Qedbpel ia□ L sbo□Fkmrq□Sl iq db□□
  - *□ L rqmrq□L sbosl iq db□Mdo dp qf k□
  - *□ >agrpq _ib□Rkabo*sl iq db□l l hl rq□
  - *□ Qebqj i□Perqal t k□Mdo dp qf k7.32 □
- J PL M*.-l %0j j '0j j &□

APPLICATIONS

- J riqf*l rqmrq□Civ_ h□□
- l BA□ f p□Pr mmiv□
- M oq _ib□Pmb hbo□Pr mmiv□
- qpov□M t bdba□ l l pq□Civ_ h,PBMF □mmif qf k□

DESCRIPTION

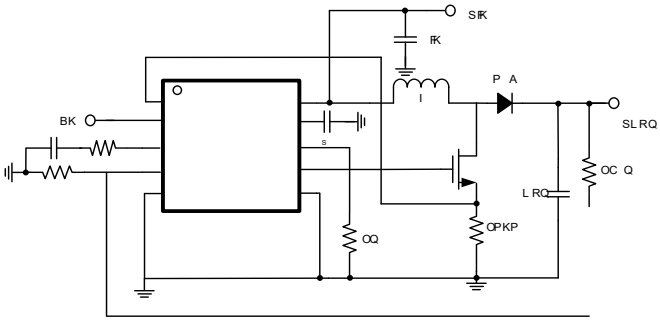
Qeb□ P Q5.3/1□ absf b□ fp□ □ t fab□ fkmrq□ kl k* pvk ed kl rp□_l l pq□ l kqp iibo□Qeb□absf b□ k□_b□rpba□ fk□ l l pq□PBMF □ka□Civ_ h□l ksbqdpqp+□

Qeb□pt fq efkd□cdbnr bk v□l c□qeb□P Q5.3/1□absf b□ k□ _b□ agrpqpa□q □kv□s irb□_bq bbk□--hEw□ka□/+/JEw□ _v□rpfkd□ □pfkdib□budpdk i□dbpfpq o□l o_v□pvk ed kfwfkd□ fq□q □ k□budpdk i□il h+□ rodbkq□j l ab□l kqp i□mdsfabp□ pr mbdf o_ kat faqe□ ka□qp kpfbkq□dbpml kpb□fk□ aafqf k□ q □ v ib*_v* v ib□ rodbkq□ifj fqfkd+□ rodbkq□ifj fq□fp□ agrpq _ib□qedr de□ k□budpdk i□dbpfpq o+□

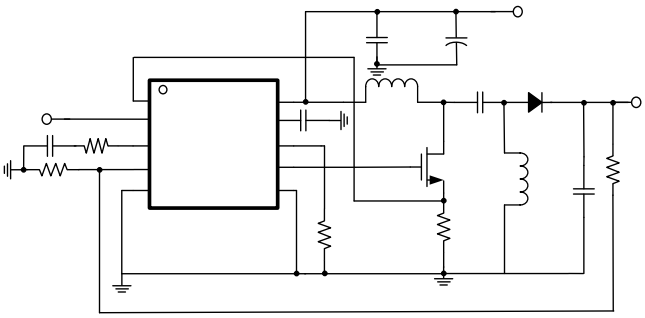
Qeb□P Q5.3/1□absf b□e p□_r fq*fk□mdo dp qf k□db qr dbp□ pr e□ p□qebqj i□perqal t k)□pel oq* for fq□mdo dp qf k□ ka□ l sbosl iq db□mdo dp qf k+□M t bo*p sfkd□perqal t k□j l ab□ dbar bp□qeb□q q i□pr mmiv□ rodbkq□q □0+6□ >+□Fkdpdo dpa□ rodbkq□pil mb□ l j mbkp qf k□pfj mifdbp□qeb□abpfdk□ ka)□ fc□kbbaba□d o□pmb fcf □ mmif qf kp)□ k□_b□fk db pba□ rpfkd□ □pfkdib□dbpfpq o+□

Qeb□absf b□fp□ s fi _ib□fk□ □J PL M*.-l %0j j '0j j &□ M h db+□

TYPICAL APPLICATION



L L PQ□



PBMF □

REVISION HISTORY

KL QB7M db krj _bop d omobsf rp obsfpf kp j v afcbocod j m db krj _bop fk qeb r obkqsbopf k

Obsfpf k + 7Obib pba qj j dnbq

Obsfpf k + 7Rma op Absf b Loabo Fkd oj qf k

Obsfpf k +/ 7Rma op Absf b Loabo Fkd oj qf k)> _pl ir dp J ufj r j O qfkdp ka Lmbo qf k pb qf k

DEVICE ORDER INFORMATION

P Q5. 3/1 J OAO	Q mb Obbi	1- - -	. 3/1	. -	J PL M*. - I	0

ABSOLUTE MAXIMUM RATINGS

L sbo lmbo qfkd cobb* fcdpj mbo q db r kibpp lqebd fpb kl dpa%&

SFK) RSI L BK	*- -0	3/	S
S)AO %A sl iq db&	*- -0	3-6	S
S)AO %Qo kpfbkqd o9/ - kp&	*. +	4+	S
FPBK) L J M) C)C>,PVK ,PA	*- -0	2-2	S
Mb h Acfsbo L rqmr q r obkq		. %&	>
Gr k qf k dpj mbo q db%&	*1-	. 2-	
Pq o db dpj mbo q db Q-pop	*32	. 2-	

%& Pqbppbp _bvl ka qel pb ifpdpa r kabo> _pl ir dp J ufj r j O qfkd j v r pb absf b mbo j kbkqa j db+Qeb absf b fp kl qdr o kdpba qd cr k qf k r qfab i cfkp Ob l j j bkaba L mbo qf k l kafqf kp+

%& Dr o kdpba v abpfdk)kl qdppdpa fk mb ar qf kp+

%& Qeb F fk ir abp l sbo dpj mbo q db mb dp qf k q mb dp qeb absf b ar dkd l sbo l a l kafqf kp+Gr k qf k dpj mbo q db i fi bu bba 4- t ebk l sbo dpj mbo q db mb dp qf k fp qfsb+ l kqfkr l rp l mbo qf k _l sb qeb pmb fdba j ufj r j l mbo qfkd gr k qf k dpj mbo q db i fi dbar b ifbcfj b+

PIN FUNCTIONS

FPBK	.	r obkq pbkpb fk mr q mfk+ l kkb qd qeb m l pfqfsb pfab i cqeb r obkq pbkpb dbpfpq o qeb r de pel oqm qe+
RSI L BK	/	Rkabo sl iq db il hl r q mb do j j fkd mfk+Qeb l ksbo dpo pq oq*r m ka per qal t k ibsbip k_b mb do j j ba_v l kkb qfkd qefp mfk q qeb pr mmiv sl iq db qeb r de dbpfpq o afsfabo+Qefp mfk j r pq kl q_b ibo qd l qfkd+ l kkb qd SFK mfk fc kl qr pba+
L J M	0	L rqmr q l c qeb fk dpdk i qp kp l kar q k b bbo d o j mifdbo+ l kkb q qeb i l l m l j mbkp qf k l j m l kbkqp _bq bbk qefp mfk ka dd r ka+
C	1	Fksbo qfkd fk mr q l c qeb bbo d o j mifdbo+ l kkb q sl iq db afsfabo cod j qeb l rqmr qd q qefp mfk q pbq l rqmr q sl iq db+Qeb absf b dbdr i dpp C sl iq db q qeb fk dpdk i dbdbdbk b s ir b l c +/ 42S qvmf i+

PIN FUNCTIONS (continued)

C>,PVK ,PA	3	Pt fq efkd odonr bk v pbopfkd mfk+Qeb pt fq efkd odonr bk v fp mo do j j ba_v pfkdib dbpfpq o_bq bbk qefp mfk ka>DKA+ Qeb fkdpdk i il h k_b pvk ed kfwba q k budpdk i il h+> efde ibsbi k qefp mfk d o 0- p t fii qr dk qeb absf b l cc ka qeb absf b t fii qebk ao t 0+6 > od j qeb pr mmiv qvmf iiv+
MDKA	4	M t bodd r ka mfk+
AO	5	K* e kkbi J L PCBQ d dp acfsb l r qmr q+ l kkb q afdb qiv q qeb d dp l c qeb K* e kkbi J L PCBQ qed r de pel oj il t fkar q k b m qe+
S	6	L r qmr q l c qeb fkdpdk i S dbdr i q o ka pr mmiv sl iq db fkmr q l c qeb J L PCBQ acfsbo+ l kkb q bo j f vm pp m fq ocd j qefp mfk q MDKA+
SFK	. -	M t bo pr mmiv fkmr q mfk

RECOMMENDED OPERATING CONDITIONS

L sbo l mbo qfkd odbb* fo dpj mbo q db o kdb r kibpp l qebd fpb kl dpa

SFK	Fkmr q sl iq db o kdb	0+	2-	S
S	S sl iq db o kdb	0+	3+	S
QG	L mbo qfkd gr k qf k dpj mbo q db	*1-	. / 2	

ESD RATINGS

SBPA	Er j k l av J l abi%E J &)mbo> B *N. - - *- - /	*/	(/	hS
	e odba Absf b J l abi% AJ &)mbo> B *N. - - *- . .	*.	(.	hS

THERMAL INFORMATION

O G	Gr k qf k d j _fbk q qeb oj i dbpfpq k b%&	. 1 / +0	,T
O G %m&	Gr k qf k d pb %m&qeb oj i dbpfpq k b%&	31+3	
O G	Gr k qf k d l oa qeb oj i dbpfpq k b%&	64+0	

%&P Qmo sfabp O G ka O G kr j _bop l kiv p dbdbdbk b d bpdfj dp gr k qf k dpj mbo q dbp l qeb absf bp+O G ka O G dbkl q e o dpdpdf l cm h db fqpbic)_r q l cj kv l qeb p vpdpj ibsbi e o dpdpdf p pr e p qeb abpfdk ka vl r q l qeb mdkdpa for fq _l oa%M &l k t ef e qeb P Q5. 3/1 fp j l r kdpa)qeb oj i m a pfwb) ka budpdk i bksfd k j bkq i c d qp+Qeb M l oa fp eb qpfkh qe qifp pl iabdba d qeb ib ap ka qeb oj i m a l qeb P Q5. 3/1+ e kdfkd qeb abpfdk l o l kdfdr o qf k l qeb M l oa e kdbp qeb bdf fbk v l qeb eb qpfkh ka qebdbd dbqeb q i O G ka O G +

ELECTRICAL CHARACTERISTICS

SFK: . / S) QG: *1- . / 2) cvmf is irbp do dppdpa rkabo/ 2 +

SFK	Lmbo qfkd fkmr qsl iq db		0+		2-	S
SFK RSIL	Fkmr qRSIL Evpdpdbpfp	SFK dpfkd 	 	/ -5 . 3-	 	S j S
FPA	Perqal t k r odbkq	SC>,PV K,PA: 2S l o SRSIL BK: -		0-6	5	r>
FN	Nr fbp bkq r odbkq odj SFK	kl il a) kl pt fq efkd) SC : / S		1 . 2		r>
FPRMMV%&	Pr mmiv r odbkq	OC>,PVK ,PA: 14-2h) pt fq efkd) kl il a ka t fqel r qbudpdk i JL PCBQ		/		j >
S	Fkdpdk i ifkb odbdri dj o	SFK 4S		3+		S
S rsil				/ -52		S
S rsil evp				42		j S
FS	S Pl r o fkd r odbkq ifj fq		/ -	4-		j >
UVLO/EN						
SRSIL PBK	Rkabo sl iq db l l hl r q dbdbdbk b sl iq db	SRSIL o j mfkd r m	. -01	. -1 /	. -2	S
FRSIL	RSIL pl r o b r odbkq		0	1 -42	3-2	r>
SRSIL PA	RSIL per qal t k sl iq db	SRSIL o j mfkd al t k	- -22	- -32	- -42	S
SOBC	Obdbdbk b sl iq db l cC		. -/ 23	. -/ 42	. -/ 61	S
FC	C mfk ib h db r odbkq	SC : . S			. - -	k>
DB>	Bodbo j mifdbo p kp* l kar q k b	S LJM: . -2S	. 6-	06-	26-	rP
FLJM PO	Bodbo j mifdbo j ufj r j pl r o b r odbkq	SC : SOBC*/ - - j S) S LJM: . -2S	01 -	23-	4. -	r>
FLJM PKH	Bodbo j mifdbo j ufj r j pfkh r odbkq	SC : SOBC(/ - - j S) S LJM: . -2S	*. 2-	*62	*1 -	r>
S LJM E	L J M efde i j m	SC : - -5S	. -6	/ -22	0-/	S
S LJM I	L J M il t i j m	SC : . -4S	- -1	- -55	. -/	S
OAPLK QLM	Adsbo pt fq e l k dbpfpq k b%q m&	FAO: - -+ >		0		
OAPLK ILT	Adsbo pt fq e l k dbpfpq k b%l qj j &	FAO: - -+ >		/		
Spbkpb	r odbkq pbkpb qedbpel ia		. / -	. 13	. 4-	j S

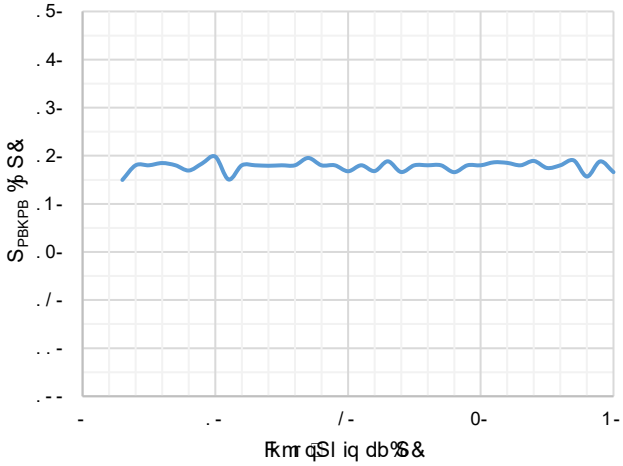
ELECTRICAL CHARACTERISTICS (continued)

SFK: . / S) QG: *1 - . / 2) qvmf i s ir bp do dppdpa r kabo / 2 +

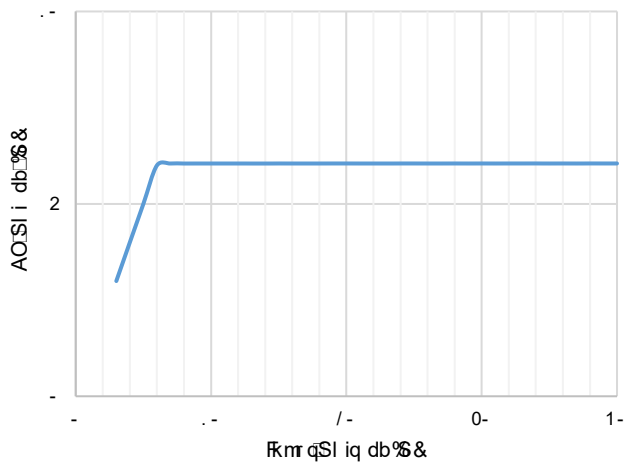
QPP	Pl oq*pq oq Qfj b			. 1		j p
CPT	Pt fq efkd odnr bk v	OC>,PVK ,PA: 14+2h	012	1- -	122	hEw
PVK EF	Qedopel ia d o Pvk ed o kfw qf k l k C>,PVK ,PA mfk	Pvk ed o kfw qf k sl iq db dpfkd		. +/ 4	. +1 2	S
PVK IL		Pvk ed o kfw qf k sl iq db c iifkd	- +25	- +85		S
AJ>U	J ufj r j Ar qv v ib	OC>,PVK ,PA: 14+2h	52	6.		"
qLK JFK	J fkfj r j l k*qfj b	Qpt : 1- - hEw		/ 2-		kp
SPA EF	Per qal t k pfdk i qedopel ia l k C>,PVK ,PA mfk	Per qal t k sl iq db dpfkd		. +/ 4	. +1 2	S
SPA IL		Per qal t k sl iq db c iifkd	- +24	- +85		S
FPA IHD	C>,PVK ,PA mfk l b h db	SPA: 2S			.	r>
SLSQE%&	C l sbosl iq db qedopel ia	C dpfkd	/ 2	52	. 02	j S
		Evpdpdopfp	0-	5-	. 0-	j S
QPA%&	Qebqj i per qal t k qedopel ia	QG dpfkd		. 32		
	Evpdpdopfp			/ 2		

%&Dr o kdpba v abpfdk ka bk e) kl qdppdpa fk mo ar qf k +
%&Dr o kdpba v abpfdk) kl qdppdpa fk mo ar qf k +
%%&Qeb l sbosl iq db mo dp qf k fp pmb fdba l fqe dopmb qd qeb dbba h sl iq db +Qefp fp b rpb qeb l sbosl iq db mo dp qf k dp hp qeb dbba h sl iq db +Qeb l sbosl iq db qedopel ia k b i ri dpa v aafkd qeb dbba h sl iq db %Sc &d qeb l sbosl iq db mo dp qf k pmb fdf qf k +

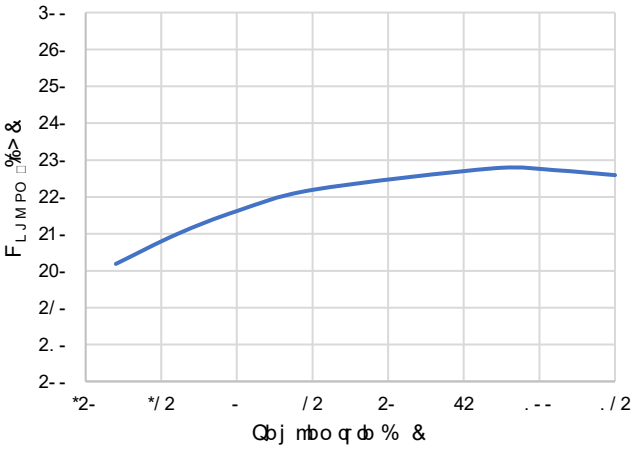
TYPICAL CHARACTERISTICS



Cfdr db□4+□ r odbkqPbkpb□Qedbpel ia□sp+□Fkmr qSl iq db



Cfdr db□5+□AO□Sl i db□sp+□Fkmr qSl iq db□



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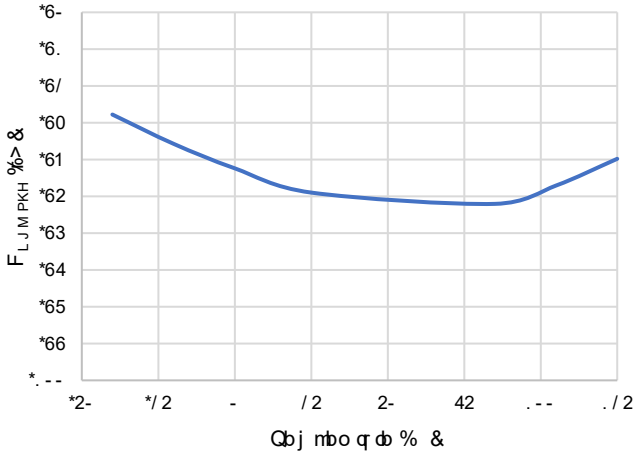
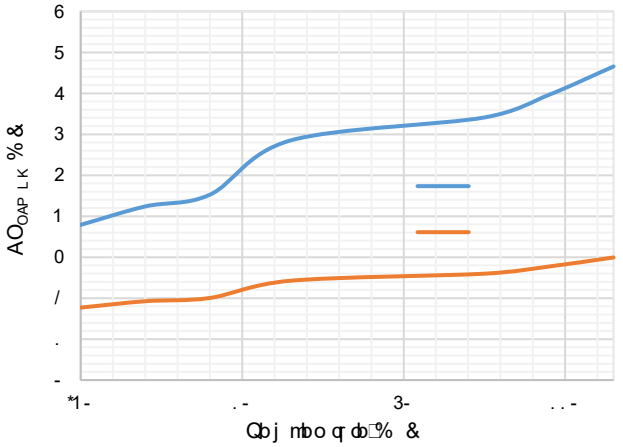
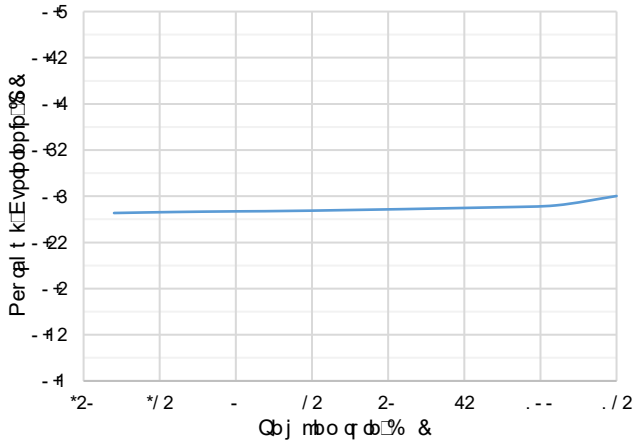


Cfdr db□ - +□ L J M□Pfkh□ r odbkqsp+□Qbj mbo qr db□

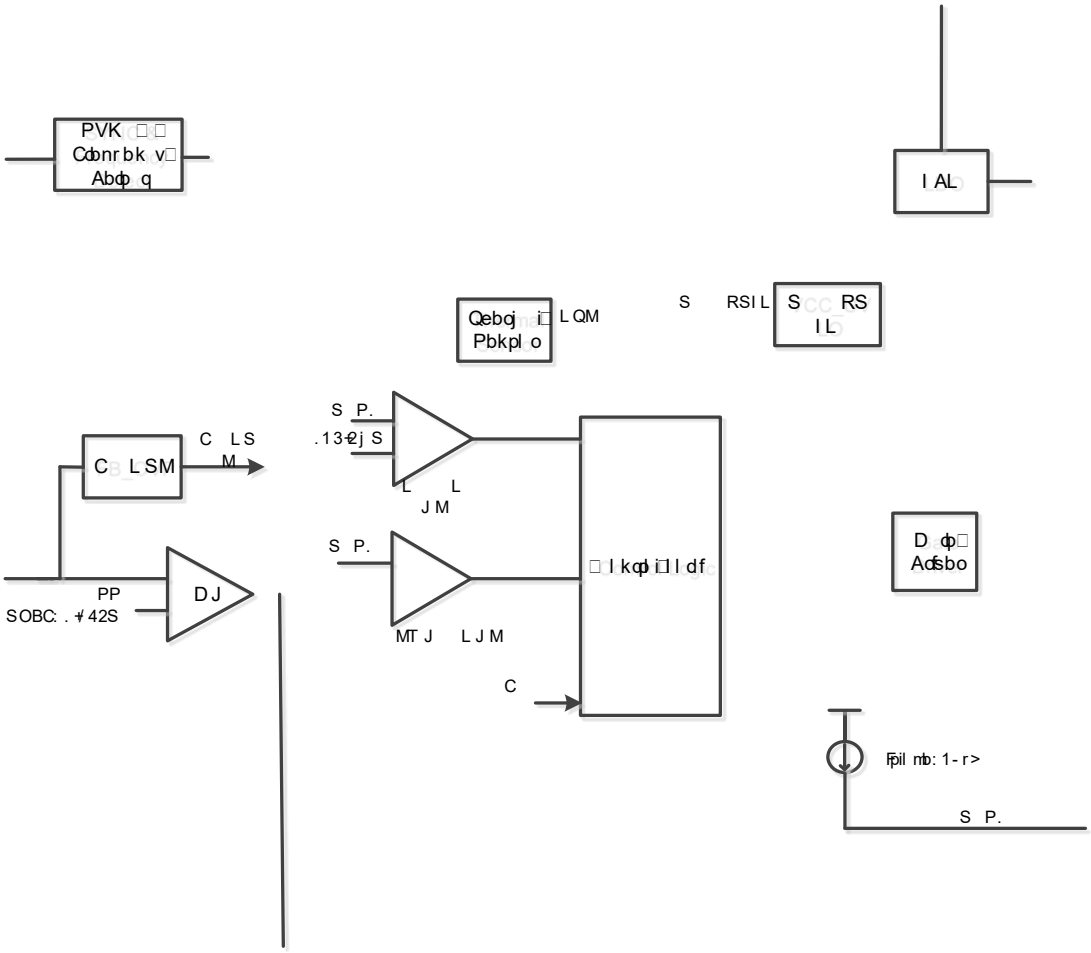


Cfdr db□ . +□AO□Obpfpq k b□sp+□Qbj mbo qr db□



Cfdr db□ / +□Per qal t k□Qedbpel ia□Evpdpdopfp□sp+□Qbj mbo qr db□

FUNCTIONAL BLOCK DIAGRAM



Cfdr do 0+Cr k qf k i il h Af do j

OPERATION

Qeb P Q5.3/1 absf b fp t fab fkmr qo kdb) kl k*pvk eo kl r p_l l pq l kqo iib oqe qr pbp mo h* r odbkq*j l ab l kqo i+ Qeb absf b k_b r pba fk_l l pq) PBMF) ka qiv_ h qi mi il dfbp+

Fk qvmf i mmif qf k fo r fq) qeb mo h r odbkqqeo r de qeb buqpdk i_JL PCBQ fq pbkpba qeo r de k buqpdk i pbkpb dopfpq o+ Qeb sl iq db o pp qefp dopfpq o fp dba fkq qeb FPKP mfk+ Qefp sl iq db fp dba fkq qeb mi pfqfsb fkmr qi qeb MT J l j m o q o+ Qeb l r qmr qsl iq db fp ipl pbkpba qeo r de k buqpdk i dbba_ h dopfpq o afsfabokbq l ch ka dba fkq qeb bood o j mifdbo kbd qfsb fkmr q+ Qeb l r qmr qi c qeb bood o j mifdbo % L J M mfk&fp aaba q qeb pil mo l j mbkp qf k o j m ka dba fkq qeb kbd qfsb fkmr qi qeb MT J l j m o q o+ > qeb pq oqi c kv pt fq efkd v ib) qeb l p fii q opbqp qeb OP i q e r pfkd qeb pt fq e il df _il h+ Qefp d o bp efde pfdk i k qeb AO mfk %d qp i qeb buqpdk i JL PCBQ& ka qeb buqpdk i_JL PCBQ qr dkp l k+ T ebk qeb sl iq db l k qeb mi pfqfsb fkmr qi qeb MT J l j m o q o bu bbap qeb kbd qfsb fkmr q) qeb OP i q e fp dopbq ka qeb buqpdk i_JL PCBQ qr dkp i o+ Qeb sl iq db pbkpba o pp qeb pbkpb dopfpq o dbkbo iiv l kq fkp pmr qf r p kl fpb pmfhbp+ Qebpb pmfhbp k d o b qeb MT J l j m o q o q dopbq qeb OP i q e mdo j q dbiv+ Ql mdosbkqqebpb pmfhbp o j dopbqqfkd qeb i q e) _i kh*l r q fo r fqfkpfab qeb F mdosbkqp qeb MT J l j m o q o o j dopbqqfkd qeb i q e d o pel oqar o qf k odpo qeb i q e fp pbq+ Qefp ar o qf k fp iiba qeb _i khfkd fkdpos i ka fp pmo fdba p j fkfj r j l k*qfj b fk qeb Bib qf i e o dpdpq p pb qf k+ Rkabo buqdpj biv ifdeq*il a l o kl *il a l kafqf kp) qeb bkbodv abifsbdba q qeb l r qmr q m fq o t ebk qeb buqpdk i_JL PCBQ fk l k ar dfkd qeb _i khfkd fkdpos i fp j l do qe k t e q fp abifsbdba q qeb il a+ > k l sbo*sl iq db l j m o q o fkpfab qeb P Q5.3/1 mdosbkqp qeb l r qmr qsl iq db od j dpfkd r kabo qebpb l kafqf kp+ Qeb l sbo*sl iq db l j m o q o pbkpbp qeb dbba_ h %C mfk&sl iq db ka dopbqp qeb OP i q e+ Qeb i q e dobj fkp fk dopbqpq dp r kqf qeb l r qmr qab vp q qeb kl j fk i s irb+

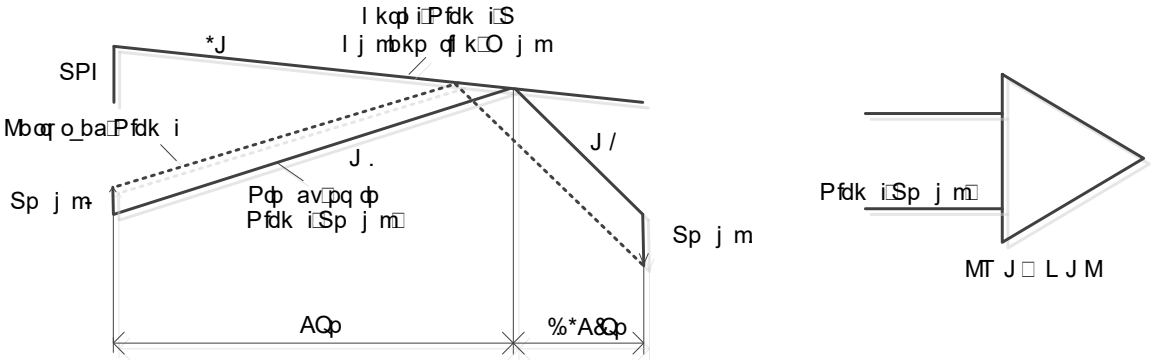
Qeb P Q5.3/1 t l dhp qMr ipb phfmj l ab q r qeboifk do pb qeb bocf fbk v fk ifdeqil a l kafqf k+

Qeb nr fbp bkq r odbkq l cP Q5.3/1 fp 1.2r > qvmf i r kabo kl *il a l kafqf k ka kl pt fq efkd+ Afp _ifkd qeb absf b) qeb qvmf i pr mmiv perqal t k r odbkq l k SFK mfk fp 0+6 > +

Qeb P Q5.3/1 e p l sbo sl iq db mo dp qf k %SM&d o qeb l r qmr qsl iq db+ LSM fp pbkpba qeb dbba_ h mfk %C &+ Fc q kv qfj b qeb sl iq db qeb dbba_ h mfk qfpbp q +03S %vm+&) LSM fp qfddbdba+ LSM t fii rpb qeb AO mfk q dl il t) d o fkd qeb mi t bo JL PCBQ l o+ T fqe qeb JL PCBQ l o) qeb l r qmr qsl iq db t fii ao m+ Qeb P Q5.3/1 _bdfkp pt fq efkd d fk t ebk qeb dbba_ h sl iq db do ebp +/5S %vm+&

Qeb fkdpdk i_f p l qeb P Q5.3/1 l j bp od j bfqeb qeb fkdpdk i_f p sl iq db dbkbo q o l o afdo qiv od j qeb sl iq db qeb SFK mfk+ > qfkmr qsl iq dbp il t bo qe k 3S qeb fkdpdk i F _f p fp qeb fkmr qsl iq db ka qsl iq dbp _l sb 3S qeb fkdpdk i_f p sl iq db dbkbo q o l o qeb P Q5.3/1 mo sfabp qeb _f p+ Qeb d dp*adfsbo pr mmiv sl iq db S dbnr fdbp k buqpdk i_vm pp m fq o+ Ob l j j bka S m fq k b fp C) al kl qmi b m fq k b bu bbafkd / +/ C+ Al kl q_f p qeb S mfk_v k buqpdk i sl iq db pl r o b+

Qeb P Q5.3/1 r pbp r odbkqj l ab l kqo i p ebj b+ Qeb j fk as kq dbp l c r odbkqj l ab l kqo i do fkebdbkq v ib*_v* v ib r odbkqifj fqd qeb pt fq e ka pfj mibo l kqo i il l m e o dpdpq p+ El t bsbo) r odbkqj l ab l kqo i e p Pr_*e qj l kf l p fii qf k t ebk ar qv v ib fp ddo dpqe k 2-" +Ql mdosbkqqeb Pr_*e qj l kf l p fii qf kp) l j mbkp qf k o j m fp aaba q qeb l kqo i pfdk i+



Cfdr db 1+ Pr _*E cj l kf 1 Lp fii dl k d o A - +2 ka l j mbkp dl k O j mdq > sl fa Pr _*E cj l kf 1 Lp fii dl k Qeb r odbkqj l ab l kdpi p ebj b p j mibp qeb fkar dq o r odbkqFF) ka l j m dbp qeb p j miba pfdk i) $S_{p\ j\ m}$) dq fkdpdk iiv dbkbo dpa l kdpi pfdk i) S +Qeb r odbkqpbkpb dbpfpdq o) O_{PBK}) p pel t k fk Cfdr db 2 l ksbdp qeb p j miba fkar dq o r odbkqFF) dq qeb sl iq db pfdk i) $S_{p\ j\ m}$) qe qfp mdmi odl k i dq FF pr e qe q:

$$E_P = A_B \qquad \%\&\%$$

Qeb l j mbkp qf k o j m e p _bbk aaba fkdpdk iiv fk qeb P Q5. 3/1 Qeb pil mb l j mbkp qf k o j m e p _bbk pbib dpa dq p qpov j l pq mmif qf kp) ka fqp s irb abmbkap l k qeb pt fq efkd odbnrbk v Qefp pil mb k_b i ri dpa rpfkd qeb d oj ri 7

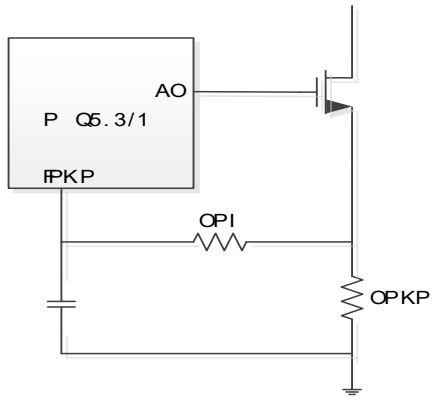
$$_R = E_B \qquad \%6\&$$

S_{PI} fp qeb j mifqrab l c qeb fkdpdk i l j mbkp qf k o j m ka C_P fp qeb l kqb iibop pt fq efkd odbnrbk v

Cl oj l db dbuf_fifqv pil mb l j mbkp qf k k_b fk db pba_v aafkd l kb budpdk i dbpfpq o) O_{PI} fk qeb PBK p m qe Cfdrdb. 2 pel t p qeb pbqrm Qeb budpdk iiv dbkbo dpa pil mb l j mbkp qf k fp qebk aaba q qeb fkdpdk i pil mb l j mbkp qf k l qeb P Q5. 3/1 Tebk rpfkd budpdk i pil mb l j mbkp qf k) qeb d oj ri d oJ _b l j bp7

$$_R = 1E_B + \quad A_B\ 2 \quad) \qquad \%-\&$$

> qvmf is irb d oc q o H fp 1 - >



Cfdrdb 2 Budpdk i OPI q fk db pb pil mb l j mbkp qf k

Qeb absf b mb sfabp v ib*_v* v ib mb h r odbkqifj fq mb dp qf k qe qq rdkp l c qeb J L PCBQ t ebk qeb pr j l c qeb fkar q o r odbkq ka qeb mb do j j _ib pil mb l j mbkp qf k o j m db ebp qeb r odbkqifj fq qedbpel ia Mb h fkar q o r odbkqifj fq %$F_{MB>H^*I}$ &fk pdp av pq dp fp i ri dpa p pel t k fk7

$$= \frac{E_B \quad _B \ - = 9d \ \times A_B \ \times}{A_{B\ B}} \qquad \%.\&$$

T ebdb

- S_{PBKPB} fp PBK mfk ifj fqfkd sl iq db %Qvm . 13 2j S&
- $F_{MB>H^*I}$ fp qeb fkar q o mb h r odbkqifj fq
- O_{PI} fp Pil mb l j mbkp qf k dbpfpq o
- A fp Ar qv v ib
- O_{PKP} fp qeb Fkar q k b mb h r odbkqabdp qf k dbpfpq k b

T ebk l sbol a e mmbkp) qeb l ksbodpo kkl q mb sfab l rqm rq r odbkqd p qpov il afkd dbnrfdbj bkq Qeb fkar q o r odbkqfp i j mba q l sbo r odbkqifj fq qf k Qerp) qeb l rqm rq sl iq db ad mp_bil t dbdri dpa sl iq db t fqe C sl iq db ibpp qe k fkdpdk i dbdbdbk b sl iq db l kqfkr l r piv Qeb fkdpdk i L J M sl iq db o j mp r m d efde

b rpb A k_b s cf _ib r kabo afdbdbkq Sfk) $F_{MB>H^*I}$ fp kl qpq _ib r kabo afdbdbkq Sfk t ebk r pfkd budpdk i pil mb l j mbkp qf k dbpfpq o Pl d o k r o dp mb h r odbkqifj fq l mbo qf k l sbo qeb fkmrq pr mmiv sl iq db) P Q db l j j bkap rpfkd l kiv qeb dfuba pil mb l j mbkp qf k

Qeb□ rqmrqslqdb□p□pbq_v□k□budpdk□i□dbpfpdq□afsfabo□OC Q□ka□OC □fk□qvmf□i□mmif□qflk□p□ebj□qf+E>□jfkfjrj□ rodbkq□l□qvmf□i□/-r>□dlt fkd□qedrde□dbba_ h□dbpfpdq□afsfabo□dfsbp□dlla□ ro v□ka□klfpb□lsbdfkd+Qeb□s irb□ l□OC Q□ k□_b□ irqdpa□_v□Bnr qflk□/+□

$$A\ \ c = \frac{E_{DC} - E_A}{E_A} \times A \qquad \square \qquad \%/\&$$

t ebdb□7□

□ S_{OBC}□fp□qeb□dbba_ h□dbdbdbk b□slqdb)□qvmf i□+/42S□

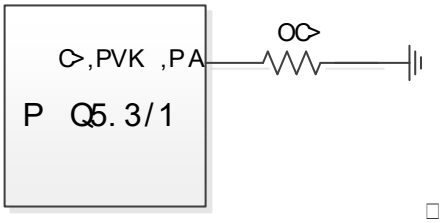
Qeb□pt fq efkd□odbnrbk v□l□qeb□P Q5.3/1□ k□_b□agrpdpa□_bq bbk□--hEw□ka□/+/□JEw□rpfkd□pfkdib□budpdk i□ dbpfpdq□o+Qefp□dbpfpdq□oj rpq□_b□lkkb dpa□_bq bbk□qeb□C>,PVK ,PA□mfk□ka□dlrka+Bnr qflk□0□ k□_b□rpba□q□ bpqfj dp□qeb□odbnrbk v□agrpq□dbpfpdq□o+□

$$1\ \ \Omega 2 = \frac{99}{U\,f1\ \ i\,2} - \ 7 \qquad \square \qquad \%0\&$$

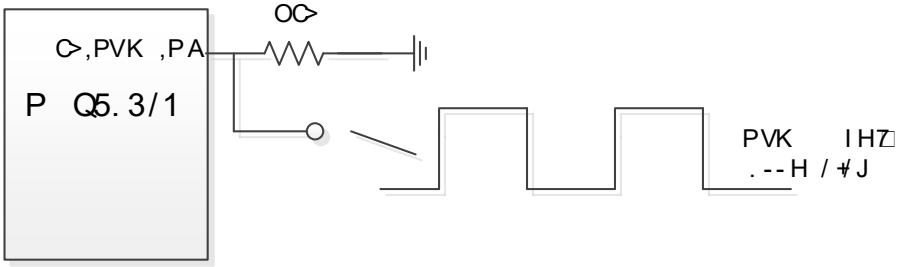
Qeb□P Q5.3/1□ k□ipl□_b□pvk edlkfwba□q□k□budpdk i□il h+Qeb□budpdk i□il h□jrpq□_b□lkkb dpa□_bq bbk□qeb□ C>,PVK ,PA□mfk□ka□dlrka)□p□pelt k□fk□Cfdrdb□3+Qeb□odbnrbk v□agrpq□dbpfpdq□oj v□dbj fk□lkkb dpa□t efib□ pvk edlkfwfkd□□pfdk i)□qebdbd db□fc□qebdb□fp□ilpp□l□cpfdk i)□qeb□pt fq efkd□odbnrbk v□t fii_b□pbq_v□qeb□odbnrbk v□ agrpq□dbpfpdq□o+□

Qeb□C>,PVK ,PA□mfk□ipl□crk qflkp□p□□perqalt k□mfk+Fc□efde□pfdk i□%.+/4S&□mmb qp□l k□qeb□C>,PVK ,PA□mfk□ lsbo□0- P)□qeb□P Q5.3/1□pdqmp□pt fq efkd□ka□dlbp□fkd□□ilt □rodbkq□j lab+Qeb□dqqi□prmmiv□rodbkq□l□qeb□F □ dbar bp□q□0-6□>)□qvmf iiv)□rkab□qebpb□lkafqflkp+□

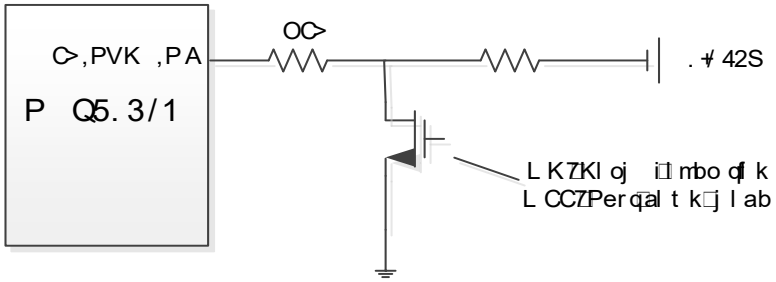
Cfdrdb□5□ka□Cfdrdb□6□pelt □kfj mibj bkqqflk□l□c□perqalt k□crk qflk□t ebk□mbo qfkd□fk□odbnrbk v□agrpq□j lab□ ka□pvk edlkfwqflk□j lab)□dbpmb qfsbiv+Fk□odbnrbk v□agrpq□j lab)□lkkb qfkd□qeb□C>,PVK ,PA□mfk□q□dlrka□ d□bp□qeb□il h□q□crk□q□□bqqfk□odbnrbk v+Mr iifkd□qefp□mfk□efde□perqp□alt k□qeb□F +Fk□odbnrbk v□agrpq□l□o□ pvk edlkfwqflk□j lab)□□efde□pfdk i□d□oj lb□qe k□0-□p□perqp□alt k□qeb□F)



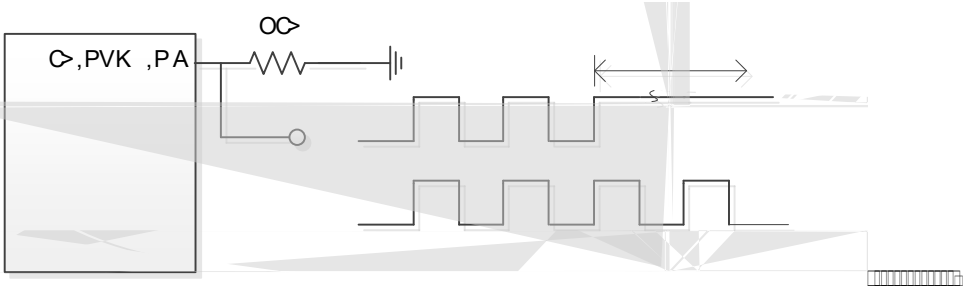
Cfdrdb.3+□Cdbnrbk v□>agrpq□



Cfdrdb.4+□Cdbnrbk v□Pvk □



Cfdr do.5+Perqal t k mbo qf k fk Cdonr bk v>agrpq.J l ab



Cfdr do.6+Perqal t k mbo qf k fk Cdonr bk v Pvk ed kfw qf k J l ab

Qeb buqpck i RSI L dbpfpq o afsfabo j r pq_b abpfdkba pl qe qqeb sl iq db qqeb RSI L mfk fp ddb qpoqe k +1/S qvmf i&t ebk qeb fkmr qsl iq db fp fk qeb abpfdba mbo qfkd o kdb+Qeb s irbp1 c O. ka O/ k_b i ri qpa p pel t k fk Bnr qf k 1 ka Bnr qf k 2+

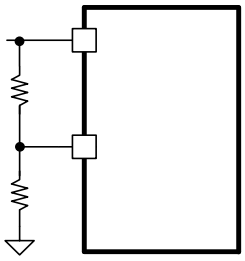
$$= \frac{E_{1\ 2} - E_{1\ 2}}{DE} \qquad \%1\&$$

t ebdb

S%K%k&fp qeb abpfdba pq qq*r ms l iq db1 c qeb l ksbqpo

S%K%cc&fp qeb abpfdba qr dkl cc sl iq db1 c qeb l ksbqpo+

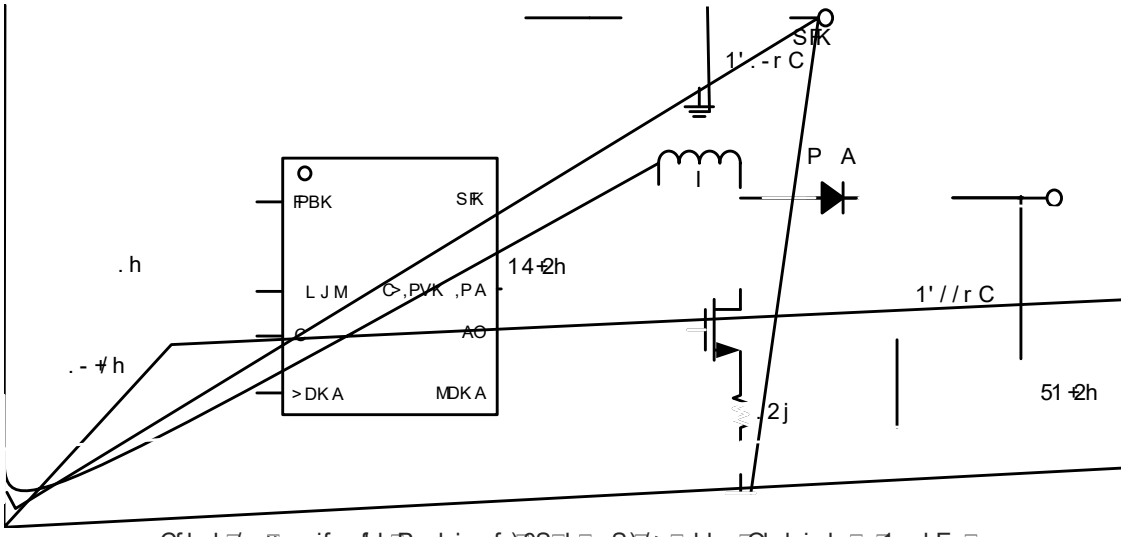
$$= \frac{E_{DE}}{E_{1\ 2} - E_{DE}} \qquad \%2\&$$



Cfdr do/-+Pvpqpj RSI L Obpfpq o Afsfabo

□

APPLICATION INFORMATION



Cfdr do□/ . +>mmif qf k□P ebj qf)□0S□q □ . S)□/ >□ l l pq□Obdri q o□ q1- - hEw□

Fkmr q□Sl iq db□	2S□Kl oj i□0S□q □ . S□
L r qmr q□Sl iq db□	. / S□
J ufj r j □L r qmr q□ r odbkq□	0>□
Pt fq efkd□Cdbnr bk v□	1- - □HEw□
L r qmr q□sl iq db□dfmmib□%mb h□q □mb h&□	42j S□%l a: / > &□

Qeb mbodcj k b lc fkar qlo odb qp qeb mlt bo prmmivp pdp av pq qp lmbo qlk) qp kpfbkq_be sflo) illm pq _fifqv)
ka_llpq lksbqpo bocf fbk v+Qeb fkar qlos irb) A dbpfpq k b) ka p qoqlk rodbkqfkdirbk bp_lqe bocf fbk v
ka qeb j dkfqrab lc qeb lrqmrqsliqdb dfmmib+I odbo fkar q k b s irb dbar bp fkar qlo rodbkq dfmmib ka
qebbodcdb ib ap qi ilt bo lrqmrqsliqdb dfmmib+Clo dfuba A dbpfpq k b) i odbo s irb fkar qlo vfbiap efdebo
bocf fbk v sf dbar ba OJP ka lbo ilppbp+Elt bsbo) i odbo fkar qlo t fqe fk dfsbk fkar qlo c j fivt fii dbkbo iiv
e sb ddb qpo pbdbp dbpfpq k b) qebdb_v lrkqbo qfkd qefp bocf fbk v as kq db+

Fkar qlos irbp k e sb /-" i obsbk 2-" qlibo k b t fqe kl rodbkq_f p+T ebk qeb fkar qlo rodbkq mmb ebp
p qoqlk ibsbi) fqp fkar q k b k ab db pb /-" ql 02" odj qeb s irb q-*> rodbkq abmbkafkd lk elt qeb
fkar qlos bkal o abdfkbp p qoqlk+T ebk pbib qfkd k fkar qlo) ellpb fqp o qba rodbkq bpmb f iiv qeb p qoqlk
rodbkq i odbo qe k fqp mb h rodbkq ardfkd qeb lmbo qlk+

Cl i iri qp qeb rodbkq fk qeb t lqpq pb) rpb qeb j fkfj rj fkmrqsliqdb) j ufj rj lrqmrqsliqdb) j ufj il a
rodbkq ka j fkfj rj pt fq efkd odbnrbk v lc qeb mmif qlk) t efib lkpfabdfkd qeb fkar q k b t fqe *0-" qlibo k b
ka ilt *mlt bo lksbqpl k bocf fbk v+

Clo llq lksbqpo) i iri qp qeb fkar qlo A rodbkq p fk Bnr qlk 3

$$\text{———————} \qquad \%3\&$$

T ebdb

- S_{LRQ} fp qeb lrqmrqsliqdb lc qeb llpq lksbqpo
- F_{LRQ} fp qeb lrqmrq rodbkq lc qeb llpq lksbqpo
- S_{FK} fp qeb fkmrqsliqdb lc qeb llpq lksbqpo
- fp qeb mlt bo lksbqpl k bocf fbk v

i iri qp qeb fkar qlo rodbkq mb h*q*mb h dfmmib) F_{MM}) p fk Bnr qlk 4+

$$\text{———————————} \qquad \%4\&$$

T ebdb

- F_{MM} fp qeb fkar qlo mb h*q*mb h rodbkq
- l fp qeb fkar q k b lc fkar qlo
- c_{PT} fp qeb pt fq efkd odbnrbk v
- S_{LRQ} fp qeb lrqmrqsliqdb
- S_{FK} fp qeb fkmrqsliqdb

Qebdb) qeb mb h pt fq efkd rodbkq lc fkar qlo) $F_{MB>H}$) fp i iri qpa p fk Bnr qlk 5

$$\text{———} \qquad \%5\&$$

Pbq qeb rodbkq ifj fq lc qeb P Q5.3/1 efdebo qe k qeb mb h rodbkq $F_{MB>H}$ ka pbib qqeb fkar qlo t fqe qeb p qoqlk
rodbkq efdebo qe k qeb rodbkq ifj fq+

Arb q qeb mbopbk b lc k fkar qlo qqeb fkmrqlc llpq lksbqpo) qeb fkmrq rodbkqt sbdcj fp lkqfkrlrp+Qeb
fkar qlo bkprdbp qe qqeb fkmrq m fq opbbp c fdv ilt dfmmib rodbkqp+Elt bsbo) p qeb fkmrq m fq odbqpj iibo)
qeb fkmrq dfmmib dl bp rm+Qeb OJP rodbkq fk qeb fkmrq m fq o fp dfsbk rp fkd Bnr qlk 6+

$$_{1A\ \ B2} = \frac{1E_{DC} - E\ \ 2\times E}{\sqrt{\ \ } \times E_{DC} \times \ \ \times U f} \qquad \%6\&$$

Qeb fkmrq m fdoopelria_b m _ibl ce kaifkd qeb OJP rodbkqf> iqelrde qeb fkmrq m fdoofp kl q p odf i fk
_llpq mmif qlk)ilt s irbp k rpb fj mba k b fkdpo qlkp+Qebdbd do) dlla nr ifqv m fdoopelria_b
elpbk fk qeb okdb lc.- C q 1- C+Fc s irb ilt boqe k.- C fp rpba) qebk mo _ibj p t fqe fj mba k b
fkdpo qlkp opt fq efkd kl fpb k odb qqeb P Q5.3/1+Q fj mo sb mbodoj k b) bpmb f iiv t fqe Sfk_bilt 5 sliqp)
fqfp db l j j bkaba dq rpb /+/ L ej dbpfpdqo qqeb fkmrqd mo sfab k O cfdpo+Qeb dbpfpdqofp mi ba fk pbodbp t fqe
qeb SFK mfk t fqe l kiv _vm pp m fdqo qq eba dq qeb SFK mfk afdb qv+> -+ * C l o * C bo j f m fdqofp
kb bpp ov fk qefp l kodr o qlk+Qeb_rih fkmrq m fdqo ka fkar dqot fii l kkb qlk qeb l qeb o pfab l qqeb dbpfpdqo
qqeb fkmrqml t boopr mmiv+

T ebdo

/b fp qeb d dp adsb rodbkq+

Qeb dq i mt boafppfm dl k c JL PCBQ fk irabp l kar dl k il pp p pel t k fk qeb dfqqdpoj ka pt fq efkd il pp p pel t k fk qeb pb l ka dpoj +Qeb dq i mt boafppfm dl k pel ria_b t fqefk m h db qeboj i o dkdp+

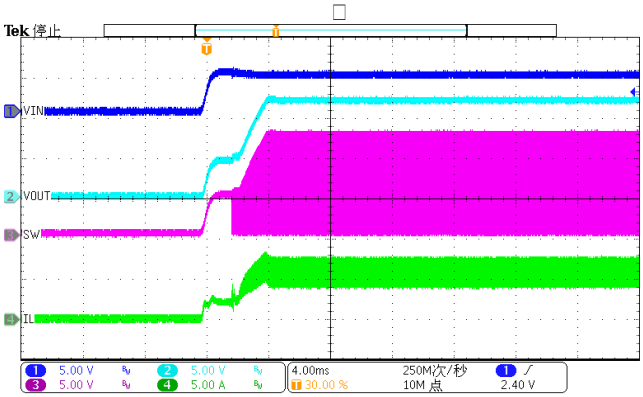
L _pbos dl k c qeb _l l pq l ksbodpo fo r fq pel t p qe qqeb sbo db rodbkqqedo r de qeb afl ab fp qeb sbo db il a rodbkq ka qeb mb h rodbkqqedo r de qeb afl ab fp qeb mb h rodbkqqedo r de qeb fkar dl o+Qeb afl ab pel ria_b o dpa dl e kaib j l db qe k fqp mb h rodbkq+Qeb mb h afl ab rodbkq k_b i ri dpa rpfkd Bnr dl k/3+

$$1 \quad 2 = \frac{DC}{1 - \quad 2} + \Delta \quad)$$

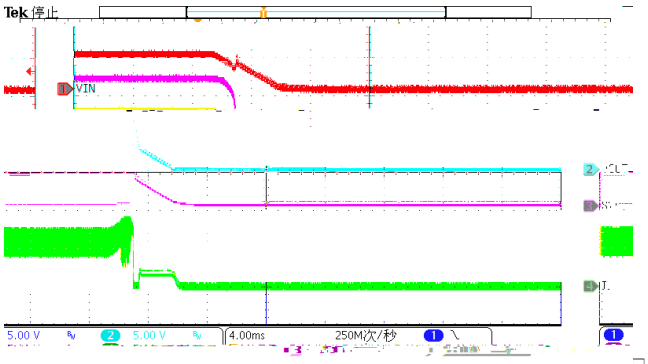
%3&

Qeboj iiv qeb afl ab j rpq_b _ib dl e kaib qeb j ufj r j sbo db rodbkqabifsbodpa dl qeb l rqmrq+Qeb mb h dbsbqpb sl iq db dl o_l l pq l ksbodpqp fp bnr i dl qeb dbdri dpa l rqmrqsl iq db+Qeb afl ab j rpq_b m _ib l c e kaifkd qefp sl iq db+Ql fj mdl sb bcof fbk v) il t dl dl oa adl mp el qhv afl ab fp db l j j bkaba+

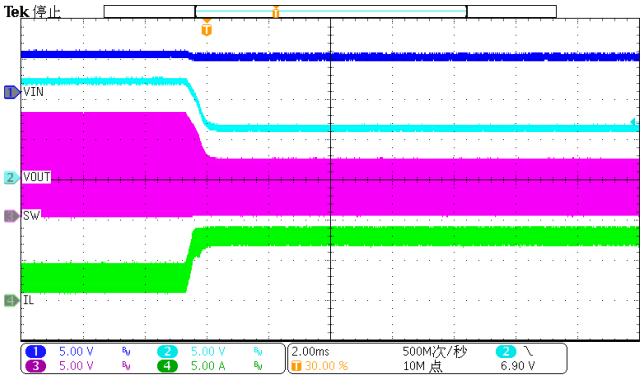
Sfk: 2S)□Sl r q . / S)□r kibpp□ qebd fpb□kl dpa



Cfdr db□/ / +M t bo□r m%□ a: / > &□



Cfdr db□/ 0+M t bo□al t k%□ a: / > &□



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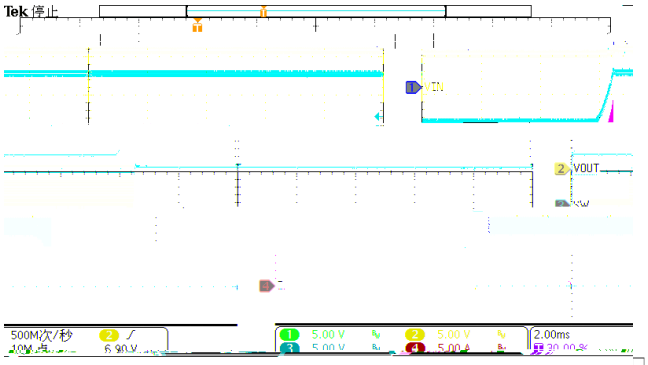

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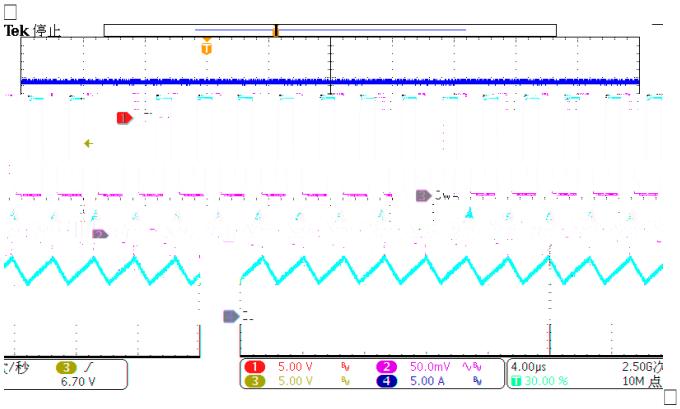

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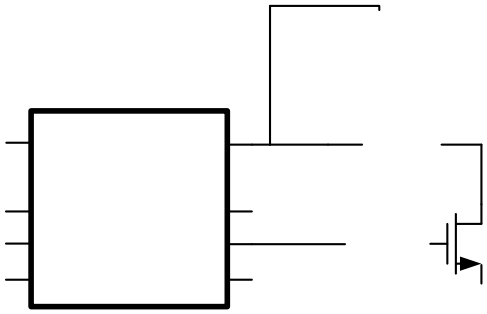
APPLICATION INFORMATION



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J ufj r j L r qmr q r qobkq	/ >
Pt fq efkd Cdbnr bk v	1- - HEw
L r qmr qsl iq db dmmib %mb h q mb h&	42j S %l a: / > &

>dl la orib d o abdpoj fkfkd qeb fkar q k b dq rpb fp dq iil t qeb fkar dq o mb h*dq *mb h dfmmib rodbkqdq b mmdufj dpiv/-" dq 1-" lcqeb j ufj r j fkmrq rodbkq qeb j fkfj r j fkmrqsliqdb+Qeb rodbkqdfmmib dl t fkd fk fkar dq op1. ka1/fp dfsbk_v7

$$\Delta = \times =9.)F) \times \frac{E}{E} \times =9.))$$ %4&

$$\Delta = \times =9.)F) \times =9.))$$ %5&

Kl oj iiv1 b k pbib qbnr is irb d oqeb fkar dq op1. ka1/)abdfsba p7

$$= = F) \frac{E}{\Delta \times U_{BF}} \times {}_{G})$$ %6&

T ebdb

f PT fp qeb pt fq efkd odbnrbk v+

Kl dp qe qqeb p q o dfk rodbkq cfkar dq op pel ria_b dob dpoqe k mb h rodbkqdl t fkd fk fkar dq op)dfsbk_v7

$$= + \frac{\Delta}{=)} \times \frac{E}{E} \times 1 + \frac{=9.)}{2)}$$ %0-&

$$= + \frac{\Delta}{=)} \times 1 + \frac{=9.)}{2)}$$ %0.&

Fel. ka1/ dbt l rka fk p j b l db p l rmiba fkar dq o)qeb fkar q k b dbnrfdba t fii_b e icarb dq qeb j rq i fkar dfk) i ri dpa_v7

$$= = -F) \frac{E}{\times \Delta \times U_{BF}} \times {}_{G})$$ %0/&

Qeb d iil t fkd m o j bdpop pel ria_b q hbk fkdq l kpfabo dfk d o JL PCBQ7qeb l k*dbpfpq k b OAP LK)qeb j fkfj r j d dp qedbpel ia slqdb SQE JRK)qeb dq i d dp e odb Nd)qeb dbsbqpb qp kpdbo m fq k b OPP) ka qeb j ufj r j ao fk dq pl r o b slqdb SN J>U+Qeb mb h pt fq efkd slqdb_bq bbk ao fk dq %&Q,/./ .2

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$$E \quad = E \quad _G + E \quad _G) \qquad \%04\&$$

Qeb afl ab pel ria ipl _b m _ib dq dl t pt fq e mb h r odbkqFN MB>H+

Qeb mt bo afppfm qf k l cqeb afl ab fp bnr i dq qeb d dt oa sl iq db ad mj riqfmfbp l rqmr q r odbkq+P el qhv afl abp db db l j j bkaba ebdb dq j fkfj fwb qeb mt bo il pp+

Cl o bo j f m fq qp t fqe il t *BPO) qeb mb h dq mb h sl iq db dfmmib l k l r mifkd m fq o fp bpqfj dpa _v7

$$\Delta E_B = \frac{\times \quad _G}{_B \times U_{BF}}) \qquad \%05\&$$

Qeb j ufj r j sl iq db d pp qeb l r mifkd m fq o fp j ufj r j fkmr qsl iq db+Qeb sl iq db o qfkd l cqeb l r mifkd m fq o j rpq _b dbo dpo qe k fq+

Qeb OJ P r odbkq l c l r mifkd m fq o fp dfsbk _v7

$$_B \; _A \; _B = \quad \times \sqrt{\frac{E \; + E}{E}}) \qquad \%06\&$$

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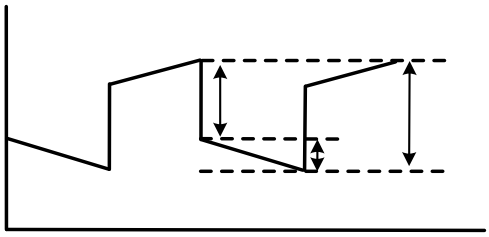

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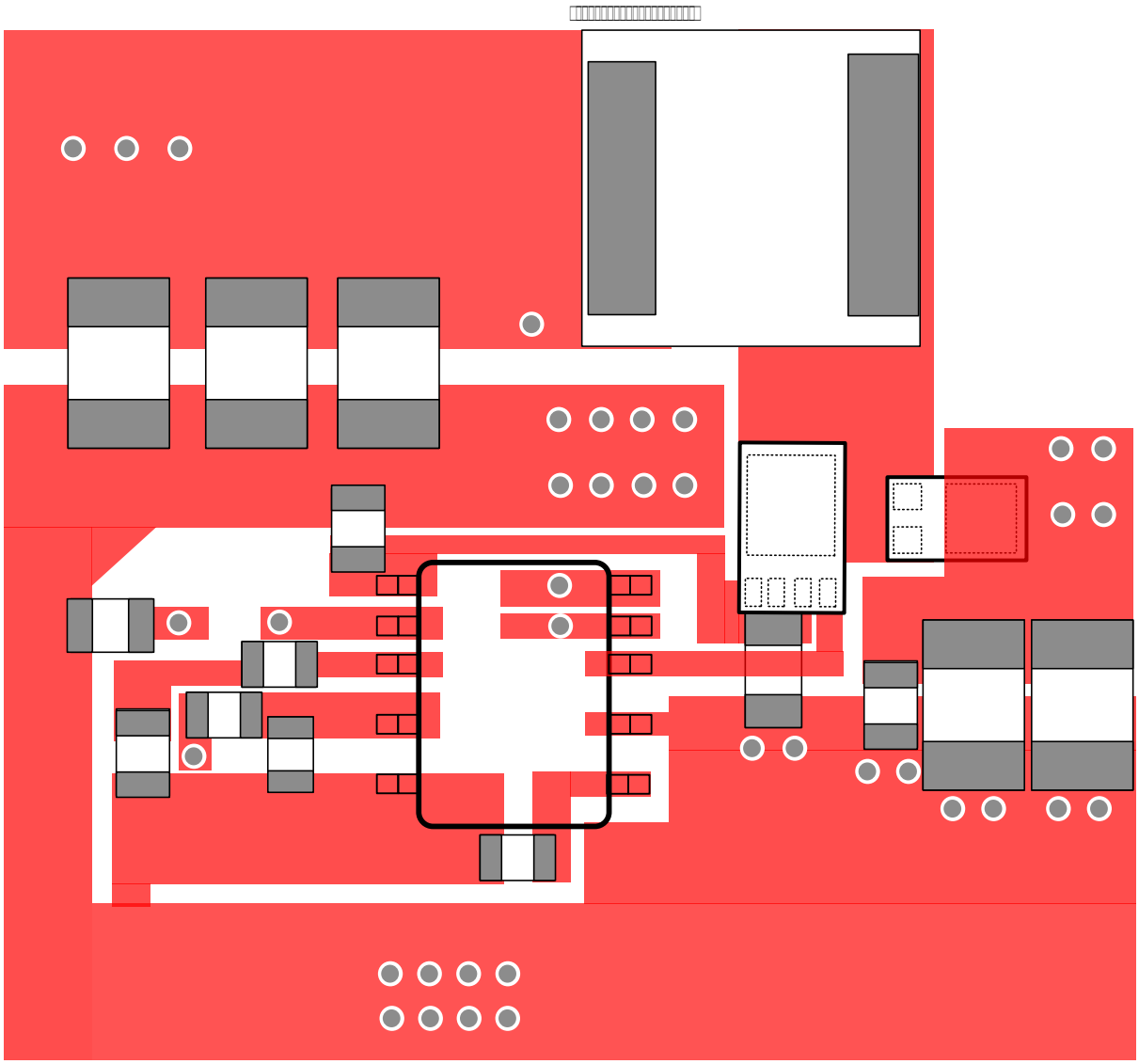

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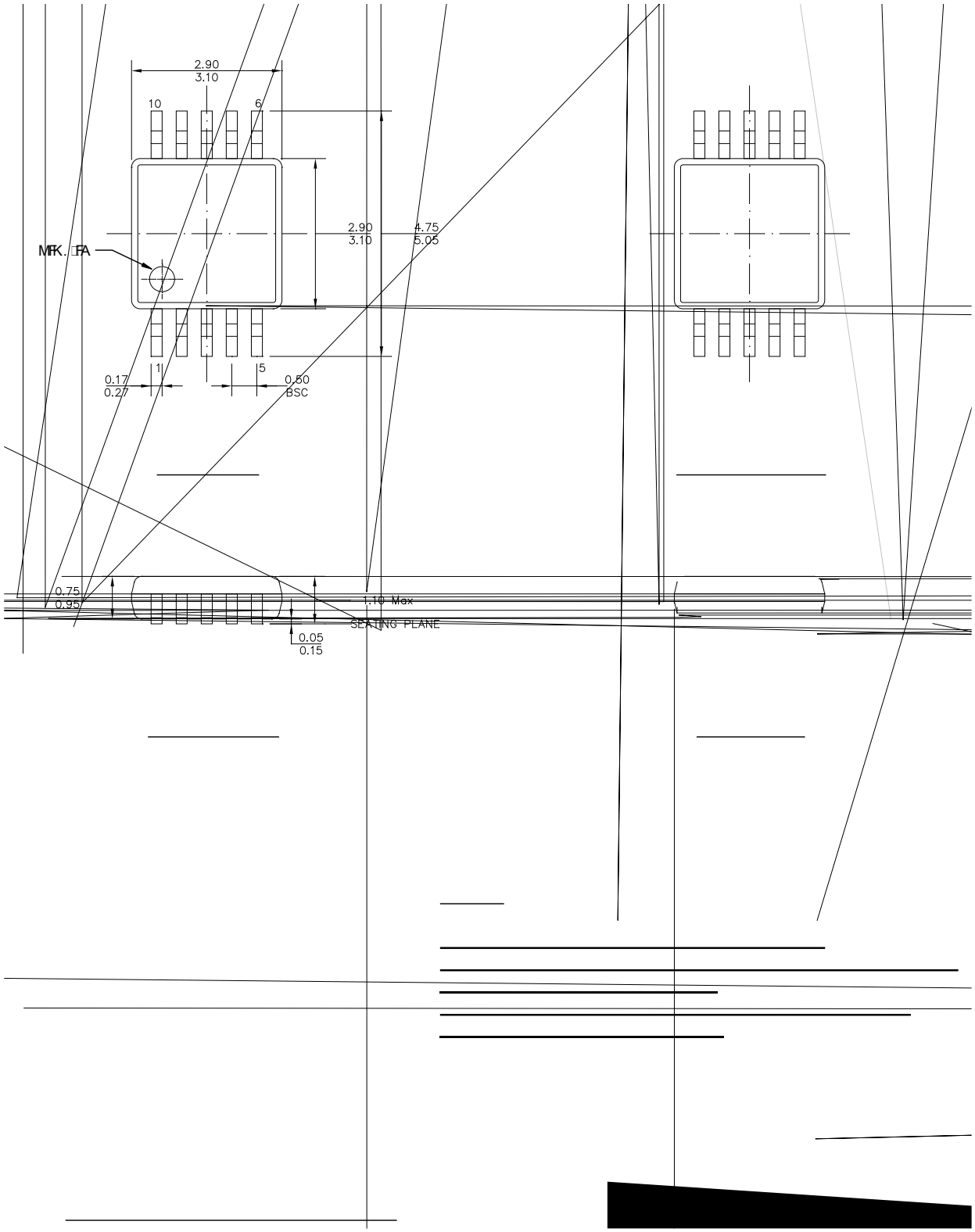
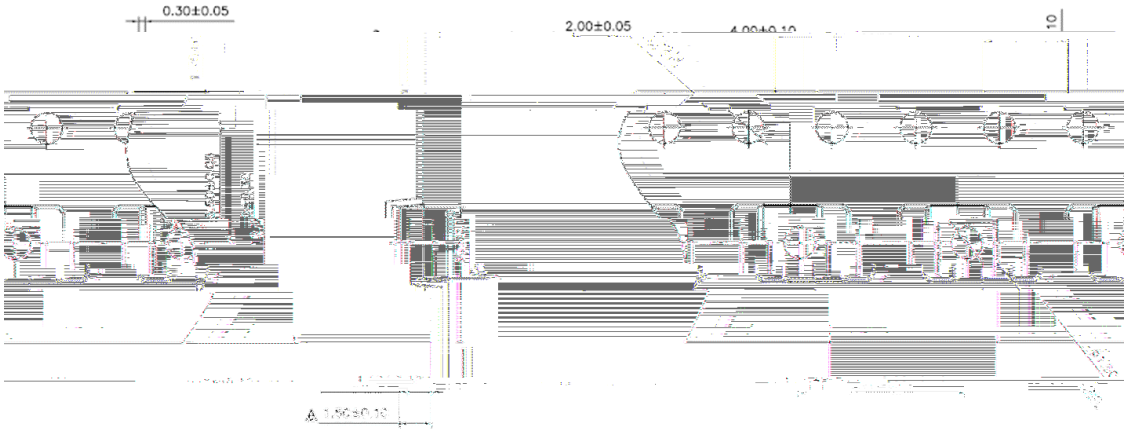
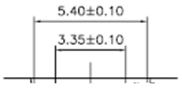
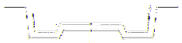
PACKAGE INFORMATION



TAPE AND REEL INFORMATION







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