

, * % 7 ' L V F U H W H

9&(9
,&		\$
9&(6\$7,& 0"o\$		9

& L U F X L W

\$ S S O L F D W L R Q V

y , Q Y H U W H U I R U P R W R U G U L Y H
 y \$ & D Q G ' & V H U Y R G U L Y H D P S O L I L
 y 8 Q L Q W H U U X S W L E O H S R Z H U V X S S
) H D W X U H V
 y + L J K E U H D N G R Z Q Y R O W D J H L P S U R
 U H O L D E L O L W \\
 y 0 D [L P X P M X Q F W L R Q W H P S H U D W X U
 y 3 R V L W L Y H W H P S H U D W X U H F R H I L
 y , Q F O X G L Q J I D V W V R I W U H F R Y H U
 y + L J K V K R U W F L U F X L W F D S D E L O L V

0 D [L P X P 5 D W L Q J V

3 D U D P H W H U	6 \ P E R O	9 D O X H
& R O O H F W R U (P L W W H U % U H D N G R Z Q 9 R O W D J H		9
' & & R O O H F W R U & X U U H Q W 7& f & 7& f &	OLPLWHG E\ 7 ,&	\$
' L R G H) R U Z D U G & X U U H Q W 7& f & 7& f &	OLPLWHG E\ 7 ,	\$
& R Q W L Q X R X V * D W H (P L W W H U 9 R O W D J H f		9
7 U D Q V L H Q W * D W H (P L W W H U 9 R O W D J H W S - V '	9*(f	9
7 X U Q R I I 6 D I H 2 S H ' U D W L Q J 7 f &	\$ U H D 9	\$
3 X O V H G & R O O H F W R U & X U U H Q W 9 W S O L P L W H G E \ 7	,&0	\$
' L R G H 3 X O V H G & X U U H Q W W S O L P L W H G E \ 7	W S O L P L W H G E \ 7	\$
6 K R U W & L U F X L W : L W K V W D Q G 7 L P H 9*(9 & 9 9 & (0 0 9	7 V F	V
3 R Z H U ' L V V L S D W L R Q 7 M	f & 3 W F w f &	:

2SHUDWLQJ -XQFWLRQ 7HP	SHUDWXUH		7 f &
6WRUDJH 7HP	SHUDWXUH	7v	f &
6ROGHULQJ 7HP	SHUDWXUH LQ IURP FDVH IRU V	ZDYH V	ROGHULQJ PP f &

(OHFWULFDO & KDUDFWULWULWODFV VRRWKHIDZL*%H7 VSHFLILH

3DUDPHWHU	HU	6\PERO	&RQGLWLRQV	0LQ	7\
6WDWLF					
&ROOHFWRU (PLWWHU %UHDNGRZQ 9ROWDJH		9 & \$			9
*DWH 7KUHVKRQG	9ROWDJH	P\$			9
&ROOHFWRU (PLWWHU 6DWXUDWLRQ 9ROWDJH		9 & \$ f & f & 7 f &			9
=HUR *DWH 9ROWDJH &ROOHFWRU &XUUHQW		9 & \$ f & f &			P \$
*DWH (PLWWHU /HDNDJH &XUUHQW		9 & \$ 9 *9 " 9			Q \$

3DUDPHWHU	HU	6\PERO	&RQGLWLRQV	0LQ	7\
'\QDPLF					
,QSXW &DSDFLWDQFH		9 & \$ 9 *9 9			Q)
5HYHUVH 7UDQVIHU &DSDFLWDQFH &UHV		1 0+]			
*DWH &KDUJH	*	9 & \$ 9 * 4 9			X &
6KRUW &LUFXLW &RQOHFWRU &XUUHQW		9FF 907M f &			\$

(OHFWULFDO & KDUDFWWHULVWLFVRRWKKIDZLRGHVSHFLILH

3DUDPHWHU	6\PERO	&RQGLWLRQV	QLQ
6WDWLF			
'LRGH)RUZDUG	9) 9RO	7M \$ f & 7M f &	9

6ZLWFKLQJ & KDUDFWWHULVWLF , QGXFWLYH /RDG

3DUDPHWHU	6\PERO	&RQGLWLRQV	QLQ
'\QDPLF M DW 7			
7XUQ RQ 'HOD\ 7LPH	9&& 9 & , \$ 9*(9a 9 5J		QV
5LVH 7LPH		W	QV
7XUQ RQ (QHUU\ (RQ			P-
7XUQ RII 'HOD\ 7LPH			QV
)DOO 7LPH		W	QV
7XUQ RII (QHUU\ (RII			P-
'\QDPLF M DW 7			
7XUQ RQ 'HOD\ 7LPH	9&& 9 & , \$ 9*(9a 9 5J		QV
5LVH 7LPH		W	QV
7XUQ RQ (QHUU\ (RQ			P-
7XUQ RII 'HOD\ 7LPH			QV
)DOO 7LPH		W	QV
7XUQ RII (QHUU\ (RII			P-
'\QDPLF M DW 7			
7XUQ RQ 'HOD\ 7LPH	9&& 9 & , \$ 9*(Ya 9 5J		QV
5LVH 7LPH		W	QV
7XUQ RQ (QHUU\ (RQ			P-
7XUQ RII 'HOD\ 7LPH			QV
)DOO 7LPH		W	QV
7XUQ RII (QHUU\ (RII			P-

(OHFWULFDO & KDUDFWHULVWLFV RI WKH ',2' (

3DUDPHWHU	6\PERO	&RQGLWLRQV	OLQ
'\QDPLFDW 7			
'LRGH)RUZDUG 9)ROW,DJH\$			9
5HYHUVH 5HFRYHU & XUUHQW			\$
5HYHUVH 5HFRYHU & KD'UJH \$ 9 9 GL GW		\$ V	X &
5HYHUVH 5HFRYHU (HUJ\			P-
'\QDPLF DW 7M •			
5HYHUVH 5HFRYHU & XUUHQW			\$
5HYHUVH 5HFRYHU & KD'UJH \$ 9 9 GL GW		\$ V	X &
5HYHUVH 5HFRYHU (HUJ\			P-
'\QDPLF DW 7M •			
5HYHUVH 5HFRYHU & XUUHQW			\$
5HYHUVH 5HFRYHU & KD'UJH \$ 9 9 GL GW		\$ V	X &
5HYHUVH 5HFRYHU (HUJ\			P-

7KHUPDO 5HVLVWDQFH

3DUDPHWHU	6\PERO	OD[9DOXH	8QLW
, * % 7 7KHUPDO 5HVLVWDQFH -XQFWLRQ & DVH . :				
'LRGH 7KHUPDO 5HVLVWDQFH 5XQFWLRQ & DVH				. :
7KHUPDO 5HVLVWDQFH -XQFWLRQ \$ PELHQW				. :

oçpDoÅoÈ

oçpDoÄoÈoÃ

19V
 17V
 15V
 13V
 11V
 9V

19V
 17V
 15V
 13V
 11V
 9V

— oçpDoÅoÈ
 oçpDoÄoÈoÃ

oé (oéo³

e³e³o³o³o³o³Øp p o³
 oØp o³

oéoDoÉoÃoÃoéo³
 oçoDoÄoÄp oúp o³
 oéoDp>oÄoÈoéo³
 oçpDoÄoÈoÃ

— oØp p o³
----- oØpøù

oØpMoÄoÊoÈqào³

oéoÐoÉoÃoÃéo³
oóÐoÇoÃoÕo³
oéoÐp>oÄoÈéo³
oØpÐoÄoÈoÃ

— oØpÐoÄoÈ
----- oØpÐoÄoÈoÃ

L
U L > . : @
L > V @

óóĐoÉoÃoÃóó³
óóĐoÃoÃp óúp ó³
óóĐp>oÃoÈóó³
óóĐoÃoÈoÃ

óóĐoÉoÃoÃóó³
óóĐoÇoÃoÔó³
óóĐp>oÃoÈóó³
óóĐoÃoÈoÃ

L
U L > . : @
L > V @

z Circuit Diagram

Z 3DFNDJH 2XWOLQH ,QIRUPDWLRQ

