

# **IEICE** **TRANSACTIONS**

## **on Fundamentals of Electronics, Communications and Computer Sciences**

DOI:10.1587/transfun.2024SML0002

Publicized:2024/09/13

This advance publication article will be replaced by  
the finalized version after proofreading.



A PUBLICATION OF THE ENGINEERING SCIENCES SOCIETY

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5BCMF3FTVMUT GPS UIF TVC EBUBTFU < >

%BUBTF	UIPE	3FTVMU4NFBO	
		%JDF	*P6
	/PSNBM		
	315 4-		
	315 44-		
	7"5 4-		
	7"5 44-		
	1SPQPTFE 4-		
	1SPQPTFE 44-		
	/PSNBM		
	315 4-		
	315 44-		
	7"5 4-		
	7"5 44-		
	1SPQPTFE 4-		
	1SPQPTFE 44-		
	/PSNBM		
	315 4-		
	315 44-		
	7"5 4-		
	7"5 44-		
	1SPQPTFE 4-		
	1SPQPTFE 44-		

5BCMF\$PNQBSJTPO PG EJWJEJOH MPDBU

-PDBU	JPT	3FTVMU4NFBO	
		%JDF	*P6
-PD			
-PD			
-PD			
-PD			
-PD			
-PD			
1SPQPTFE			

\$PODMVTJPOT

\*O UIJT QBQFS XFQSPQPTFE BNFUIPE  
 VMBSJ[BUJPO NFUIPE VTJOH BEWFSTBS  
 JOH NFUIPE BT B TPMVUJPO UP UIF JOT  
 JO NFEJDBM JNBHF QSPDFTTJOH FTQFD  
 UJPO PG DBMDJPDBUJPO SFHJPOT JO EF  
 5IF QSPQPTFE NFUIPE QSPWJEFT FOFD  
 OFUXPSL BSDIJUFDUVSFT 8F BMTP DP  
 JNQSPWFT UIF BDDVSDZ XIFO USBJJOH

3FGFSFODFT

< > -P[BOP . /BHIBWJ , 'PSFNBO 4 -JN ,  
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 GPS BHFHSPVQT JO BOE BTZTUEN  
 (MPCBM #VSEFO PG %JTFBTF 4UVEZ

MFDLFOTUFJO . 'SFZ + ;PSO BOE ( 'MFD  
 SPMF PG DBMDJVN JO UIF QBUIPHFOFTJT PG F  
 TJT , 5SFOETJO 1IBSNBDPMPHJDBM 4DJFODFT

< > 1 #PVUPVZSJF 1 -BDPMMFZ BOE # -BVSFOU  
 DBSEJPWBTDVMBS PVUDPNF , \$MJOJDBM BOE  
 BOE 1IZTJPMPHZ 7PM OP QQ {  
 < > 5 ; /BRWJ BOE . 4 -FF •\$BSPUJE JOUJNB NF  
 QMBRVF JO DBSEJPWBTDVMBS SJTL BTFTTTF  
 JOH 7PM /P QQ {  
 < > 5 /BTV , ,BXBDIJ . .VOFZBTV , \$IBNOPOHUIE  
 6DIJEB : \*TIJPLB / :PTIJOBSJ BOE " 5BHVDIJ  
 DJPDBUJPO 3FHJPO JO %FOUBM 1BOPSNJD 3E  
 1SPD \*OUFSOBUJPOBM 8PSLTIPQ PO 4NBSU  
 "TJB 4\*4" %B[BJGV 'VLVPLB 4FQU { QQ  
 < > :BNB[BLJ . .VOFZBTV 4 :PTIJE " "TBOP  
 \*TIJPLB / :PTIJOBSJ BOE " 5BHVDIJ •\*NQSP  
 BDDVSDZ PG DBMDJPF BSFB GSPN EFOUBM  
 EFFQ MFBSOJH , \*\$5FDI 3FQPSU 4\*4  
 < > 5 .VSBOP . .VOFZBTV 4 :PTIJE , \$IBNOPOH  
 , 6DIJEB / %FXBLF : \*TIJPLB BOE / :PTIJOB  
 \$BMDJPDBUJPO 3FHJPOT GSPN %FOUBM 1BOPS  
 4FNBOUJD 4FHNFOUBUJPO 6TJOH %FFQ -FBSO  
 UJPOBM 8PSLTIPQ PO 4NBSU \*OGP .FEJB 4ZTU  
 MJOF 4FQU { QQ  
 < > 5 .VSBOP . .VOFZBTV 4 :PTIJE , \$IBNOPOH  
 BOE , 6DIJEB •/FX .FUIPE PG %FUFDUJOH \$B  
 JO %FOUBM 1BOPSNJD 3BEJPHSBQIT #BTFF P  
 UI \*OUFSOBUJPOBM 4ZNQPTJVN PO \$PNNVOJ  
 5FDIOPMPHJFT \*4\$\*5 5PUUPSJ +BQBO 0DU

< > \*TIJJBOE " 4BUP •5SBJOJOH %FFQ /FVSBM /F  
 JBMMZ "VHNFOUFE 'FBUVSFT GPS 4NBMM TDBM  
 \*OUFSOBUJPOBM +PJOU \$POGFSFODF PO /  
 #VEBQFTU )VOHBSZ +VMZ QQ {  
 < > 4[FHFEZ 8 ;BSFNCB \* 4VUTLFWFS + #SVO  
 GFMPX BOE 3 'FSHVT •\*OUSJHVJH QSPQF  
 BS9JW  
 < > + (PPEGFMMPX + 4IJFOT BOE \$ 4[FHFEZ  
 OFTTJOH "EWFSTBSJBM &YBNQMFT , BS9JW  
 < > ;IBOH ) -JV BOE 2 )V •5SBOT'VTF 5SBOTG  
 CGS •COMZONH •F4FHFHFOU BUJPO , 1SPD  
 FODF PG •FFJDBM •NBHF \$PNQVUJOH BOE \$PNQ  
 WJPO "\$\$ " 4USBTCPVSH 'SBODF 4FQU 0  
 1 \$B[BOP •BNVOZBTV 4 •PTIJE " "TBOP  
 JHMMZ JO 4 , GDSJUF •EJUEB  
 2 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 3 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 4 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 5 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 6 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 7 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 8 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 9 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB  
 0 •UJPOBM 8PSLTIPQ PO 4NBSU •EJUEB

< > 1 'BO ( 1 +J 5 ;IPV ( \$IFO ) 'V + 4IFO  
 •1SB/FU 1BSBMMFM 3FWFSTF "UUFUJPO /FU  
 UJPO , BS9JW  
 < > #BL 7S "CPZV ( &SMJLINBO BOE 1 ,FMMNBO  
 BOT FUBM \*(MPCBM BOE SFHJPOBM NPSUBM  
 GPS BHFHSPVQT JO BOE BTZTUEN  
 (MPCBM #VSEFO PG %JTFBTF 4UVEZ , -BOUI 7PMHNB BOE + {#B •EBN " NFUIPE GPS TU  
 UJPO , BS9JW