寄存器

寄存器列表

OFFSET	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0x00	IWTF	COV	CUV	OCD1	OCC1	OCD2	OCC2	SCD
0x01	PD	VADF	CC1F	CC2F	CST[3]	CST[2]	CST[1]	CST[0]
0x02	CC1[15]	CC1[14]	CC1[13]	CC1[12]	CC1[11]	CC1[10]	CC1[9]	CC1[8]
0x03	CC1[7]	CC1[6]	CC1[5]	CC1[4]	CC1[3]	CC1[2]	CC1[1]	CC1[0]
0x04	CC2[19]	CC2[18]	CC2[17]	CC2[16]	CC2[15]	CC2[14]	CC2[13]	CC2[12]
0x05	CC2[11]	CC2[10]	CC2[9]	CC2[8]	CC2[7]	CC2[6]	CC2[5]	CC2[4]
0x06	CC2[3]	CC2[2]	CC2[1]	CC2[0]	PDSGF	PCHGF	DSGF	CHGF
0x07	VTP[15]	VTP[14]	VTP[13]	VTP[12]	VTP[11]	VTP[10]	VTP[9]	VTP[8]
0x08	VTP[7]	VTP[6]	VTP[5]	VTP[4]	VTP[3]	VTP[2]	VTP[1]	VTP[0]
0x09	VPK[15]	VPK[14]	VPK[13]	VPK[12]	VPK[11]	VPK[10]	VPK[9]	VPK[8]
0x0A	VPK[7]	VPK[6]	VPK[5]	VPK[4]	VPK[3]	VPK[2]	VPK[1]	VPK[0]
0x0B	VLD[15]	VLD[14]	VLD[13]	VLD[12]	VLD[11]	VLD[10]	VLD[9]	VLD[8]
0x0C	VLD[7]	VLD[6]	VLD[5]	VLD[4]	VLD[3]	VLD[2]	VLD[1]	VLD[0]
0x0D	VCT[15]	VCT[14]	VCT[13]	VCT[12]	VCT[11]	VCT[10]	VCT[9]	VCT[8]
0x0E	VCT[7]	VCT[6]	VCT[5]	VCT[4]	VCT[3]	VCT[2]	VCT[1]	VCT[0]
0x0F	V1P8[15]	V1P8[14]	V1P8[13]	V1P8[12]	V1P8[11]	V1P8[10]	V1P8[9]	V1P8[8]
0x10	V1P8[7]	V1P8[6]	V1P8[5]	V1P8[4]	V1P8[3]	V1P8[2]	V1P8[1]	V1P8[0]
0x11	VGP1[15]	VGP1[14]	VGP1[13]	VGP1[12]	VGP1[11]	VGP1[10]	VGP1[9]	VGP1[8]
0x12	VGP1[7]	VGP1[6]	VGP1[5]	VGP1[4]	VGP1[3]	VGP1[2]	VGP1[1]	VGP1[0]
0x13	VGP2[15]	VGP2[14]	VGP2[13]	VGP2[12]	VGP2[11]	VGP2[10]	VGP2[9]	VGP2[8]
0x14	VGP2[7]	VGP2[6]	VGP2[5]	VGP2[4]	VGP2[3]	VGP2[2]	VGP2[1]	VGP2[0]
0x15	VGP3[15]	VGP3[14]	VGP3[13]	VGP3[12]	VGP3[11]	VGP3[10]	VGP3[9]	VGP3[8]
0x16	VGP3[7]	VGP3[6]	VGP3[5]	VGP3[4]	VGP3[3]	VGP3[2]	VGP3[1]	VGP3[0]
0x17	VGP4[15]	VGP4[14]	VGP4[13]	VGP4[12]	VGP4[11]	VGP4[10]	VGP4[9]	VGP4[8]
0x18	VGP4[7]	VGP4[6]	VGP4[5]	VGP4[4]	VGP4[3]	VGP4[2]	VGP4[1]	VGP4[0]
0x19	VGP5[15]	VGP5[14]	VGP5[13]	VGP5[12]	VGP5[11]	VGP5[10]	VGP5[9]	VGP5[8]
0x1A	VGP5[7]	VGP5[6]	VGP5[5]	VGP5[4]	VGP5[3]	VGP5[2]	VGP5[1]	VGP5[0]
0x1B	VGP6[15]	VGP6[14]	VGP6[13]	VGP6[12]	VGP6[11]	VGP6[10]	VGP6[9]	VGP6[8]
0x1C	VGP6[7]	VGP6[6]	VGP6[5]	VGP6[4]	VGP6[3]	VGP6[2]	VGP6[1]	VGP6[0]
0x1D	VC1[15]	VC1[14]	VC1[13]	VC1[12]	VC1[11]	VC1[10]	VC1[9]	VC1[8]
0x1E	VC1[7]	VC1[6]	VC1[5]	VC1[4]	VC1[3]	VC1[2]	VC1[1]	VC1[0]
0x1F	VC2[15]	VC2[14]	VC2[13]	VC2[12]	VC2[11]	VC2[10]	VC2[9]	VC2[8]
0x20	VC2[7]	VC2[6]	VC2[5]	VC2[4]	VC2[3]	VC2[2]	VC2[1]	VC2[0]
0x21	VC3[15]	VC3[14]	VC3[13]	VC3[12]	VC3[11]	VC3[10]	VC3[9]	VC3[8]
0x22	VC3[7]	VC3[6]	VC3[5]	VC3[4]	VC3[3]	VC3[2]	VC3[1]	VC3[0]
0x23	VC4[15]	VC4[14]	VC4[13]	VC4[12]	VC4[11]	VC4[10]	VC4[9]	VC4[8]
0x24	VC4[7]	VC4[6]	VC4[5]	VC4[4]	VC4[3]	VC4[2]	VC4[1]	VC4[0]
0x25	VC5[15]	VC5[14]	VC5[13]	VC5[12]	VC5[11]	VC5[10]	VC5[9]	VC5[8]

OFFSET	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0x26	VC5[7]	VC5[6]	VC5[5]	VC5[4]	VC5[3]	VC5[2]	VC5[1]	VC5[0]
0x27	VC6[15]	VC6[14]	VC6[13]	VC6[12]	VC6[11]	VC6[10]	VC6[9]	VC6[8]
0x28	VC6[7]	VC6[6]	VC6[5]	VC6[4]	VC6[3]	VC6[2]	VC6[1]	VC6[0]
0x29	VC7[15]	VC7[14]	VC7[13]	VC7[12]	VC7[11]	VC7[10]	VC7[9]	VC7[8]
0x2A	VC7[7]	VC7[6]	VC7[5]	VC7[4]	VC7[3]	VC7[2]	VC7[1]	VC7[0]
0x2B	VC8[15]	VC8[14]	VC8[13]	VC8[12]	VC8[11]	VC8[10]	VC8[9]	VC8[8]
0x2C	VC8[7]	VC8[6]	VC8[5]	VC8[4]	VC8[3]	VC8[2]	VC8[1]	VC8[0]
0x2D	VC9[15]	VC9[14]	VC9[13]	VC9[12]	VC9[11]	VC9[10]	VC9[9]	VC9[8]
0x2E	VC9[7]	VC9[6]	VC9[5]	VC9[4]	VC9[3]	VC9[2]	VC9[1]	VC9[0]
0x2F	VC10[15]	VC10[14]	VC10[13]	VC10[12]	VC10[11]	VC10[10]	VC10[9]	VC10[8]
0x30	VC10[7]	VC10[6]	VC10[5]	VC10[4]	VC10[3]	VC10[2]	VC10[1]	VC10[0]
0x31	VC11[15]	VC11[14]	VC11[13]	VC11[12]	VC11[11]	VC11[10]	VC11[9]	VC11[8]
0x32	VC11[7]	VC11[6]	VC11[5]	VC11[4]	VC11[3]	VC11[2]	VC11[1]	VC11[0]
0x33	VC12[15]	VC12[14]	VC12[13]	VC12[12]	VC12[11]	VC12[10]	VC12[9]	VC12[8]
0x34	VC12[7]	VC12[6]	VC12[5]	VC12[4]	VC12[3]	VC12[2]	VC12[1]	VC12[0]
0x35	VC13[15]	VC13[14]	VC13[13]	VC13[12]	VC13[11]	VC13[10]	VC13[9]	VC13[8]
0x36	VC13[7]	VC13[6]	VC13[5]	VC13[4]	VC13[3]	VC13[2]	VC13[1]	VC13[0]
0x37	VC14[15]	VC14[14]	VC14[13]	VC14[12]	VC14[11]	VC14[10]	VC14[9]	VC14[8]
0x38	VC14[7]	VC14[6]	VC14[5]	VC14[4]	VC14[3]	VC14[2]	VC14[1]	VC14[0]
0x39	VC15[15]	VC15[14]	VC15[13]	VC15[12]	VC15[11]	VC15[10]	VC15[9]	VC15[8]
0x3A	VC15[7]	VC15[6]	VC15[5]	VC15[4]	VC15[3]	VC15[2]	VC15[1]	VC15[0]
0x3B	VC16[15]	VC16[14]	VC16[13]	VC16[12]	VC16[11]	VC16[10]	VC16[9]	VC16[8]
0x3C	VC16[7]	VC16[6]	VC16[5]	VC16[4]	VC16[3]	VC16[2]	VC16[1]	VC16[0]
0x3D	VC17[15]	VC17[14]	VC17[13]	VC17[12]	VC17[11]	VC17[10]	VC17[9]	VC17[8]
0x3E	VC17[7]	VC17[6]	VC17[5]	VC17[4]	VC17[3]	VC17[2]	VC17[1]	VC17[0]
0x3F	VC18[15]	VC18[14]	VC18[13]	VC18[12]	VC18[11]	VC18[10]	VC18[9]	VC18[8]
0x40	VC18[7]	VC18[6]	VC18[5]	VC18[4]	VC18[3]	VC18[2]	VC18[1]	VC18[0]
0x41	VC19[15]	VC19[14]	VC19[13]	VC19[12]	VC19[11]	VC19[10]	VC19[9]	VC19[8]
0x42	VC19[7]	VC19[6]	VC19[5]	VC19[4]	VC19[3]	VC19[2]	VC19[1]	VC19[0]
0x43	VC20[15]	VC20[14]	VC20[13]	VC20[12]	VC20[11]	VC20[10]	VC20[9]	VC20[8]
0x44	VC20[7]	VC20[6]	VC20[5]	VC20[4]	VC20[3]	VC20[2]	VC20[1]	VC20[0]
0x45	VC21[15]	VC21[14]	VC21[13]	VC21[12]	VC21[11]	VC21[10]	VC21[9]	VC21[8]
0x46	VC21[7]	VC21[6]	VC21[5]	VC21[4]	VC21[3]	VC21[2]	VC21[1]	VC21[0]
0x47	VC22[15]	VC22[14]	VC22[13]	VC22[12]	VC22[11]	VC22[10]	VC22[9]	VC22[8]
0x48	VC22[7]	VC22[6]	VC22[5]	VC22[4]	VC22[3]	VC22[2]	VC22[1]	VC22[0]
0x49	VC23[15]	VC23[14]	VC23[13]	VC23[12]	VC23[11]	VC23[10]	VC23[9]	VC23[8]
0x4A	VC23[7]	VC23[6]	VC23[5]	VC23[4]	VC23[3]	VC23[2]	VC23[1]	VC23[0]
0x4B	VC24[15]	VC24[14]	VC24[13]	VC24[12]	VC24[11]	VC24[10]	VC24[9]	VC24[8]
0x4C	VC24[7]	VC24[6]	VC24[5]	VC24[4]	VC24[3]	VC24[2]	VC24[1]	VC24[0]
0x4D	VVOS[15]	VVOS[14]	VVOS[13]	VVOS[12]	VVOS[11]	VVOS[10]	VVOS[9]	VVOS[8]
0x4E	VVOS[7]	VVOS[6]	VVOS[5]	VVOS[4]	VVOS[3]	VVOS[2]	VVOS[1]	VVOS[0]
0x4F	CVOS[15]	CVOS[14]	CVOS[13]	CVOS[12]	CVOS[11]	CVOS[10]	CVOS[9]	CVOS[8]

OFFSET	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0x50	CVOS[7]	CVOS[6]	CVOS[5]	CVOS[4]	CVOS[3]	CVOS[2]	CVOS[1]	CVOS[0]
0x51	LDPU	PDSGC	PCHGC	DSGM	DSGC[1]	DSGC[0]	CHGC[1]	CHGC[0]
0x52	PDWM			DPC[4]	DPC[3]	DPC[2]	DPC[1]	DPC[0]
0x53	PDDM	PCWM	PCCM	PCDM	DWM	DDM	DPDM	DBDM
0x54	CWM	CO1M	CO2M	CSM	CDM	CCM	CPCM	CBDM
0x55	HSFM				CAEW	CAES		CAMZ
0x56					C1OW[1]	C1OW[0]	C1OS[1]	C1OS[0]
0x57								
0x58								
0x59	OCD1T[7]	OCD1T[6]	OCD1T[5	OCD1T[4]	OCD1T[3]	OCD1T[2]	OCD1T[1]	OCD1T[0]
0x5A	OCC1T[7]	OCC1T[6]	OCC1T[5]	OCC1T[4]	OCC1T[3]	OCC1T[2]	OCC1T[1]	OCC1T[0]
0x5B	OCD1D[7]	OCD1D[6]	OCD1D[5]	OCD1D[4]	OCD1D[3]	OCD1D[2]	OCD1D[1]	OCD1D[0]
0x5C	OCCD[7]	OCCD[6]	OCCD[5]	OCCD[4]	OCCD[3]	OCCD[2]	OCCD[1]	OCCD[0]
0x5D								
0x5E		OCD2E	OCD2T[5]	OCD2T[4]	OCD2T[3]	OCD2T[2]	OCD2T[1]	OCD2T[0]
0x5F		OCC2E	OCC2T[5]	OCC2T[4]	OCC2T[3]	OCC2T[2]	OCC2T[1]	OCC2T[0]
0x60	OCD2D[7]	OCD2D[6]	OCD2D[5]	OCD2D[4]	OCD2D[3]	OCD2D[2]	OCD2D[1]	OCD2D[0]
0x61	OCC2D[7]	OCC2D[6]	OCC2D[5]	OCC2D[4]	OCC2D[3]	OCC2D[2]	OCC2D[1]	OCC2D[0]
0x62		SCDE	SCDT[5]	SCDT[4]	SCDT[3]	SCDT[2]	SCDT[1]	SCDT[0]
0x63	SCDD[7]	SCDD[6]	SCDD[5]	SCDD[4]	SCDD[3]	SCDD[2]	SCDD[1]	SCDD[0]
0x64								
0x65	CWT[7]	CWT[6]	CWT[5]	CWT[4]	CWT[3]	CWT[2]	CWT[1]	CWT[0]
0x66	BDPT[7]	BDPT[6]	BDPT[5]	BDPT[4]	BDPT[3]	BDPT[2]	BDPT[1]	BDPT[0]
0x67	CB[24]	CB[23]	CB[22]	CB[21]	CB[20]	CB[19]	CB[18]	CB[17]
0x68	CB[16]	CB[15]	CB[14]	CB[13]	CB[12]	CB[11]	CB[10]	CB[9]
0x69	CB[8]	CB[7]	CB[6]	CB[5]	CB[4]	CB[3]	CB[2]	CB[1]
0x6A	CM[24]	CM[23]	CM[22]	CM[21]	CM[20]	CM[19]	CM[18]	CM[17]
0x6B	CM[16]	CM[15]	CM[14]	CM[13]	CM[12]	CM[11]	CM[10]	CM[9]
0x6C	CM[8]	CM[7]	CM[6]	CM[5]	PKM	LDM	CTM	V1P8M
0x6D			CPVS[2]	CPVS[1]	CPVS[0]	COW	CMM	CVS
0x6E	VAE	VASM	VAMP[1]	VAMP[0]			VAO[1]	VAO[0]
0x6F								
0x70	COVT[11]	COVT[10]	COVT[9]	COVT[8]	COVT[7]	COVT[6]	COVT[5]	COVT[4]
0x71	COVT[3]	COVT[2]	COVT[1]	COVT[0]	COVD[3]	COVD[2]	COVD[1]	COVD[0]
0x72	CUVT[11]	CUVT[10]	CUVT[9]	CUVT[8]	CUVT[7]	CUVT[6]	CUVT[5]	CUVT[4]
0x73	CUVT[3]	CUVT[2]	CUVT[1]	CUVT[0]	CUVD[3]	CUVD[2]	CUVD[1]	CUVD[0]
0x74	GP1M[1]	GP1M[0]	GP2M[2]	GP2M[1]	GP2M[0]	GP3M[2]	GP3M[1]	GP3M[0]
0x75	GP4M[1]	GP4M[0]	GP5M[2]	GP5M[1]	GP5M[0]	GP6M[2]	GP6M[1]	GP6M[0]
0x76	COTF	COTT[6]	COTT[5]	COTT[4]	COTT[3]	COTT[2]	COTT[1]	COTT[0]
0x77	V3P3ES	V3P3EW	V3P3M		IWTS	IWT[2]	IWT[1]	IWT[0]
0x78	TIWK			IWTS	TWSE[3]	TWSE[2]	TWSE[1]	TWSE[0]
0x79	IWM	IVOM	ICCM	ICOM	ICUM	IOC1M	IOC2M	ISCDM

OFFSET	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0x7A								
0x7B								
0x7C								
0x7D								
0x7E	FRT[7]	FRT[6]	FRT5]	FRT[4]	FRT[3]	FRT[2]	FRT[1]	FRT[0]
0x7F								
0x80								
0x81								
0x82								
0x83								
0x84								
0x85								
0x86								
0x87								
0x88								
0x89								
0x8A								
0x8B								
0x8C								
0x8D								
0x8E								
0x8F	CV[7]	CV[6]	CV[5]	CV[4]	CV[3]	CV[2]	CV[1]	CV[0]
0x90								

寄存器描述

警报标识寄存器

0x00	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	IWTF	COV	CUV	OCD1	OCC1	OCD2	OCC2	SCD
MODE	R/W0	R/W0	R/W0	R/W0	R/W0	R/W0	R/W0	R/W0
DEFAULT	0	0	0	0	0	0	0	0

IWTF················I²C 看门狗溢出标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生 I²C 看门狗溢出

1·····················已发生 I²C 看门狗溢出

COV················电池过压标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生电池过压

1·····················已发生电池过压

CUV················电池欠压标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生电池欠压

1·····················已发生电池欠压

OCD1···············1 级放电过流标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生 1 级放电过流

1·····················已发生 1 级放电过流

OCC1···············1 级充电过流标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生 1 级充电过流

1·····················已发生 1 级充电过流

OCD2···············2 级放电过流标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生 2 级放电过流

1·····················已发生 2 级放电过流

OCC2···············2 级充电过流标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生 2 级充电过流

1·····················已发生 2 级充电过流

SCD················放电短路标识位，将该 bit 置 0 即可清除，置 1 无效

0·····················未发生放电短路

1·····················已发生放电短路

芯片状态寄存器

0x01	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	PD	VADF	CC1F	CC2F	CST[3]	CST[2]	CST[1]	CST[0]
MODE	R	RC	RC	RC	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

PD················充电器检测标识位

0·····················未检测到充电器

1·····················已检测到充电器

VADF···············VADC 转换完成标识位，I²C 读取该地址后会自动清零

0·····················VADC 未完成转换

1·····················VADC 已完成转换

CC1F···············CADC CC1 转换完成标识位，I²C 读取该地址后会自动清零

0·················CADC CC1 未完成转换

1·················CADC CC1 已完成转换

CC2F···········CADC CC2 转换完成标识位，I²C 读取该地址后会自动清零

0·················CADC CC2 未完成转换

1·················CADC CC2 已完成转换

CST[3:0]··········芯片状态标识位，写入 1101，1110，1111 有效，写入其他值无效

0000···············芯片从关机状态被唤醒

0001···············芯片从休眠状态被 I²C 通信唤醒

0010···············芯片从休眠状态被定时唤醒

0011···············芯片从休眠状态被放电电流唤醒

0100···············芯片从休眠状态被充电电流唤醒

0101···············芯片从休眠状态被 2 级放电过流唤醒

0110···············芯片从休眠状态被 2 级充电过流唤醒

0111···············芯片从休眠状态被放电短路唤醒

1000···············芯片从休眠状态被充电器唤醒

1001···············N/A

1010···············N/A

1011···············芯片正在等待关机

1100···············芯片正在等待休眠

1101···············使所有寄存器复位为默认值

1110···············使芯片进入休眠状态

1111···············使芯片进入关断状态

CC1 寄存器

0x02	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CC1[15]	CC1[14]	CC1[13]	CC1[12]	CC1[11]	CC1[10]	CC1[9]	CC1[8]
MODE	R	R	R	R	R	R	R	R

0x03	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CC1[7]	CC1[6]	CC1[5]	CC1[4]	CC1[3]	CC1[2]	CC1[1]	CC1[0]
MODE	R	R	R	R	R	R	R	R

CC1[15:0]··········CADC CC1 电流值，有符号二进制补码，正值为放电，负值为充电，LSB=5μV

CC2 寄存器

0x04	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CC2[19]	CC2[18]	CC2[17]	CC2[16]	CC2[15]	CC2[14]	CC2[13]	CC2[12]
MODE	R	R	R	R	R	R	R	R

0x05	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CC2[11]	CC2[10]	CC2[9]	CC2[8]	CC2[7]	CC2[6]	CC2[5]	CC2[4]
MODE	R	R	R	R	R	R	R	R

0x06	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CC2[3]	CC2[2]	CC2[1]	CC2[0]	PDSGF	PCHGF	DSGF	CHGF
MODE	R	R	R	R	R	R	R	R

CC2[19:0]··········CADC CC2 电流值，有符号二进制补码，正值为放电，负值为充电，LSB=5/16μV=0.3125μV

PDSGF··············PDSG 驱动输出标识位

0·····················PDSG 驱动输出已关闭

1·····················PDSG 驱动输出已开启

PCHGF···············PCHG 驱动输出标识位

0·····················PCHG 驱动输出已关闭

1·····················PCHG 驱动输出已开启

DSGF···············DSG 驱动输出标识位

0·····················DSG 驱动输出已关闭

1·····················DSG 驱动输出已开启

CHGF···············CHG 驱动输出标识位

0·····················CHG 驱动输出已关闭

1·····················CHG 驱动输出已开启

VTOP 寄存器

0x07	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VTP[15]	VTP[14]	VTP[13]	VTP[12]	VTP[11]	VTP[10]	VTP[9]	VTP[8]
MODE	R	R	R	R	R	R	R	R
0x08	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VTP[7]	VTP[6]	VTP[5]	VTP[4]	VTP[3]	VTP[2]	VTP[1]	VTP[0]
MODE	R	R	R	R	R	R	R	R

VTP[15:0]··········VTOP 电压值，无符号二进制，LSB=12.8mV

VPK 寄存器

0x09	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VPK[15]	VPK[14]	VPK[13]	VPK[12]	VPK[11]	VPK[10]	VPK[9]	VPK[8]
MODE	R	R	R	R	R	R	R	R
0x0A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VPK[7]	VPK[6]	VPK[5]	VPK[4]	VPK[3]	VPK[2]	VPK[1]	VPK[0]
MODE	R	R	R	R	R	R	R	R

VPK[15:0]·········PACK 电压值，无符号二进制，LSB=12.8mV

VLD 寄存器

0x0B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VLD[15]	VLD[14]	VLD[13]	VLD[12]	VLD[11]	VLD[10]	VLD[9]	VLD[8]
MODE	R	R	R	R	R	R	R	R
0x0C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VLD[7]	VLD[6]	VLD[5]	VLD[4]	VLD[3]	VLD[2]	VLD[1]	VLD[0]
MODE	R	R	R	R	R	R	R	R

VLD[15:0]·········LOAD 电压值，无符号二进制，LSB=12.8mV

VCT 寄存器

0x0D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VCT[15]	VCT[14]	VCT[13]	VCT[12]	VCT[11]	VCT[10]	VCT[9]	VCT[8]
MODE	R	R	R	R	R	R	R	R
0x0E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VCT[7]	VCT[6]	VCT[5]	VCT[4]	VCT[3]	VCT[2]	VCT[1]	VCT[0]
MODE	R	R	R	R	R	R	R	R

VCT[15:0]··········芯片内核温度值，无符号二进制，芯片内核温度=VCT×0.24467℃-271.03℃

V1P8 寄存器

0x0F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	V1P8[15]	V1P8[14]	V1P8[13]	V1P8[12]	V1P8[11]	V1P8[10]	V1P8[9]	V1P8[8]
MODE	R	R	R	R	R	R	R	R
0x10	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	V1P8[7]	V1P8[6]	V1P8[5]	V1P8[4]	V1P8[3]	V1P8[2]	V1P8[1]	V1P8[0]
MODE	R	R	R	R	R	R	R	R

V1P8[15:0]·········V1P8 电压值，无符号二进制，LSB=100μV

VGP1 寄存器

0x11	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP1[15]	VGP1[14]	VGP1[13]	VGP1[12]	VGP1[11]	VGP1[10]	VGP1[9]	VGP1[8]
MODE	R	R	R	R	R	R	R	R
0x12	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP1[7]	VGP1[6]	VGP1[5]	VGP1[4]	VGP1[3]	VGP1[2]	VGP1[1]	VGP1[0]
MODE	R	R	R	R	R	R	R	R

VGP1[15:0]·········GP1 电压值，无符号二进制，LSB=100μV

VGP2 寄存器

0x13	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP2[15]	VGP2[14]	VGP2[13]	VGP2[12]	VGP2[11]	VGP2[10]	VGP2[9]	VGP2[8]
MODE	R	R	R	R	R	R	R	R
0x14	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP2[7]	VGP2[6]	VGP2[5]	VGP2[4]	VGP2[3]	VGP2[2]	VGP2[1]	VGP2[0]
MODE	R	R	R	R	R	R	R	R

VGP2[15:0]·········GP2 电压值，无符号二进制，LSB=100μV

VGP3 寄存器

0x15	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP3[15]	VGP3[14]	VGP3[13]	VGP3[12]	VGP3[11]	VGP3[10]	VGP3[9]	VGP3[8]
MODE	R	R	R	R	R	R	R	R
0x16	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP3[7]	VGP3[6]	VGP3[5]	VGP3[4]	VGP3[3]	VGP3[2]	VGP3[1]	VGP3[0]
MODE	R	R	R	R	R	R	R	R

VGP3[15:0]·········GP3 电压值，无符号二进制，LSB=100μV

VGP4 寄存器

0x17	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP4[15]	VGP4[14]	VGP4[13]	VGP4[12]	VGP4[11]	VGP4[10]	VGP4[9]	VGP4[8]
MODE	R	R	R	R	R	R	R	R
0x18	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP4[7]	VGP4[6]	VGP4[5]	VGP4[4]	VGP4[3]	VGP4[2]	VGP4[1]	VGP4[0]
MODE	R	R	R	R	R	R	R	R

VGP4[15:0]········GP4 电压值，无符号二进制，LSB=100μV

VGP5 寄存器

0x19	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP5[15]	VGP5[14]	VGP5[13]	VGP5[12]	VGP5[11]	VGP5[10]	VGP5[9]	VGP5[8]
MODE	R	R	R	R	R	R	R	R
0x1A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP5[7]	VGP5[6]	VGP5[5]	VGP5[4]	VGP5[3]	VGP5[2]	VGP5[1]	VGP5[0]
MODE	R	R	R	R	R	R	R	R

VGP5[15:0]········GP5 电压值，无符号二进制，LSB=100μV

VGP6 寄存器

0x1B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP6[15]	VGP6[14]	VGP6[13]	VGP6[12]	VGP6[11]	VGP6[10]	VGP6[9]	VGP6[8]
MODE	R	R	R	R	R	R	R	R
0x1C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VGP6[7]	VGP6[6]	VGP6[5]	VGP6[4]	VGP6[3]	VGP6[2]	VGP6[1]	VGP6[0]
MODE	R	R	R	R	R	R	R	R

VGP6[15:0]········GP6 电压值，无符号二进制，LSB=100μV

VC1 寄存器

0x1D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC1[15]	VC1[14]	VC1[13]	VC1[12]	VC1[11]	VC1[10]	VC1[9]	VC1[8]
MODE	R	R	R	R	R	R	R	R
0x1E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC1[7]	VC1[6]	VC1[5]	VC1[4]	VC1[3]	VC1[2]	VC1[1]	VC1[0]
MODE	R	R	R	R	R	R	R	R

VC1[15:0]··········C1 电压值，默认无符号二进制，LSB=100μV

VC2 寄存器

0x1F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC2[15]	VC2[14]	VC2[13]	VC2[12]	VC2[11]	VC2[10]	VC2[9]	VC2[8]
MODE	R	R	R	R	R	R	R	R
0x20	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC2[7]	VC2[6]	VC2[5]	VC2[4]	VC2[3]	VC2[2]	VC2[1]	VC2[0]
MODE	R	R	R	R	R	R	R	R

VC2[15:0]··········C2 电压值，默认无符号二进制，LSB=100μV

VC3 寄存器

0x21	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC3[15]	VC3[14]	VC3[13]	VC3[12]	VC3[11]	VC3[10]	VC3[9]	VC3[8]
MODE	R	R	R	R	R	R	R	R
0x22	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC3[7]	VC3[6]	VC3[5]	VC3[4]	VC3[3]	VC3[2]	VC3[1]	VC3[0]
MODE	R	R	R	R	R	R	R	R

VC3[15:0]··········C3 电压值，默认无符号二进制，LSB=100μV

VC4 寄存器

0x23	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC4[15]	VC4[14]	VC4[13]	VC4[12]	VC4[11]	VC4[10]	VC4[9]	VC4[8]
MODE	R	R	R	R	R	R	R	R
0x24	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC4[7]	VC4[6]	VC4[5]	VC4[4]	VC4[3]	VC4[2]	VC4[1]	VC4[0]
MODE	R	R	R	R	R	R	R	R

VC4[15:0]··········C4 电压值，默认无符号二进制，LSB=100μV

VC5 寄存器

0x25	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC5[15]	VC5[14]	VC5[13]	VC5[12]	VC5[11]	VC5[10]	VC5[9]	VC5[8]
MODE	R	R	R	R	R	R	R	R
0x26	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC5[7]	VC5[6]	VC5[5]	VC5[4]	VC5[3]	VC5[2]	VC5[1]	VC5[0]
MODE	R	R	R	R	R	R	R	R

VC5[15:0]··········C5 电压值，默认无符号二进制，LSB=100μV

VC6 寄存器

0x27	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC6[15]	VC6[14]	VC6[13]	VC6[12]	VC6[11]	VC6[10]	VC6[9]	VC6[8]
MODE	R	R	R	R	R	R	R	R
0x28	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC6[7]	VC6[6]	VC6[5]	VC6[4]	VC6[3]	VC6[2]	VC6[1]	VC6[0]
MODE	R	R	R	R	R	R	R	R

VC6[15:0]··········C6 电压值，默认无符号二进制，LSB=100μV

VC7 寄存器

0x29	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC7[15]	VC7[14]	VC7[13]	VC7[12]	VC7[11]	VC7[10]	VC7[9]	VC7[8]
MODE	R	R	R	R	R	R	R	R
0x2A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC7[7]	VC7[6]	VC7[5]	VC7[4]	VC7[3]	VC7[2]	VC7[1]	VC7[0]
MODE	R	R	R	R	R	R	R	R

VC7[15:0]··········C7 电压值，默认无符号二进制，LSB=100μV

VC8 寄存器

0x2B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC8[15]	VC8[14]	VC8[13]	VC8[12]	VC8[11]	VC8[10]	VC8[9]	VC8[8]
MODE	R	R	R	R	R	R	R	R
0x2C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC8[7]	VC8[6]	VC8[5]	VC8[4]	VC8[3]	VC8[2]	VC8[1]	VC8[0]
MODE	R	R	R	R	R	R	R	R

VC8[15:0]·········C8 电压值，默认无符号二进制，LSB=100μV

VC9 寄存器

0x2D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC9[15]	VC9[14]	VC9[13]	VC9[12]	VC9[11]	VC9[10]	VC9[9]	VC9[8]
MODE	R	R	R	R	R	R	R	R
0x2E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC9[7]	VC9[6]	VC9[5]	VC9[4]	VC9[3]	VC9[2]	VC9[1]	VC9[0]
MODE	R	R	R	R	R	R	R	R

VC9[15:0]·········C9 电压值，默认无符号二进制，LSB=100μV

VC10 寄存器

0x2F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC10[15]	VC10[14]	VC10[13]	VC10[12]	VC10[11]	VC10[10]	VC10[9]	VC10[8]
MODE	R	R	R	R	R	R	R	R
0x30	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC10[7]	VC10[6]	VC10[5]	VC10[4]	VC10[3]	VC10[2]	VC10[1]	VC10[0]
MODE	R	R	R	R	R	R	R	R

VC10[15:0]········C10 电压值，默认无符号二进制，LSB=100μV

VC11 寄存器

0x31	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC11[15]	VC11[14]	VC11[13]	VC11[12]	VC11[11]	VC11[10]	VC11[9]	VC11[8]
MODE	R	R	R	R	R	R	R	R
0x32	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC11[7]	VC11[6]	VC11[5]	VC11[4]	VC11[3]	VC11[2]	VC11[1]	VC11[0]
MODE	R	R	R	R	R	R	R	R

VC11[15:0]········C11 电压值，默认无符号二进制，LSB=100μV

VC12 寄存器

0x33	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC12[15]	VC12[14]	VC12[13]	VC12[12]	VC12[11]	VC12[10]	VC12[9]	VC12[8]
MODE	R	R	R	R	R	R	R	R
0x34	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC12[7]	VC12[6]	VC12[5]	VC12[4]	VC12[3]	VC12[2]	VC12[1]	VC12[0]
MODE	R	R	R	R	R	R	R	R

VC12[15:0]········C12 电压值，默认无符号二进制，LSB=100μV

VC13 寄存器

0x35	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC13[15]	VC13[14]	VC13[13]	VC13[12]	VC13[11]	VC13[10]	VC13[9]	VC13[8]
MODE	R	R	R	R	R	R	R	R
0x36	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC13[7]	VC13[6]	VC13[5]	VC13[4]	VC13[3]	VC13[2]	VC13[1]	VC13[0]
MODE	R	R	R	R	R	R	R	R

VC13[15:0]·········C13 电压值，默认无符号二进制，LSB=100μV

VC14 寄存器

0x37	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC14[15]	VC14[14]	VC14[13]	VC14[12]	VC14[11]	VC14[10]	VC14[9]	VC14[8]
MODE	R	R	R	R	R	R	R	R
0x38	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC14[7]	VC14[6]	VC14[5]	VC14[4]	VC14[3]	VC14[2]	VC14[1]	VC14[0]
MODE	R	R	R	R	R	R	R	R

VC14[15:0]·········C14 电压值，默认无符号二进制，LSB=100μV

VC15 寄存器

0x39	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC15[15]	VC15[14]	VC15[13]	VC15[12]	VC15[11]	VC15[10]	VC15[9]	VC15[8]
MODE	R	R	R	R	R	R	R	R
0x3A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC15[7]	VC15[6]	VC15[5]	VC15[4]	VC15[3]	VC15[2]	VC15[1]	VC15[0]
MODE	R	R	R	R	R	R	R	R

VC15[15:0]·········C15 电压值，默认无符号二进制，LSB=100μV

VC16 寄存器

0x3B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC16[15]	VC16[14]	VC16[13]	VC16[12]	VC16[11]	VC16[10]	VC16[9]	VC16[8]
MODE	R	R	R	R	R	R	R	R
0x3C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC16[7]	VC16[6]	VC16[5]	VC16[4]	VC16[3]	VC16[2]	VC16[1]	VC16[0]
MODE	R	R	R	R	R	R	R	R

VC16[15:0]·········C16 电压值，默认无符号二进制，LSB=100μV

VC17 寄存器

0x3D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC17[15]	VC17[14]	VC17[13]	VC17[12]	VC17[11]	VC17[10]	VC17[9]	VC17[8]
MODE	R	R	R	R	R	R	R	R
0x3E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC17[7]	VC17[6]	VC17[5]	VC17[4]	VC17[3]	VC17[2]	VC17[1]	VC17[0]
MODE	R	R	R	R	R	R	R	R

VC17[15:0]·········C17 电压值，默认无符号二进制，LSB=100μV

VC18 寄存器

0x3F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC18[15]	VC18[14]	VC18[13]	VC18[12]	VC18[11]	VC18[10]	VC18[9]	VC18[8]
MODE	R	R	R	R	R	R	R	R
0x40	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC18[7]	VC18[6]	VC18[5]	VC18[4]	VC18[3]	VC18[2]	VC18[1]	VC18[0]
MODE	R	R	R	R	R	R	R	R

VC18[15:0]·········C18 电压值，默认无符号二进制，LSB=100µV

VC19 寄存器

0x41	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC19[15]	VC19[14]	VC19[13]	VC19[12]	VC19[11]	VC19[10]	VC19[9]	VC19[8]
MODE	R	R	R	R	R	R	R	R
0x42	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC19[7]	VC19[6]	VC19[5]	VC19[4]	VC19[3]	VC19[2]	VC19[1]	VC19[0]
MODE	R	R	R	R	R	R	R	R

VC19[15:0]·········C19 电压值，默认无符号二进制，LSB=100µV

VC20 寄存器

0x43	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC20[15]	VC20[14]	VC20[13]	VC20[12]	VC20[11]	VC20[10]	VC20[9]	VC20[8]
MODE	R	R	R	R	R	R	R	R
0x44	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC20[7]	VC20[6]	VC20[5]	VC20[4]	VC20[3]	VC20[2]	VC20[1]	VC20[0]
MODE	R	R	R	R	R	R	R	R

VC20[15:0]·········C20 电压值，默认无符号二进制，LSB=100µV

VC21 寄存器

0x45	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC21[15]	VC21[14]	VC21[13]	VC21[12]	VC21[11]	VC21[10]	VC21[9]	VC21[8]
MODE	R	R	R	R	R	R	R	R
0x46	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC21[7]	VC21[6]	VC21[5]	VC21[4]	VC21[3]	VC21[2]	VC21[1]	VC21[0]
MODE	R	R	R	R	R	R	R	R

VC21[15:0]·········C21 电压值，默认无符号二进制，LSB=100µV

VC22 寄存器

0x47	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC22[15]	VC22[14]	VC22[13]	VC22[12]	VC22[11]	VC22[10]	VC22[9]	VC22[8]
MODE	R	R	R	R	R	R	R	R
0x48	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC22[7]	VC22[6]	VC22[5]	VC22[4]	VC22[3]	VC22[2]	VC22[1]	VC22[0]
MODE	R	R	R	R	R	R	R	R

VC22[15:0]·········C22 电压值，默认无符号二进制，LSB=100µV

VC23 寄存器

0x49	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC23[15]	VC23[14]	VC23[13]	VC23[12]	VC23[11]	VC23[10]	VC23[9]	VC23[8]
MODE	R	R	R	R	R	R	R	R
0x4A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC23[7]	VC23[6]	VC23[5]	VC23[4]	VC23[3]	VC23[2]	VC23[1]	VC23[0]
MODE	R	R	R	R	R	R	R	R

VC23[15:0]·········C23 电压值，默认无符号二进制，LSB=100μV

VC24 寄存器

0x4B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VC24[15]	VC24[14]	VC24[13]	VC24[12]	VC24[11]	VC24[10]	VC24[9]	VC24[8]
MODE	R	R	R	R	R	R	R	R
0x4C	**BIT 7**	**BIT 6**	**BIT 5**	**BIT 4**	**BIT 3**	**BIT 2**	**BIT 1**	**BIT 0**
NAME	VC24[7]	VC24[6]	VC24[5]	VC24[4]	VC24[3]	VC24[2]	VC24[1]	VC24[0]
MODE	R	R	R	R	R	R	R	R

VC24[15:0]·········C24 电压值，默认无符号二进制，LSB=100μV

VVOS 寄存器

0x4D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VVOS[15]	VVOS[14]	VVOS[13]	VVOS[12]	VVOS[11]	VVOS[10]	VVOS[9]	VVOS[8]
MODE	R	R	R	R	R	R	R	R
0x4E	**BIT 7**	**BIT 6**	**BIT 5**	**BIT 4**	**BIT 3**	**BIT 2**	**BIT 1**	**BIT 0**
NAME	VVOS[7]	VVOS[6]	VVOS[5]	VVOS[4]	VVOS[3]	VVOS[2]	VVOS[1]	VVOS[0]
MODE	R	R	R	R	R	R	R	R

VVOS[15:0]········VADC 校准电压值，无符号二进制，LSB=100μV

CVOS 寄存器

0x4F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CVOS[15]	CVOS[14]	CVOS[13]	CVOS[12]	CVOS[11]	CVOS[10]	CVOS[9]	CVOS[8]
MODE	R	R	R	R	R	R	R	R
0x50	**BIT 7**	**BIT 6**	**BIT 5**	**BIT 4**	**BIT 3**	**BIT 2**	**BIT 1**	**BIT 0**
NAME	CVOS[7]	CVOS[6]	CVOS[5]	CVOS[4]	CVOS[3]	CVOS[2]	CVOS[1]	CVOS[0]
MODE	R	R	R	R	R	R	R	R

CVOS[15:0]········CADC 校准电压值，有符号二进制补码，LSB=5μV

充/放电控制寄存器

0x51	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	LDPU	PDSGC	PCHGC	DSGM	DSGC[1]	DSGC[0]	CHGC[1]	CHGC[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

LDPU···············LOAD 上拉控制位

0···················关闭 LOAD 上拉

1···················开启 LOAD 上拉，该 bit 会在 60s 后自动复位为 0

PDSGC············PDSG 驱动输出控制位

0···················关闭 PDSG 驱动输出

1···················开启 PDSG 驱动输出

PCHGC············PCHG 驱动输出控制位

0···················关闭 PCHG 驱动输出

1···················开启 PCHG 驱动输出

DSGM···········DSG 驱动输出模式控制位

0···················DSG 为电荷泵驱动输出模式

1·······················DSG 为源随驱动输出模式

DSGC[1:0]·········DSG 驱动输出控制位

00/01················关闭 DSG 驱动输出

10····················关闭 DSG 驱动输出，但允许在充电电流大于 FET 体二极管续流阈值时开启 DSG 驱动输出

11·····················开启 DSG 驱动输出

CHGC[1:0]·········CHG 驱动输出控制位

00/01················关闭 CHG 驱动输出

10····················关闭 CHG 驱动输出，但允许在放电电流大于 FET 体二极管续流阈值时开启 CHG 驱动输出

11····················开启 CHG 驱动输出

0x52	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	PDWM			DPC[4]	DPC[3]	DPC[2]	DPC[1]	DPC[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	1	0	0	1	0	0	0	0

PDWM···············I²C 超时关闭 PDSG 驱动输出屏蔽位

0·····················I2C 超时关闭 PDSG 驱动输出

1·····················I2C 超时不影响 PDSG 驱动输出状态

DPC[4:0]···········DSG 驱动输出下拉强度控制位，

00000···············下拉强度为 0

00001···············下拉强度为 1

……

11101···············下拉强度为 29

11110···············下拉强度为 30

11111················N/A

放电屏蔽控制寄存器

0x53	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	PDDM	PCWM	PCCM	PCDM	DWM	DDM	DPDM	DBDM
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	1	0	1	1	0	0	1

PDDM···············关闭 PDSG 驱动输出屏蔽位

0·····················DON 输入为 0 时关闭 PDSG 驱动输出

1·····················DON 输入不影响 PDSG 驱动输出状态

PCWM···············I²C 超时关闭 PCHG 驱动输出屏蔽位

0·····················I²C 超时关闭 PCHG 驱动输出

1·····················I²C 超时不影响 PCHG 驱动输出状态

PCCM···············CON(CHG_OFF_N)关闭 PCHG 驱动输出屏蔽位

0·····················CON 输入为 0 时关闭 PCHG 驱动输出

1·····················CON 输入不影响 PCHG 驱动输出状态

PCDM···············DON(DSG_OFF_N)关闭 PCHG 驱动输出屏蔽位

0·····················DON 输入为 0 时关闭 PCHG 驱动输出

1·····················DON 输入不影响 PCHG 驱动输出状态

DWM···············I²C 超时关闭 DSG 驱动输出屏蔽位

0·····················I²C 超时关闭 DSG 驱动输出

1·····················I²C 超时不影响 DSG 驱动输出

DDM ·················· DON(DSG_OFF_N)关闭 DSG 驱动输出屏蔽位

0 ···················· DON 输入为 0 时关闭 DSG 驱动输出

1 ···················· DON 输入不影响 DSG 驱动输出状态

DPDM ··············· PDSG 开启时关闭 DSG 驱动输出屏蔽位

0 ···················· PDSG 开启时关闭 DSG 驱动输出

1 ···················· PDSG 开启时不影响 DSG 驱动输出状态

DBDM ··············· 放电 NFET 体二极管保护屏蔽位

0 ···················· 充电电流大于放电 NFET 体二极管续流阈值时自动开启 DSG 驱动输出

1 ···················· 充电电流大于放电 NFET 体二极管续流阈值时不影响 DSG 驱动输出状态

充电屏蔽控制寄存器

0x54	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CWM	CO1M	CO2M	CSM	CDM	CCM	CPCM	CBDM
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	1	1	1	1	1	0	0	1

CWM ··············· I²C 超时关闭 CHG 驱动输出屏蔽位

0 ···················· I²C 超时关闭 CHG 驱动输出

1 ···················· I²C 超时不影响 CHG 驱动输出

CO1M ··············· 1 级放电过流时关闭 CHG 驱动输出屏蔽位

0 ···················· 1 级放电过流时关闭 CHG 驱动输出

1 ···················· 1 级放电过流时不影响 CHG 驱动输出

CO2M ··············· 2 级放电过流时关闭 CHG 驱动输出屏蔽位

0 ···················· 2 级放电过流时关闭 CHG 驱动输出

1 ···················· 2 级放电过流时不影响 CHG 驱动输出

CSM ··············· 放电短路时关闭 CHG 驱动输出屏蔽位

0 ···················· 放电短路时关闭 CHG 驱动输出

1 ···················· 放电短路时不影响 CHG 驱动输出

CDM ··············· DON(DSG_OFF_N)关闭 CHG 驱动输出屏蔽位

0 ···················· DON 输入为 0 时关闭 CHG 驱动输出

1 ···················· DON 输入不影响 CHG 驱动输出状态

CCM ··············· CON(CHG_OFF_N)关闭 CHG 驱动输出屏蔽位

0 ···················· CON 输入为 0 时关闭 CHG 驱动输出

1 ···················· CON 输入不影响 CHG 驱动输出状态

CPCM ··············· PCHG 开启时关闭 CHG 驱动输出屏蔽位

0 ···················· PCHG 开启时关闭 CHG 驱动输出

1 ···················· PCHG 开启时不影响 CHG 驱动输出状态

CBDM ··············· 充电 NFET 体二极管保护屏蔽位

0 ···················· 放电电流大于充电 NFET 体二极管续流阈值时自动开启 CHG 驱动输出

1 ···················· 放电电流大于充电 NFET 体二极管续流阈值时不影响 CHG 驱动输出状态

CADC 控制寄存器

0x55	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	HSFM				CAEW	CAES		CAMZ
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W1
DEFAULT	0	0	1	0	1	1	0	0

HSFM················高边 FET 驱动输出屏蔽位

0·····················允许高边 FET 驱动输出

1·····················屏蔽高边 FET 驱动输出

CAEW···············芯片工作状态下 CADC 使能控制位

0·····················芯片工作状态下关闭 CADC

1·····················芯片工作状态下开启 CADC

CAES···············芯片休眠状态下电流唤醒使能控制位

0·····················芯片休眠状态下关闭电流唤醒

1·····················芯片休眠状态下开启电流唤醒

CAMZ···············CADC 手动校准控制位

0·····················无效

1·····················开启一次 CADC 校准，该 bit 会自动复位为 0

0x56	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME					C1OW[1]	C1OW[0]	C1OS[1]	C1OS[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	1	1	1	1	1	1	1	1

0x57	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	1	0	1	0	0	0

0x58	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	0	0	0	1	0	1

C1OW[1:0]·········CADC CC1 测量时间控制位

00·····················0.5ms

01·····················1.0ms

10·····················2.0ms

11·····················4.0ms

C1OS[1:0]·········芯片休眠状态下电流唤醒时间控制位

00·····················4ms

01·····················8ms

10·····················16ms

11·····················32ms

1 级放电过流保护阈值寄存器

0x59	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCD1T[7]	OCD1T[6]	OCD1T[5]	OCD1T[4]	OCD1T[3]	OCD1T[2]	OCD1T[1]	OCD1T[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

OCD1T[7:0]·······1 级放电过流保护阈值控制位

0x00··················关闭

其他··················阈值电压=OCD1T×0.25mV

1 级充电过流保护阈值寄存器

0x5A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCC1T[7]	OCC1T[6]	OCC1T[5]	OCC1T[4]	OCC1T[3]	OCC1T[2]	OCC1T[1]	OCC1T[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

OCC1T[7:0]········1 级充电过流保护阈值控制位

0x00················关闭

其他················阈值电压=OCC1T×0.25mV

1 级放电过流保护延迟寄存器

0x5B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCD1D[7]	OCD1D[6]	OCD1D[5]	OCD1D[4]	OCD1D[3]	OCD1D[2]	OCD1D[1]	OCD1D[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

OCD1D[7:0]········1 级放电过流保护延迟控制位，延迟时间=(OCD1D+1)×8ms

1 级充电过流保护延迟寄存器

0x5C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCC1D[7]	OCC1D[6]	OCC1D[5]	OCC1D[4]	OCC1D[3]	OCC1D[2]	OCC1D[1]	OCC1D[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x5D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R/W	R/W	R/W	R/W	R	R	R	R
DEFAULT	1	0	1	1	-	-	-	-

OCCD[7:0]·········1 级充电过流保护延迟控制位，延迟时间=(OCC1D+1)×8ms

2 级放电过流保护阈值寄存器

0x5E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME		OCD2E	OCD2T[5]	OCD2T[4]	OCD2T[3]	OCD2T[2]	OCD2T[1]	OCD2T[0]
MODE	R	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	1	0	0	0	0	0	0

OCD2E·············2 级放电过流保护使能控制位

0·····················关闭

1·····················开启

OCD2T[5:0]········2 级放电过流保护阈值控制位，阈值电压=(OCD2T+1)×4mV

2 级充电过流保护阈值寄存器

0x5F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME		OCC2E	OCC2T[5]	OCC2T[4]	OCC2T[3]	OCC2T[2]	OCC2T[1]	OCC2T[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	1	1	0	0	0	0	0	0

OCC2E·············2 级充电过流保护使能控制位

0·····················关闭

1·····················开启

OCC2T[5:0]········2 级充电过流保护阈值控制位，阈值电压=(OCC2T+1)×4mV

2 级放电过流保护延迟寄存器

0x60	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCD2D[7]	OCD2D[6]	OCD2D[5]	OCD2D[4]	OCD2D[3]	OCD2D[2]	OCD2D[1]	OCD2D[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

OCD2D[7:0]·······2 级放电过流保护延迟控制位，延迟时间=(OCD2D+1)×4ms

2 级充电过流保护延迟寄存器

0x61	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	OCC2D[7]	OCC2D[6]	OCC2D[5]	OCC2D[4]	OCC2D[3]	OCC2D[2]	OCC2D[1]	OCC2D[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

OCC2D[7:0]········2 级充电过流保护延迟控制位，延迟时间=(OCC2D+1)×4ms

放电短路保护阈值寄存器

0x62	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME		SCDE	SCDT[5]	SCDT[4]	SCDT[3]	SCDT[2]	SCDT[1]	SCDT[0]
MODE	R	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	1	0	0	0	0	0	0

SCDE ················放电短路保护使能控制位

0·······················关闭

1·······················开启

SCDT[5:0]··········放电短路保护阈值控制位，阈值电压=SCDT×10mV

放电短路保护延迟寄存器

0x63	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	SCDD[7]	SCDD[6]	SCDD[5]	SCDD[4]	SCDD[3]	SCDD[2]	SCDD[1]	SCDD[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x64	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R

SCDD[7:0]········放电短路保护延迟控制位，延迟时间=SCDD×7.81μs

电流唤醒寄存器

0x65	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CWT[7]	CWT[6]	CWT[5]	CWT[4]	CWT[3]	CWT[2]	CWT[1]	CWT[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

CWT[7:0]··········芯片休眠状态下电流唤醒阈值控制位

0x00·················关闭休眠状态下电流唤醒

其他·················阈值电压=CWT×10μV

续流保护寄存器

0x66	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	BDPT[7]	BDPT[6]	BDPT[5]	BDPT[4]	BDPT[3]	BDPT[2]	BDPT[1]	BDPT[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

BDPT[7:0]·········充/放电 NFET 体二极管续流保护阈值控制位

0x00·················关闭充/放电 NFET 体二极管续流保护

其他·················阈值电压=BDPT×40μV

电池被动均衡寄存器

0x67	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CB[24]	CB[23]	CB[22]	CB[21]	CB[20]	CB[19]	CB[18]	CB[17]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x68	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CB[16]	CB[15]	CB[14]	CB[13]	CB[12]	CB[11]	CB[10]	CB[9]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x69	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CB[8]	CB[7]	CB[6]	CB[5]	CB[4]	CB[3]	CB[2]	CB[1]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

CB[n]·················第 n 节电池被动均衡控制位

0·····················关闭第 n 节电池被动均衡

1·····················开启第 n 节电池被动均衡，该组寄存器会在 60s 后自动复位为 0

电池屏蔽寄存器

0x6A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CM[24]	CM[23]	CM[22]	CM[21]	CM[20]	CM[19]	CM[18]	CM[17]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x6B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CM[16]	CM[15]	CM[14]	CM[13]	CM[12]	CM[11]	CM[10]	CM[9]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x6C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CM[8]	CM[7]	CM[6]	CM[5]	PKM	LDM	CTM	V1P8M
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

CM[n]·················第 n 节电池保护屏蔽控制位

0·····················开启第 n 节电池保护

1·····················关闭第 n 节电池保护，同时默认关闭第 n 节电池电压测量

PKM·················PACK 电压测量屏蔽控制位

0·····················开启 PACK 电压测量

1·····················关闭 PACK 电压测量

LDM ···············LOAD 电压测量屏蔽控制位

0·····················开启 LOAD 电压测量

1·····················关闭 LOAD 电压测量

CTM ···············芯片核心温度测量屏蔽控制位

0·····················开启芯片核心温度测量

1·····················关闭芯片核心温度测量

V1P8M···············V1P8 电压测量屏蔽控制位

0·····················开启 V1P8 电压测量

1·····················关闭 V1P8 电压测量

电荷泵控制寄存器

0x6D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME			CPVS[2]	CPVS[1]	CPVS[0]	COW	CMM	CVS
MODE	R	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	1	1	0	1	0	0	0

CPVS[2:0]··········电荷泵输出电压控制位

000·················关闭

001·················6V

010·················7V

011·················8V

100·················9V

101·················10V

110·················11V

111·················12V

COW ···············电池采集线断线检测控制位

0·····················关闭

1·····················开启断线检测，该 bit 会在 1s 后自动复位为 0

CMM···············屏蔽电池电压测量控制位

0·····················关闭屏蔽电池电压测量

1·····················开启屏蔽电池电压测量

CVS ···············电池电压有符号数显示控制位

0·····················电池电压以无符号数显示，LSB=100μV

1·····················电池电压以有符号数显示，LSB=200μV

VADC 控制寄存器

0x6E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	VAE	VASM	VAMP[1]	VAMP[0]			VAO[1]	VAO[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	1	1	0	0	1	1	0	1
0x6F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	1	0	1	0	0	0

VAE ···············VADC 使能控制位

0····················关闭

1····················开启

VASM················VADC 与 CADC CC2 同步测量控制位

0····················VADC 连续测量

1····················VADC 与 CADC CC2 同步测量

VAMP[1:0]·········VADC 同步测量周期控制位

00···················每 1 个 CC2 周期 VADC 测量 1 次

01···················每 2 个 CC2 周期 VADC 测量 1 次

10···················每 4 个 CC2 周期 VADC 测量 1 次

11···················每 8 个 CC2 周期 VADC 测量 1 次

VAO[1:0]··········VADC 测量时间控制位

00···················0.79ms

01···················1.54ms

10···················3.03ms

11···················6.02ms

电池过压保护寄存器

0x70	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	COVT[11]	COVT[10]	COVT[9]	COVT[8]	COVT[7]	COVT[6]	COVT[5]	COVT[4]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x71	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	COVT[3]	COVT[2]	COVT[1]	COVT[0]	COVD[3]	COVD[2]	COVD[1]	COVD[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

COVT[11:0]········电池过压保护阈值控制位

0x00···············关闭电池过压保护

其他················阈值电压=COVT×1mV+500mV

COVD[3:0]·········电池过压保护延迟控制位

0000················200ms

0001················300ms

0010················400ms

0011················500ms

0100················600ms

0101················700ms

0110················800ms

0111················900ms

1000················1s

1001················2s

1010················3s

1011················4s

1100················5s

1101················6s

1110················7s

1111·················8s

电压欠压保护寄存器

0x72	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CUVT[11]	CUVT[10]	CUVT[9]	CUVT[8]	CUVT[7]	CUVT[6]	CUVT[5]	CUVT[4]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x73	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CUVT[3]	CUVT[2]	CUVT[1]	CUVT[0]	CUVD[3]	CUVD[2]	CUVD[1]	CUVD[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

CUVT[11:0]········电池欠压保护阈值控制位

0x00·················关闭电池欠压保护

其他·················阈值电压=CUVT×1mV

CUVD[3:0]·········电池欠压保护延迟控制位

0000·················200ms

0001·················300ms

0010·················400ms

0011·················500ms

0100·················600ms

0101·················700ms

0110·················800ms

0111·················900ms

1000·················1s

1001·················2s

1010·················3s

1011·················4s

1100·················5s

1101·················6s

1110·················7s

1111·················8s

GP1，GP2 和 GP3 模式寄存器

0x74	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	GP1M[1]	GP1M[0]	GP2M[2]	GP2M[1]	GP2M[0]	GP3M[2]	GP3M[1]	GP3M[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

GP1M[1:0]·········GP1 模式控制位

00·················关闭，GP1 为高阻态

01·················热敏电阻检测输入

10·················模拟电压检测输入

11·················CON(CHG_OFF_N)，CHG 驱动硬线控制，低电平关闭 CHG 驱动输出，高电平不影响 CHG 驱动输出状态

GP2M[2:0]·········GP2 模式控制位

000·················关闭，GP2 为高阻态

001·················热敏电阻检测输入

010··················模拟电压检测输入

011··················N/A

100··················N/A

101··················N/A

110··················中断输出

111··················低边 PDSG 驱动输出

GP3M[2:0]········GP3 模式控制位

000··················关闭，GP3 为高阻态

001··················热敏电阻检测输入

010··················模拟电压检测输入

011··················N/A

100··················N/A

101··················N/A

110··················中断输出

111··················低边 PCHG 驱动输出

GP4，GP5 和 GP6 模式寄存器

0x75	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	GP4M[1]	GP4M[0]	GP5M[2]	GP5M[1]	GP5M[0]	GP6M[2]	GP6M[1]	GP6M[0]
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

GP4M[1:0]········GP4 模式控制位

00··················关闭，GP4 为高阻态

01··················热敏电阻检测输入

10··················模拟电压检测输入

11··················DON(DSG_OFF_N)，DSG 驱动硬线控制，低电平关闭 DSG 驱动输出，高电平不影响 DSG 驱动输出状态

GP5M[2:0]········GP5 模式控制位

000··················关闭，GP5 为高阻态

001··················热敏电阻检测输入

010··················模拟电压检测输入

011··················N/A

100··················N/A

101··················N/A

110··················中断输出

111··················低边 CHG 驱动输出

GP6M[2:0]········GP6 模式控制位

000··················关闭，GP6 为高阻态

001··················热敏电阻检测输入

010··················模拟电压检测输入

011··················N/A

100··················N/A

101··················N/A

110··················中断输出

111··················低边 DSG 驱动输出

芯片过温保护寄存器

0x76	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	COTF	COTT[6]	COTT[5]	COTT[4]	COTT[3]	COTT[2]	COTT[1]	COTT[0]
MODE	RC	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

COTF·················芯片内核过温关机标识位，该 bit 会在读取后自动复位为 0

0·······················未发生过芯片内核过温

1·······················已发生过芯片内核过温

COTT[6:0]·········芯片内核过温保护阈值控制位,

0x00···················关闭芯片内核过温保护

其他·················阈值温度=(1466+COTT×2)×0.24467°C-271.03°C

I²C 看门狗寄存器

0x77	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	V3P3ES	V3P3EW	V3P3M		IWTS	IWT[2]	IWT[1]	IWT[0]
MODE	R/W	R/W	R/W	R	R	R/W	R/W	R/W
DEFAULT	1	1	0	0	0	0	0	0

V3P3ES·············芯片休眠状态下 V3P3 输出控制位

0·······················芯片休眠状态下关闭 V3P3 输出

1·······················芯片休眠状态下开启 V3P3 输出

V3P3EW·············芯片工作状态下 V3P3 输出控制位

0·······················芯片工作状态下关闭 V3P3 输出

1·······················芯片工作状态下开启 V3P3 输出

V3P3M·············I²C 超时重启 V3P3 控制位

0·······················I²C 超时不影响 V3P3 输出

1·······················I²C 超时后 V3P3 输出关闭 1s 后重启

BACIWTS·········I²C 看门狗超时状态位

0·······················未超时

1·······················已超时

IWT[2:0]·········I²C 看门狗定时器控制位

0XX ·················关闭定时器

100···················定时器设为 4s

101···················定时器设为 8s

110···················定时器设为 16s

111···················定时器设为 32s

定时唤醒寄存器

0x78	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	TIWK				TWSE[3]	TWSE[2]	TWSE[1]	TWSE[0]
MODE	R	R	R	R	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0

TIWK·················定时唤醒状态位

0·······················关闭

1·······················开启

TWSE[3:0]·········定时唤醒定时器控制位

0000·················关闭

0001·················10s

0010·················20s

0011·················30s

0100·················40s

0101·················50s

0110·················1min

0111·················2min

1000·················3min

1001·················4min

1010·················5min

1011·················6min

1100·················7min

1101·················8min

1110·················9min

1111·················10min

中断屏蔽寄存器

0x79	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	IWM	IVOM	ICCM	ICOM	ICUM	IOC1M	IOC2M	ISCDM
MODE	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
DEFAULT	0	0	0	0	0	0	0	0
0x7A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	-	-	-	-	-	-	-
0x7B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	0	-	-	-	-	-
0x7C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	0	0	1	0	0	0
0x7D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R

IWM·················唤醒中断输出屏蔽控制位

0·················芯片唤醒后中断输出低电平 1ms

1·················芯片唤醒后中断无输出

IVOM·················VADC 转换结束中断输出屏蔽控制位

0·················VADC 转换结束后中断输出低电平 1ms

1·················VADC 转换结束后中断无输出

ICCM·················CADC CC2 转换结束中断输出屏蔽控制位

0·······················CADC CC2 转换结束后中断输出低电平 1ms

1·······················CADC CC2 转换结束后中断无输出

ICOM ···············电池过压中断输出屏蔽控制位

0·······················电池过压后中断输出低电平 1ms

1·······················电池过压后中断无输出

ICUM ···············电池欠压中断输出屏蔽控制位

0·······················电池欠压后中断输出低电平 1ms

1·······················电池欠压后中断无输出

IOC1M ···········1 级过流(包含 1 级放电过流和 1 级充电过流)中断输出屏蔽控制位

0·······················1 级过流后中断输出低电平 1ms

1·······················1 级过流后中断无输出

IOC2M ···········2 级过流(包含 2 级放电过流和 2 级充电过流)中断输出屏蔽控制位

0·······················2 级过流后中断输出低电平 1ms

1·······················2 级过流后中断无输出

ISCDM···············放电短路中断输出屏蔽控制位

0·······················放电短路后中断输出低电平 1ms

1·······················放电短路后中断无输出

电阻修调寄存器

0x7E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	FRT[7]	FRT[6]	FRT5]	FRT[4]	FRT[3]	FRT[2]	FRT[1]	FRT[0]
MODE	R	R	R	R	R	R	R	R
0x7F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x80	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x81	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x82	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x83	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x84	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x85	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R

0x86	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x87	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x88	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x89	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x8A	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x8B	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x8C	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x8D	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
0x8E	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R
DEFAULT	0	0	-	-	-	0	0	0

FRT[7:0] ············存储在 FUSE 中电阻修调值；电阻值=6800Ω+FRT×25Ω

芯片版本寄存器

0x8F	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME	CV[7]	CV[6]	CV[5]	CV[4]	CV[3]	CV[2]	CV[1]	CV[0]
MODE	R	R	R	R	R	R	R	R
0x90	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
NAME								
MODE	R	R	R	R	R	R	R	R

CV[7:0] ··············芯片版本

管理系统

放电管理

放电驱动逻辑
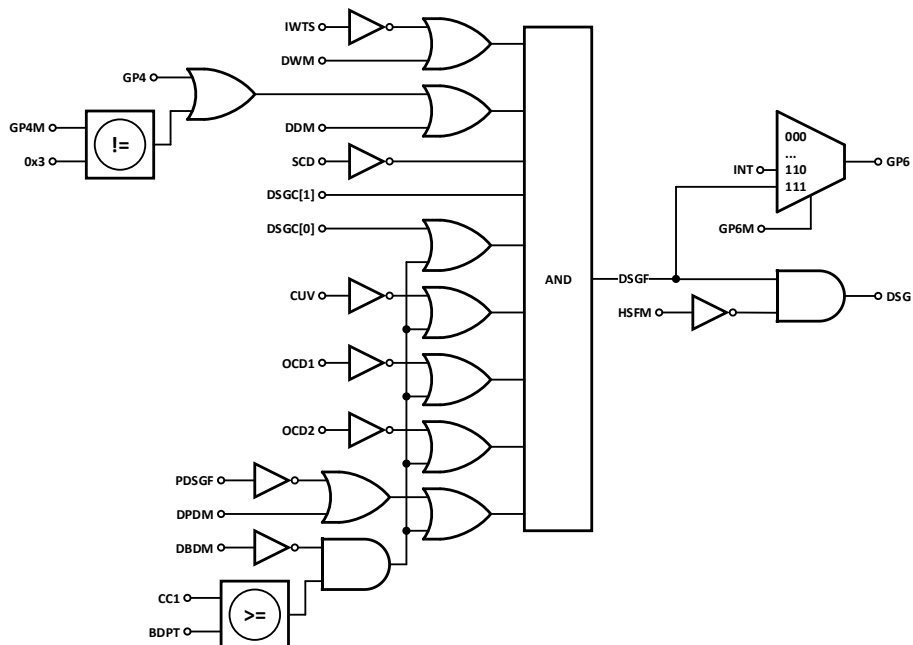
图 1 放电驱动逻辑

预放电驱动逻辑
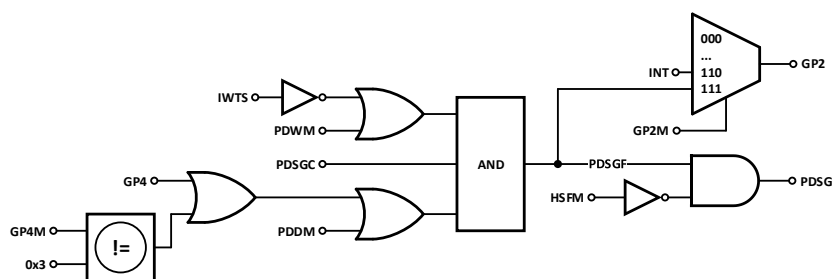
图 2 预放电驱动逻辑

充电管理

充电驱动逻辑
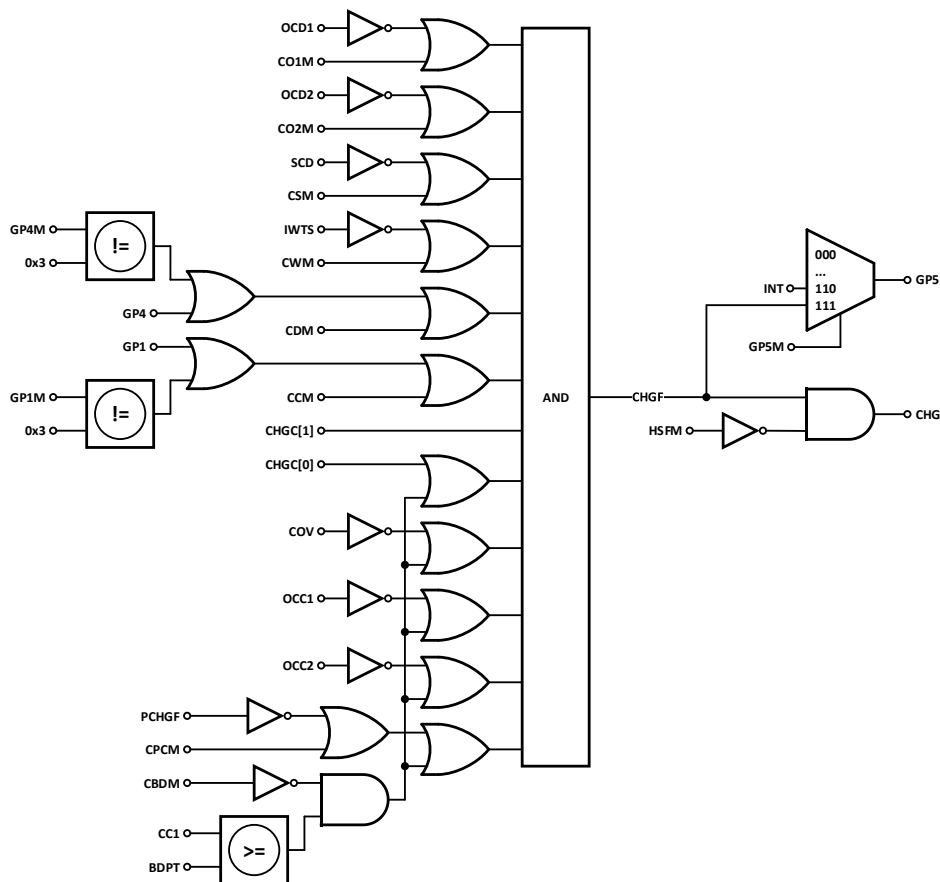
图 3　充电驱动逻辑

预充电驱动逻辑

图 4　预充电驱动逻辑

逻辑符号说明

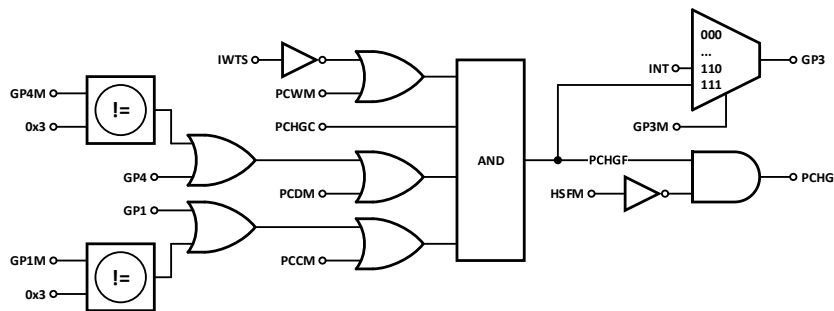if (A!=B) Y=1
else Y=0
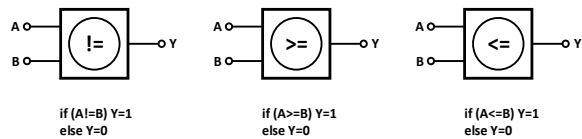
if (A>=B) Y=1
else Y=0

if (A<=B) Y=1
else Y=0

图 5　逻辑符号说明

应用和实施

电池电压二次校准

DVC1124 为单颗 24 串电池组监控芯片，电池输入共模电压最高可达 120V，对电池电压测量结果有较大影响，需要在 MCU 中对电池电压测量值进行二次校准，具体计算公式如下：

$$V_{CAC}[n]=\frac{V_{CBC}[n]}{K[n]}$$

$$K[n]=1+p_1\times V_{CM}[n]+p_2\times V_{CM}[n]^2$$

$$V_{CM}[n]=\begin{cases}0 & n=1\\V_{CM}[n-1]+V_{CAC}[n-1] & n\geq2\end{cases}$$

$$p_1=0.35\times10^{-6}$$

$$p_2=-0.12\times10^{-6}$$

其中，

1. $V_{CBC}[n]$为校准前第 n 串电池电压测量值；
2. $V_{CAC}[n]$为校准后第 n 串电池电压值；
3. $K[n]$为第 n 串电池电压校准系数；
4. $V_{CM}[n]$为第 n 串电池的共模电压。

为简化计算，也可以使用如表 1 所示的校准系数速查表。

表 1 电池电压二次校准系数速查表

$V_{CM}[V]$	K
0~24	1.0000
24~40	0.9999
40~51	0.9998
51~60	0.9997
60~68	0.9996
68~75	0.9995
75~82	0.9994
82~88	0.9993
88~93	0.9992
93~99	0.9991
99~104	0.9990
104~109	0.9989
109~113	0.9988
113~117	0.9987
117~120	0.9986

修订历史记录

版本	日期	描述	页码
1.0	2023/4/2	修改"寄存器 CST[3:0]"描述	6
		修改"寄存器 OCD1T[7:0]"描述	18
		修改"寄存器 OCC1T[7:0]"描述	19
		修改"寄存器 COVT[11:0]"描述	23
		修改"寄存器 CUVT[11:0]"描述	24
		新增"寄存器 V3P3ES"	26
		新增"寄存器偏移 0x90"	29
		修改"放电驱动逻辑"	30
		修改"预放电驱动逻辑"	30
		修改"充电驱动逻辑"	31
		修改"预充电驱动逻辑"	31
		修改"电池电压二次校准"系数 p2	32