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#ifndef _19XDRIVERS_H
#define _19XDRIVERS_H

//Parameter Settings
int bqSetVINDPM(int vdp);           //REG00[6:3]
int bqSetIINDPM(int idpm);          //REG00[2:0]
int bqSetCHGCONFIG(int code);       //REG01[5:4]
int bqSetSYSMIN(int vlimit);        //REG01[3:1]
int bqSetOTGILIM(int code);         //REG01[0]
int bqSetFASTCHRG(int ichg);        //REG02[7:2]
int bqSetPRECHRG(int iprechg);      //REG03[7:4]
int bqSetTERMCHRG(int iterm);       //REG03[3:0]
int bqSetChgVoltage(int vreg);      //REG04[7:2]
int bqSetBATLOWV(int setting);      //REG04[1]
int bqSetRECHRG(int setting);       //REG04[0]
int bqSetWatchDog(int code);        //REG05[5:4]
int bqSetFastChgTimer(int code);    //REG05[2:1]
//int bqSetJEITAICHG();              //Not listed in the datasheet
//int bqSetJEITAVREG();              //Not listed in the datasheet
int bqSetBATCOMP(int resistor);     //REG06[7:5]
int bqSetVCLAMP(int vclamp);        //REG06[4:2]
int bqSetTREG(int code);            //REG06[1:0]

//Control Settings
int bqEnHIZ(int enable);            //REG00[7]
int bqRstREG();                     //REG01[7]
int bqRstWatchDog();                //REG01[6]
int bqEnTERM(int enable);           //REG05[7]
int bqTERMSTAT(int enable);         //REG05[6]
int bqEnTIMER(int enable);          //REG05[3]
int bqEnDPDM(int enable);           //REG07[7]
int bqEnTMR2X(int enable);          //REG07[6]
int bqOffBATFET(int enable);        //REG07[5]

unsigned int Reg00Val;
unsigned int Reg01Val;
unsigned int Reg02Val;
unsigned int Reg03Val;
unsigned int Reg04Val;
unsigned int Reg05Val;
unsigned int Reg06Val;
unsigned int Reg07Val;
unsigned int Reg08Val; //Read Only
unsigned int Reg09Val; //Read Only
unsigned int Reg10Val;

#define Reg00Add 0x00
#define Reg01Add 0x01
#define Reg02Add 0x02
#define Reg03Add 0x03
#define Reg04Add 0x04
#define Reg05Add 0x05
#define Reg06Add 0x06
#define Reg07Add 0x07
#define Reg08Add 0x08
#define Reg09Add 0x09
#define Reg10Add 0x0A

#define DevID 0x6B //bq24190/192/192I
// #define DevID 0x6A //bq24191

#define DISABLE 0
#define ENABLE 1
#define RESET 1

// Variables used on bqSetVINDPM Function

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#define VINDPM_MIN 3880 //value in mV
#define VINDPM_MAX 5080 //value in mV
#define VINDPM_STEP 80 //value in mV
#define VINDPM_OFFSET 3880 //value in mV
#define VINDPM_LSHIFT 3
#define VINDPM_MASK 0x87 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetIINDPM Function
#define IINLIM_100MA 0 //000
#define IINLIM_150MA 1 //001
#define IINLIM_500MA 2 //010
#define IINLIM_900MA 3 //011
#define IINLIM_1200MA 4 //100
#define IINLIM_1500MA 5 //101
#define IINLIM_2000MA 6 //110
#define IINLIM_3000MA 7 //111
#define IINDPM_LSHIFT 0
#define IINDPM_MASK 0xF8 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetCHGCONFIG Function
// #define DISABLE 0
#define CHARGE_BATTERY 1
#define OTG 2
// #define OTG 3
#define CHGCONFIG_LSHIFT 5
#define CHGCONFIG_MASK 0xCF //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetSYSMIN Function
#define SYSMIN_MIN 3000 //value in mV
#define SYSMIN_MAX 3700 //value in mV
#define SYSMIN_STEP 100 //value in mV
#define SYSMIN_OFFSET 3000 //value in mV
#define SYSMIN_LSHIFT 1
#define SYSMIN_MASK 0xF1 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetOTGILIM Function
#define BOOSTLIM_500mA 0
#define BOOSTLIM_1300mA 1
#define BOOSTLIM_LSHIFT 0
#define BOOSTLIM_MASK 0xFE //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetFASTCHRG Function
#define ICHG_MIN 500 //value in mA
#define ICHG_MAX 4532 //value in mA
#define ICHG_STEP 64 //value in mA
#define ICHG_LSHIFT 2
#define ICHG_MASK 0x03 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetPRECHRG Function
#define PRECHG_MIN 128 //value in mA
#define PRECHG_MAX 2048 //value in mA
#define PRECHG_STEP 128 //value in mA
#define PRECHG_LSHIFT 4
#define PRECHG_MASK 0x0F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetTERMCHRG Function
#define ITERM_MIN 128 //value in mA
#define ITERM_MAX 2048 //value in mA
#define ITERM_STEP 128 //value in mA
#define ITERM_LSHIFT 0
#define ITERM_MASK 0xF0 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetChgVoltage Function
#define VREG_MIN 3504 //value in mV
#define VREG_MAX 4512 //value in mV
#define VREG_STEP 16 //value in mV
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#define VREG_LSHIFT 2
#define VREG_MASK 0x03 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetBATLOWV Function
#define BATLOWV_2800mV 0
#define BATLOWV_3000mV 1 //default value
#define BATLOWV_LSHIFT 1
#define BATLOWV_MASK 0xFD //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetRECHRG Function
#define VRECHG_100mV 0 //default value
#define VRECHG_300mV 1
#define VRECHG_LSHIFT 0
#define VRECHG_MASK 0xFE //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetWatchDog Function
// #define DISABLE 0
#define WatchDog_40s 1 //default value
#define WatchDog_80s 2
#define WatchDog_160s 3
#define WatchDog_LSHIFT 4
#define WatchDog_MASK 0xCF //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetFastChgTimer Function
#define CHGTIMER_5h 0
#define CHGTIMER_8h 1 //default value
#define CHGTIMER_12h 2
#define CHGTIMER_20h 3
#define CHGTIMER_LSHIFT 1
#define CHGTIMER_MASK 0xF9 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetBATCOMP Function
#define BATCOMP_MIN 0 //value in mOhm
#define BATCOMP_MAX 70 //value in mOhm
#define BATCOMP_STEP 10 //value in mOhm
#define BATCOMP_LSHIFT 5
#define BATCOMP_MASK 0x1F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetVCLAMP Function
#define VCLAMP_MIN 0 //value in mV
#define VCLAMP_MAX 112 //value in mV
#define VCLAMP_STEP 16 //value in mV
#define VCLAMP_LSHIFT 2
#define VCLAMP_MASK 0xE3 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqSetTREG Function
#define TREG_60C 0
#define TREG_80C 1
#define TREG_100C 2
#define TREG_120C 3 //default value
#define TREG_LSHIFT 0
#define TREG_MASK 0xFC //Bits Set to 1 on mask will remain unchanged

// Variables used on bqEnHIZ Function
#define ENHIZ_LSHIFT 7
#define ENHIZ_MASK 0x7F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqRstREG Function
#define RESETREG_LSHIFT 7
#define RESETREG_MASK 0x7F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqRstWatchDog Function
#define RESETWATCHDOG_LSHIFT 6
#define RESETWATCHDOG_MASK 0xBF //Bits Set to 1 on mask will remain unchanged

// Variables used on bqEnTERM Function
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#define ENTERM_LSHIFT 7
#define ENTERM_MASK 0x7F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqTERMSTAT Function
#define TERMSTAT_ITERM 0          /*default value
#define TERMSTAT_EARLY 1
#define TERMSTAT_LSHIFT 6
#define TERMSTAT_MASK 0xBF //Bits Set to 1 on mask will remain unchanged

// Variables used on bqEnTIMER Function
#define ENTIMER_LSHIFT 3
#define ENTIMER_MASK 0xF7 //Bits Set to 1 on mask will remain unchanged

// Variables used on bqEnDPDM Function
#define ENDPDM_LSHIFT 7
#define ENDPDM_MASK 0x7F //Bits Set to 1 on mask will remain unchanged

// Variables used on bqEnTMR2X Function
#define EN2XTIMER_LSHIFT 6
#define EN2XTIMER_MASK 0xBF //Bits Set to 1 on mask will remain unchanged

// Variables used on bqOffBATFET Function
#define OFFBATFET_LSHIFT 5
#define OFFBATFET_MASK 0xDF //Bits Set to 1 on mask will remain unchanged

#endif
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