;;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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;; FILENAME: LPF2\_1.asm

;; Version: 2.5, Updated on 2010/9/19 at 23:40:48

;; Generated by PSoC Designer 5.4.3191

;;

;; DESCRIPTION: Asm source for 2 Pole Switched Capacitor Low Pass Filter

;;

;; NOTE: User Module APIs conform to the fastcall16 convention for marshalling

;; arguments and observe the associated "Registers are volatile" policy.

;; This means it is the caller's responsibility to preserve any values

;; in the X and A registers that are still needed after the API functions

;; returns. For Large Memory Model devices it is also the caller's

;; responsibility to perserve any value in the CUR\_PP, IDX\_PP, MVR\_PP and

;; MVW\_PP registers. Even though some of these registers may not be modified

;; now, there is no guarantee that will remain the case in future releases.

;;-----------------------------------------------------------------------------

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;;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

include "m8c.inc"

include "memory.inc"

include "LPF2\_1.inc"

;-----------------------------------------------

; Global Symbols

;-----------------------------------------------

export LPF2\_1\_Start

export \_LPF2\_1\_Start

export LPF2\_1\_SetPower

export \_LPF2\_1\_SetPower

export LPF2\_1\_SetC1

export \_LPF2\_1\_SetC1

export LPF2\_1\_SetC2

export \_LPF2\_1\_SetC2

export LPF2\_1\_SetC3

export \_LPF2\_1\_SetC3

export LPF2\_1\_SetC4

export \_LPF2\_1\_SetC4

export LPF2\_1\_SetCA

export \_LPF2\_1\_SetCA

export LPF2\_1\_SetCB

export \_LPF2\_1\_SetCB

export LPF2\_1\_SetPolarity

export \_LPF2\_1\_SetPolarity

export LPF2\_1\_Stop

export \_LPF2\_1\_Stop

;-----------------------------------------------

; Variable Allocation

;-----------------------------------------------

AREA bss (RAM,REL)

;-----------------------------------------------

; EQUATES

;-----------------------------------------------

bPOWERMASK: equ 03h ; Power field mask for CR3

LPF\_CNUMMASK: equ 1fh ; Mask for A, B & C Caps

LPF\_CFBMASK: equ 80h ; Mask for Feedback Caps

LPF\_POLARITYMASK: equ 20h ; Mask of Asign field for CR0

LPF2\_1\_IfCond: equ LPF2\_1\_AMD\_MSK & 0x01

IF (LPF2\_1\_AMD\_VAL)

IF (LPF2\_1\_IfCond)

LPF2\_1\_AMD: equ LPF2\_1\_AMD\_VAL

ELSE

LPF2\_1\_AMD: equ LPF2\_1\_AMD\_VAL << 4

ENDIF

ENDIF

AREA UserModules (ROM,REL)

;-----------------------------------------------------------------------------

; FUNCTION NAME: LPF2\_1\_Start

;

; DESCRIPTION: Applies power setting to the module's PSoC blocks

;

;-----------------------------------------------------------------------------

;

; ARGUMENTS: A register contains the power setting (constant)

; RETURNS: Nothing

; SIDE EFFECTS:

; The A and X registers may be modified by this or future implementations

; of this function. The same is true for all RAM page pointer registers in

; the Large Memory Model. When necessary, it is the calling function's

; responsibility to perserve their values across calls to fastcall16

; functions.

;

LPF2\_1\_Start:

\_LPF2\_1\_Start:

LPF2\_1\_SetPower:

\_LPF2\_1\_SetPower:

RAM\_PROLOGUE RAM\_USE\_CLASS\_2

and A, bPOWERMASK ; mask A to protect unchanged bits

mov X, SP ; define temp store location

push A ; put power value in temp store

IF (LPF2\_1\_AMD\_VAL)

M8C\_SetBank1

mov A, reg[LPF2\_1\_AMD\_REG] ; read modulator register

and A, ~LPF2\_1\_AMD\_MSK ; clear modulator bittfield in A

or A, LPF2\_1\_AMD ; combine modulator value with balance of register

mov reg[LPF2\_1\_AMD\_REG], A ; move complete value back to register

M8C\_SetBank0

ENDIF

mov A, reg[LPF2\_1\_FLIN\_CR3] ; read power value

and A, ~bPOWERMASK ; clear power bits in A

or A, [X] ; combine power value with balance of reg.

mov reg[LPF2\_1\_FLIN\_CR3], A ; move complete value back to register

mov A, reg[LPF2\_1\_FLOUT\_CR3] ; read power value

and A, ~bPOWERMASK ; clear power bits in A

or A, [X] ; combine power value with balance of reg.

mov reg[LPF2\_1\_FLOUT\_CR3], A ; move complete value back to register

pop A

RAM\_EPILOGUE RAM\_USE\_CLASS\_2

ret

;-----------------------------------------------------------------------------

; FUNCTION NAME: LPF2\_1\_SetCn, n=1..4

;

; DESCRIPTION: Alters the filter transfer function by modifying the value

; of the capacitors (defined in LPF2\_1.inc)

;

;-----------------------------------------------------------------------------

;

; ARGUMENTS: The A register contains a non-negative integer less than 32

; RETURNS:

; SIDE EFFECTS:

; The A and X registers may be modified by this or future implementations

; of this function. The same is true for all RAM page pointer registers in

; the Large Memory Model. When necessary, it is the calling function's

; responsibility to perserve their values across calls to fastcall16

; functions.

;

LPF2\_1\_SetC1:

\_LPF2\_1\_SetC1:

RAM\_PROLOGUE RAM\_USE\_CLASS\_2

and A, LPF\_CNUMMASK ; mask A to protect unchanged bits

mov X, SP ; define temp store location

push A ; put C1 value in temp store

mov A, reg[LPF2\_1\_FILT\_C1\_REG] ; read current C1

and A, ~LPF\_CNUMMASK ; clear C1 bits in A

or A, [X] ; combine C1 value with balance of reg.

mov reg[LPF2\_1\_FILT\_C1\_REG], A ; move complete value back to register

pop A

RAM\_EPILOGUE RAM\_USE\_CLASS\_2

ret

LPF2\_1\_SetC2:

\_LPF2\_1\_SetC2:

RAM\_PROLOGUE RAM\_USE\_CLASS\_2

and A, LPF\_CNUMMASK ; mask A to protect unchanged bits

mov X, SP ; define temp store location

push A ; put C2 value in temp store

mov A, reg[LPF2\_1\_FILT\_C2\_REG] ; read current C2

and A, ~LPF\_CNUMMASK ; clear C2 bits in A

or A, [X] ; combine C2 value with balance of reg.

mov reg[LPF2\_1\_FILT\_C2\_REG], A ; move complete value back to register

pop A

RAM\_EPILOGUE RAM\_USE\_CLASS\_2

ret

LPF2\_1\_SetC3:

\_LPF2\_1\_SetC3:

RAM\_PROLOGUE RAM\_USE\_CLASS\_2

and A, LPF\_CNUMMASK ; mask A to protect unchanged bits

mov X, SP ; define temp store location

push A ; put C3 value in temp store

mov A, reg[LPF2\_1\_FILT\_C3\_REG] ; read current C3

and A, ~LPF\_CNUMMASK ; clear C3 bits in A

or A, [X] ; combine C3 value with balance of reg.

mov reg[LPF2\_1\_FILT\_C3\_REG], A ; move complete value back to register

pop A

RAM\_EPILOGUE RAM\_USE\_CLASS\_2

ret

LPF2\_1\_SetC4:

\_LPF2\_1\_SetC4:

RAM\_PROLOGUE RAM\_USE\_CLASS\_2

and A, LPF\_CNUMMASK ; mask A to protect unchanged bits

mov X, SP ; define temp store location

push A ; put C4 value in temp store

mov A, reg[LPF2\_1\_FILT\_C4\_REG] ; read current C4

and A, ~LPF\_CNUMMASK ; clear C4 bits in A

or A, [X] ; combine C4 value with balance of reg.

mov reg[LPF2\_1\_FILT\_C4\_REG], A ; move complete value back to register

pop A

RAM\_EPILOGUE RAM\_USE\_CLASS\_2

ret

;-----------------------------------------------------------------------------

; FUNCTION NAME: LPF2\_1\_SetCA

; and LPF2\_1\_SetCB

;

; DESCRIPTION: Alters the filter transfer function by modifying the value

; of the op-amp feedback capacitors (see LPF2\_1.inc)

;-----------------------------------------------------------------------------

;

; ARGUMENTS: The A register contains one of the LPF2\_1\_FEEDBACK

; constants defined in LPF2\_1.inc

; RETURNS: Nothing.

; SIDE EFFECTS:

; The A and X registers may be modified by this or future implementations

; of this function. The same is true for all RAM page pointer registers in

; the Large Memory Model. When necessary, it is the calling function's

; responsibility to perserve their values across calls to fastcall16

; functions.

;

LPF2\_1\_SetCA:

\_LPF2\_1\_SetCA:

RAM\_PROLOGUE RAM\_USE\_CLASS\_1

cmp A, LPF2\_1\_FEEDBACK\_32 ; Change Feedback to 32 units?

jz .SetCAto32 ; Yes, go make it so

; No, clear it to 16 units...

and reg[LPF2\_1\_FILT\_CA\_REG], ~LPF\_CFBMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

.SetCAto32:

or reg[LPF2\_1\_FILT\_CA\_REG], LPF\_CFBMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

LPF2\_1\_SetCB:

\_LPF2\_1\_SetCB:

RAM\_PROLOGUE RAM\_USE\_CLASS\_1

cmp A, LPF2\_1\_FEEDBACK\_32 ; Change Feedback to 32 units?

jz .SetCAto32 ; Yes, go make it so

; No, clear it to 16 units...

and reg[LPF2\_1\_FILT\_CB\_REG], ~LPF\_CFBMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

.SetCAto32:

or reg[LPF2\_1\_FILT\_CB\_REG], LPF\_CFBMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

;-----------------------------------------------------------------------------

; FUNCTION NAME: LPF2\_1\_SetPolarity

;

; DESCRIPTION: Alters the output polarity of the data by altering the

; input polarity at FLIN

;-----------------------------------------------------------------------------

;

; ARGUMENTS: The A register contains one of the LPF2\_1\_POLARITY

; constants defined in LPF2\_1.inc

; RETURNS: Nothing.

; SIDE EFFECTS:

; The A and X registers may be modified by this or future implementations

; of this function. The same is true for all RAM page pointer registers in

; the Large Memory Model. When necessary, it is the calling function's

; responsibility to perserve their values across calls to fastcall16

; functions.

;

LPF2\_1\_SetPolarity:

\_LPF2\_1\_SetPolarity:

RAM\_PROLOGUE RAM\_USE\_CLASS\_1

cmp A, LPF2\_1\_POLARITY\_NON\_INVERTING ; Should the output be non-inverting?

jz .SetPoltoNonInv ; Yes, go make it so

; No, then set it to Inverting...

or reg[LPF2\_1\_FLIN\_CR0], LPF\_POLARITYMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

.SetPoltoNonInv:

and reg[LPF2\_1\_FLIN\_CR0], ~LPF\_POLARITYMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

;-----------------------------------------------------------------------------

; FUNCTION NAME: LPF2\_1\_Stop

;

; DESCRIPTION: Cuts power to the user module.

;

;-----------------------------------------------------------------------------

;

; ARGUMENTS: None

; RETURNS: Nothing

; SIDE EFFECTS:

; The A and X registers may be modified by this or future implementations

; of this function. The same is true for all RAM page pointer registers in

; the Large Memory Model. When necessary, it is the calling function's

; responsibility to perserve their values across calls to fastcall16

; functions.

;

LPF2\_1\_Stop:

\_LPF2\_1\_Stop:

RAM\_PROLOGUE RAM\_USE\_CLASS\_1

and reg[LPF2\_1\_FLIN\_CR3], ~bPOWERMASK

and reg[LPF2\_1\_FLOUT\_CR3], ~bPOWERMASK

RAM\_EPILOGUE RAM\_USE\_CLASS\_1

ret

; End of File LPF2\_1.asm