M62258FP

GENERAL PURPOSE BATTERY CHARGER CONTROL IC

DESCRIPTION

The M62258FP is designed as general purpose battery charger control. The M62258FP has function which require for the batterycharge control on single chip. Not only the combination of M62258 and microcomputer capable of handing battery charge control, but also it is capable of monitoring battery temperature, prevent from over current or voltage, using minimal peripherals. It also has feedback function to the primary side of SW power supply, which can used to control feedback of charge current and output voltage.

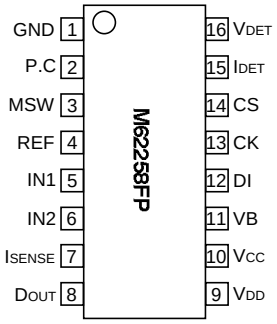
FEATURES

- Built-in 3 wire serial data interface function for MCU.
- Built-in multiplexer and level magnification circuit with 2input ports.
- Built-in low input/output operation 5V voltage regulator function. (Pre drive type)
- Built-in charge current/output voltage control circuit.

APPLICATION

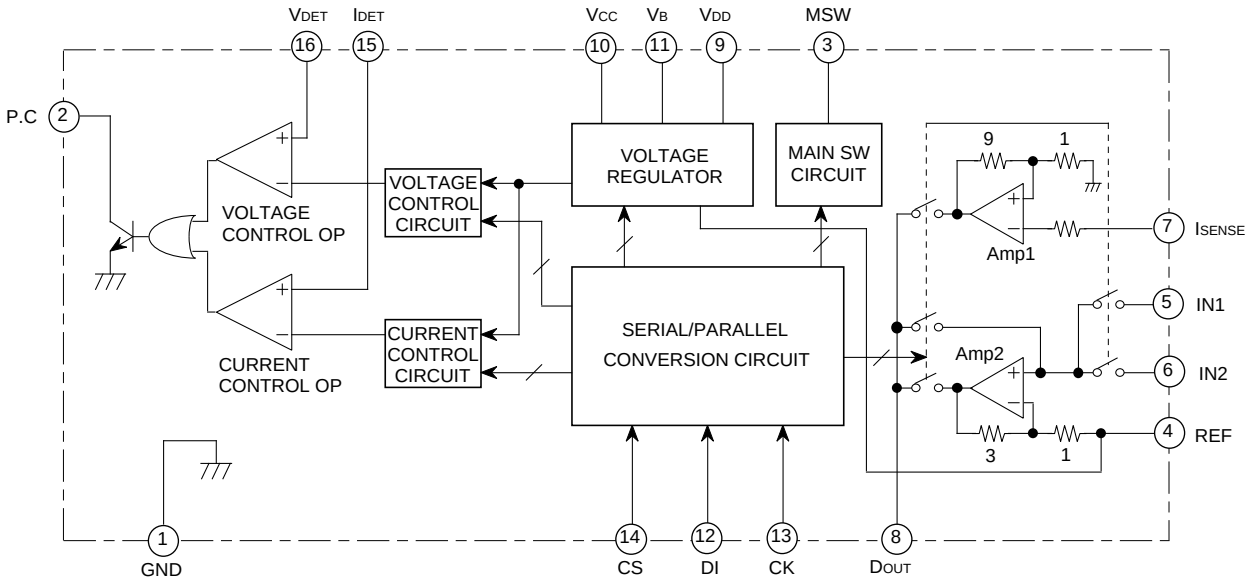
Video camera, hand held telephone and general battery charger for other digital equipment

PIN CONFIGURATION (TOP VIEW)



16P2N-A

BLOCK DIAGRAM



EXPLANATION OF TERMINALS

Pin No.	Symbol	Function
⑫	DI	The serial data input pin which used to receive 8 bit wide serial data
⑬	CK	The shift clock input pin which tales the input signal of DI pin to 8 bit shift register by the rising edge of clock signal
⑭	CS	When this pin is "Low", DI pin can receive the data into the 8 bit shift register. The each bit will be latched at rising edge of the clock signal
⑧	D_{OUT}	The output pin of the amplified A-D data
④	REF	The reference voltage output pin of the A-D converter
⑤,⑥	IN1,2	The A-D converter input pin
⑦	I_{SENSE}	The current sense input pin
③	MSW1	The main switch driver output pin (Open collector)
⑨	V_{DD}	The stabilized +5V output pin
⑪	V_B	The pre-drive pin which used to connect the external PNP Tr
⑩	V_{CC}	The power supply pin
⑮	I_{DET}	The current detection input pin
⑯	V_{DET}	The voltage detection input pin
②	P.C	The feedback pin for voltage and current control
①	GND	The ground pin

ABSOLUTE MAXIMUM RATINGS

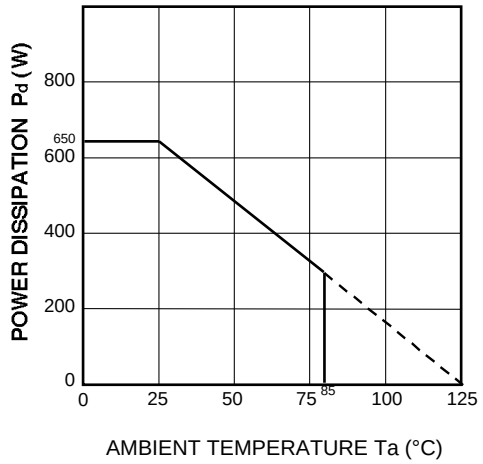
Symbol	Parameter	Ratings	Unit
V_{CC}	Supply voltage	16	V
I_{SW}	Main switch drive current	200	mA
I_B	Regulator output current	20	mA
I_{PC}	P.C drive current	10	mA
V_{SW}	Main switch max. voltage	V_{CC}	V
V_{PC}	P.C max.voltage	V_{CC}	V
Pd	Power dissipation	650	mW
K_θ	Thermal derating	6.5	mW/ °C
T_{opr}	Operating temperature	-20to+85	°C
T_{stg}	Storage temperature	-40to+125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=12V, ISW=50mA, unless otherwise noted)

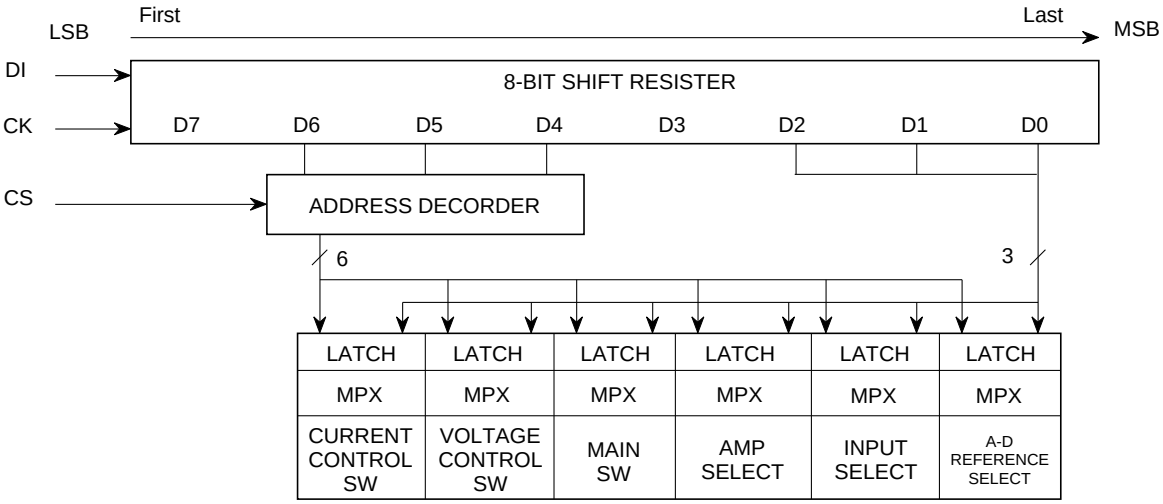
Block	Symbol	Parameter	Test conditions	Limits			Unit
				Min	Typ	Max	
	V_{CC}	Supply voltage		V_{DD}+0.2		15	V
	I_{CC}	Circuit current			15		mA
5V power supply	V_{DD}	Stabilized voltage output	I_B=10mA	4.75	5.00	5.25	V
	Reg-in	Input regulation	V_{DD}+0.2V		50	200	mV
	Reg-L	Load regulation	I_{DD}=1 to 100mA		10	100	mV
	R.R	Ripple rejection ratio	f=120Hz,Vin=0dbm		60		dB
	V_{DEF}	Min. input-output voltage difference			0.2		V
Op. SW	VsatM	Main-SW output saturation voltage	I_{SW}=50mA		0.8	1.2	V
Control	V_{IN}	Input voltage range		0		V_{CC}-2	V
	I_{IB}	Input bias current		-1			µA
	V_{PCL}	P.C output "L" voltage	I_{PC}=5mA		0.2	0.4	V
Level Mag.	V_{ISENSE}	I_{SENSE} input voltage range				0.5	V
	V_{IN-IN}	IN input voltage range	V_{CC}≥7V	0.2		5	V
			V_{CC}=5.5V	0.2		3.5	V
	I_{IN}	IN input current		-100			nA

TYPICAL CHARACTERISTICS

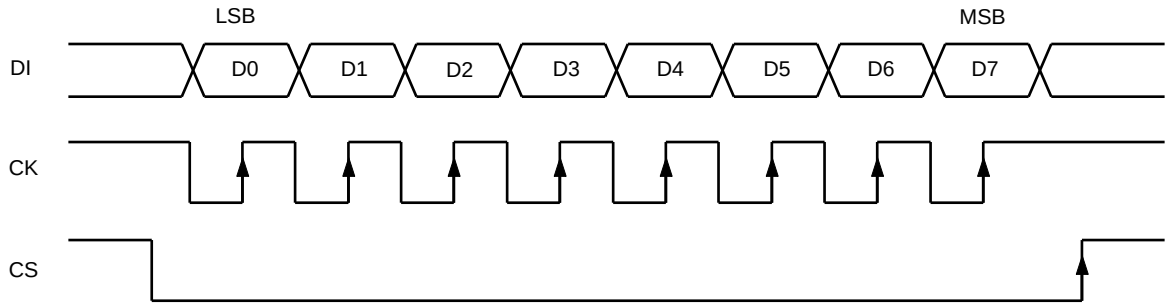
THERMAL DERATING (MAXIMUM RATING)



DIGITAL DATA FORMAT



DATA TIMING CHART (MODEL)



DATA SETTINGS

Control function	Address				Data				Description
	D7	D6	D5	D4	D3	D2	D1	D0	
RESET	0	0	0	0	-	-	-	-	Main-SW is OFF, A-D reference voltage=0.8V Voltage setting reference voltage=4.0V Current setting reference voltage=45mV
Current control	0	0	0	1	-	-	-	-	See Table 1
Voltage control	0	0	1	0	-	-	-	-	See Table 2
Main SW	0	0	1	1	-	-	-	-	See Table 3
Amp. select	0	1	0	0	-	-	-	-	See Table 4
Input select	0	1	0	1	-	-	-	-	See Table 5
A-D reference select	0	1	1	0	-	-	-	-	See Table 6

Table 1. Current control data

D2	D1	D0	Current control input voltage	Current ratio
0	0	0	0V	0
0	0	1	45mV	1/8
0	1	0	80mV	1/4
0	1	1	160mV	1/2
1	0	0	240mV	3/4
1	0	1	320mV	1
1	1	0	—	Trickle

*During trickle charge mode, use constant voltage mode and charge directly to the battery using external resister
*45mV selected at RESET

Table 2. Voltage control data

D2	D1	D0	Voltage control input voltage	Voltage ratio
0	0	0	0V	0
0	0	1	0.8V	1
0	1	0	1.6V	2
0	1	1	2.4V	3
1	0	0	3.2V	4
1	0	1	4.0V	5
1	1	0	4.8V	6

*Output port of microcomputer can be used to control voltage and current setting
*4.0V setting at RESET

Table 3. Main SW select

D0	SW1
0	OFF
1	ON

*Main SW is off at RESET

Table 4. Amp. select

D1	D0	State
0	0	Select Amp.1 output
0	1	Select Amp.2 input
1	0	Select Amp.2 output

*Amp.1 output is selected at RESET

Table 5. Input select

D0	State
0	Select in1
1	Select in2

*IN1 selected at RESET

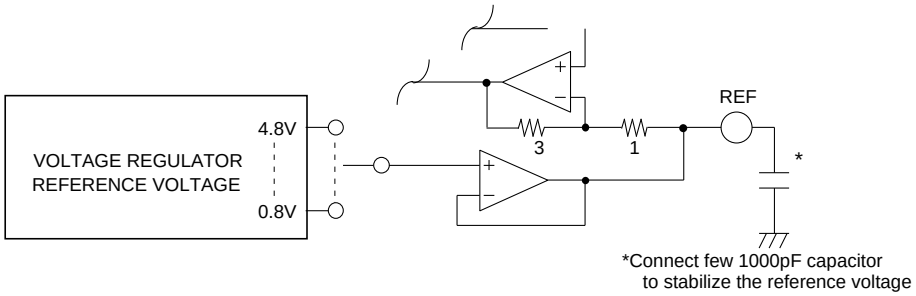
Table 6. A-D Reference voltage select

D2	D1	D0	State
0	0	0	Select 0V
0	0	1	Select 0.8V
0	1	0	Select 1.6V
0	1	1	Select 2.4V
1	0	0	Select 3.2V
1	0	1	Select 4.0V
1	1	0	Select 4.8V

*0.8V is selected at RESET

Function block description

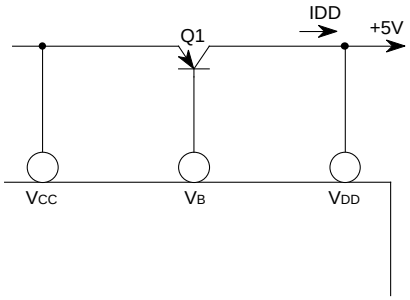
(1).A-D converter input



Select the desire reference voltage to be detected by serial data from the microcomputer.
The input voltage level of IN1 and IN2 will be magnified 4 times using selected reference voltage as a canter.

This magnified data will be return to the A-D input port of the microcomputer.
As result, accuracy of the A-D converter of the microcomputer will be increased by 2 bit.

(2).+5V voltage regulator



Since it capable of driving external PNP Tr. base up to 20mA, it can supply current of

IDD MAX=20mAXQ1h_{FE}.

Also, since this is low I/O type power source, it can be operate

V_{CC}-V_{DD}=0.1V

APPLICATION EXAMPLE