

GENERAL DESCRIPTION

The CM3718C is a low-noise, pulse-width-modulated (PWM), DC-DC step-down converter. It powers logic and transmitters in small wireless systems such as cellular phones, communicating PDAs, and handy-terminals. The device features an internal synchronous rectifier for high efficiency; it requires no external Schottky diode. Excellent noise characteristics and fixed-frequency operation provide easy post-filtering. The CM3718C is ideally suited for Li-Ion battery applications. It is also useful for +3V or +5V fixed input applications.

The device operates in one of four modes. Forced PWM mode operates at a fixed frequency regardless of the load. Shutdown mode places the device in standby, reducing quiescent supply current to under 0.1 μ A.

The CM3718C can deliver over 1.5A. The output voltage can be adjusted from VREF to VIN. The input range is from 2.0V to 5.0V. Other features of the CM3718C include high efficiency, low dropout voltage. It is available in a space-saving 8-pin SOP package.

FEATURES

- ◆ Patented Filed #6,452,366
- ◆ 1.2MHz switching and synchronization
- ◆ Dynamic output-voltage adjustment from VREF to VIN
- ◆ 1.5A Guaranteed Output Current
- ◆ 95% Efficiency
- ◆ No Schottky Diode Required
- ◆ External Soft Start
- ◆ 8-pin SOP package.

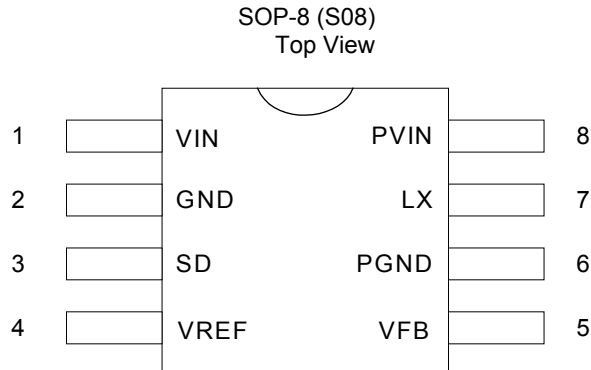
24 Hours Technical Support---WebSIM

Champion provides customers an online circuit simulation tool called WebSIM. You could simply logon our website at www.champion-micro.com for details.

APPLICATIONS

- ◆ Cellular Phone
- ◆ Cordless Phone
- ◆ PDAs and Handy-Terminals
- ◆ CPU I/O Supplies
- ◆ Notebook Chipset Supplies
- ◆ Battery Operated Devices

PIN CONFIGURATION



PIN DESCRIPTION

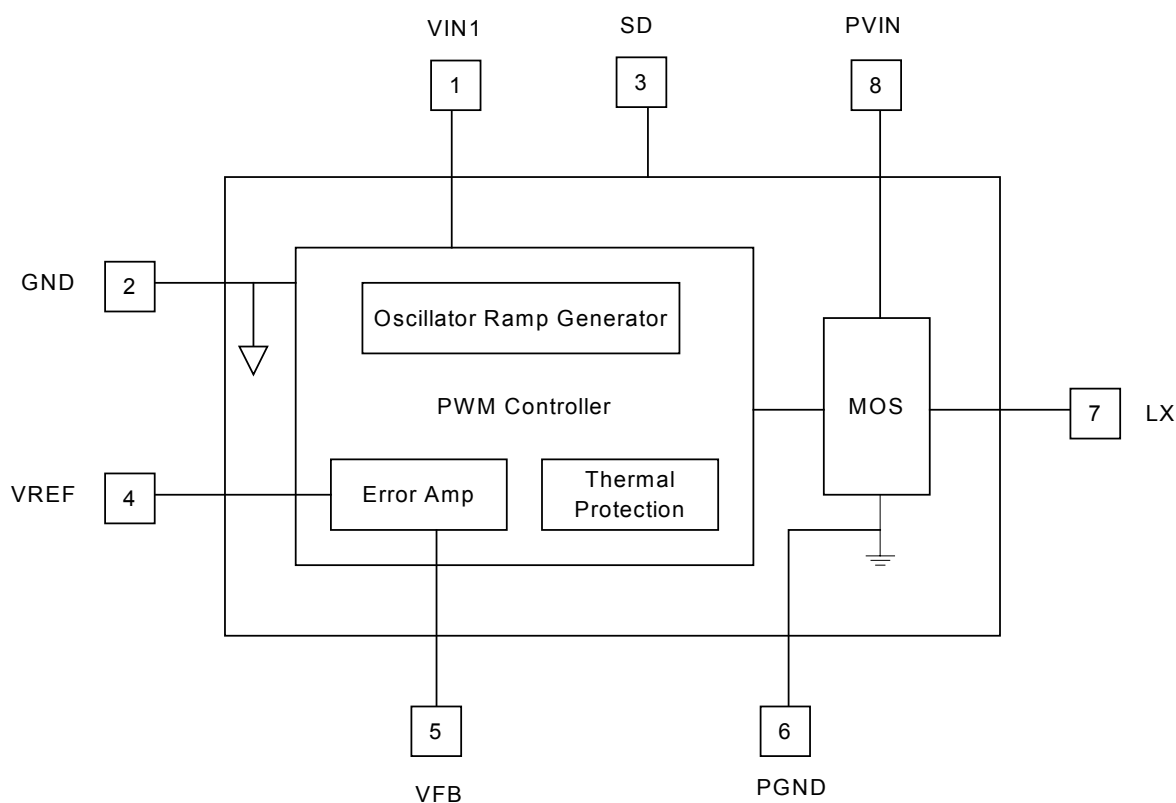
Pin No.	Symbol	Description	Operating Rating			
			Min.	Typ.	Max.	Unit
1	VIN	Voltage supply for internal circuits	2	2.5	5.5	V
2	GND	Ground for internal reference voltage divider				
3	SD	CMOS input level	Shutdown level		VIN + 0.3	V
			Enable level		2.0	
4	VREF	V _{OUT} Set Voltage	1.1		VIN	V
5	VFB	Feedback node for the V _{OUT}		VREF		V
6	PGND	Ground for output power transistors				
7	LX	Inductor connection to the Drains of the internal power MOSFETs			5.5	V
8	PVIN	Voltage supply for output power transistors	2	2.5	5.5	V

ORDERING INFORMATION

Part Number	Temperature Range	Package
CM3718CIS	-40°C to 85°C	8-Pin SOP (S08)
CM3718CGIS*	-40°C to 85°C	8-Pin SOP (S08)

*Note: G : Suffix for Pb Free Product

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Absolute maximum ratings are those values beyond which the device could be permanently damaged.

PVIN/VIN -0.3V to 6.0V
Voltage on Any Other Pin GND – 0.3V to VIN + 0.3V
Output Current, Source or Sink 1.5A

Junction Temperature 150°C
Storage Temperature -65°C to 125°C
Lead Temperature (Soldering, 5 sec)..... 260°C
Thermal Dissipation(θ_{JC})..... 50°C/W

OPERATING CONDITIONS

Temperature Range -40°C to 85°C
PVIN Operating Range 2.0V to 4.0V

ELECTRICAL CHARACTERISTICS (Unless otherwise stated, these specifications apply $T_A=25^\circ\text{C}$; VIN=+3.3V and PVIN=+3.3V) maximum ratings are stress ratings only and functional device operation is not implied.

(Note 1)

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Symbol	Parameter	Test Conditions	CM3718C			Unit
			Min.	Typ.	Max.	
SWITCHING REGULATOR						
V _{REF}	Adjustable Output Voltage		VREF		V _{IN}	V
f _{sw}	Switching Frequency	CM3718C		1.2		MHz
I _{OUT(RMS)}	Maximum Output RMS Current	CM3718C			1.5	A
I _{OUT(PEAK)}	Maximum Output Peak Current	CM3718C			3	A
MOSFETs						
R _{DS(ON)}	Drain to Source on-State Resistance	PV _{IN} =5V		250		mΩ
SUPPLY						
I _{VIN}	Quiescent Current	VFB = 1.4V LC unconnected		220		μA
I _{PVIN}		VFB = 1.4V LC unconnected		500		μA



The CM3718C step-down, pulse-width-modulated (PWM), DC-DC converter has an adjustable output range from VREF to the input voltage (VIN). An internal synchronous rectifier improves efficiency and eliminates an external Schottky diode. Fixed-frequency operation enables easy post-filtering, thereby providing excellent noise characteristics. As a result, the CM3718C is an ideal choice for many small wireless systems.

The reference voltage could be ranged from 1.1V to VIN.

The output voltage pins (LX) are tied to the RF power amp, via an external inductor. Output voltage is determined by the VREF inputs.

The input voltage reference pin, VREF determine the output voltages (LX). If a specific voltage is forced at the VREF pin, the output voltage follows the voltage at the VREF pin.

Several inputs are provided for the supply voltages: PVIN and VIN

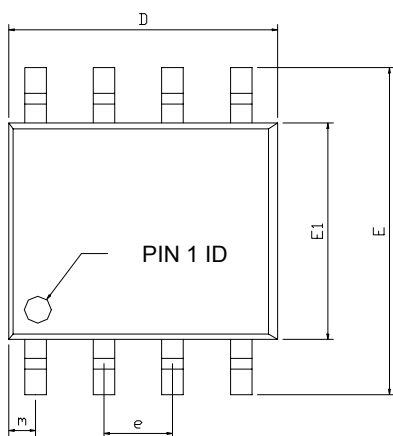
The PVIN provide the power supply to the power MOSFETs.
VIN provides the voltage supply to the logic section and internal error amplifiers.

The VFB pin is an input that can be used for closed loop compensation. This input is derived from the voltage output. AGND pin is a contact node of internal resistor divider for remote sense.

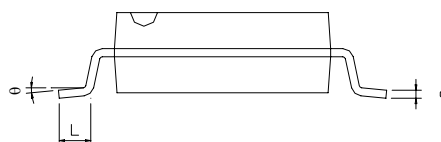
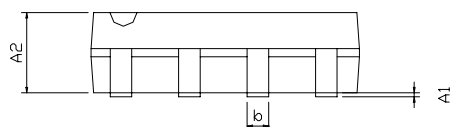
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PACKAGE DIMENSION

8-PIN SOP (S08)



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A1	0.10	---	0.25	0.004	---	0.010
A2	1.40	---	1.55	0.055	---	0.061
b	0.30	---	0.51	0.012	---	0.020
C	0.15	---	0.26	0.006	---	0.010
D	4.60	---	5.06	0.169	---	0.199
E	5.79	---	6.20	0.228	---	0.244
E1	3.76	---	4.01	0.148	---	0.158
e	---	1.27	---	---	0.050	---
L	0.38	---	0.69	0.015	---	0.035
m	0.43	---	0.69	0.017	---	0.027
θ	0°	---	8°	0°	---	8°





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