M62220L/FP

3.3V FIXED OUTPUT VOLTAGE DC-DC CONVERTER

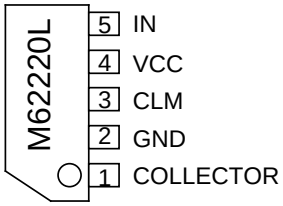
GENERAL DESCRIPTION

The M62220 is a general purpose DC-DC converter which provides a 3.3V fixed output voltage.

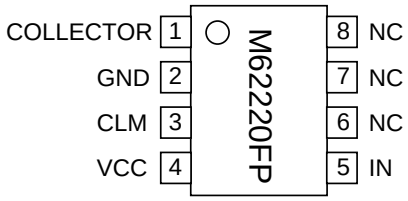
It is possible to simplify the peripheral circuit and to design compact and low cost sets because this IC, housed in a small 5- or 8-pin package includes necessary peripheral components.

Especially this is most suitable for CD-ROM, Disk Drive sets and PDA as a converter from 5V to 3.3V .

PIN CONFIGURATION (TOP VIEW)



Outline 5P5T



Outline 8P2S-A

NC: NO CONNECTION

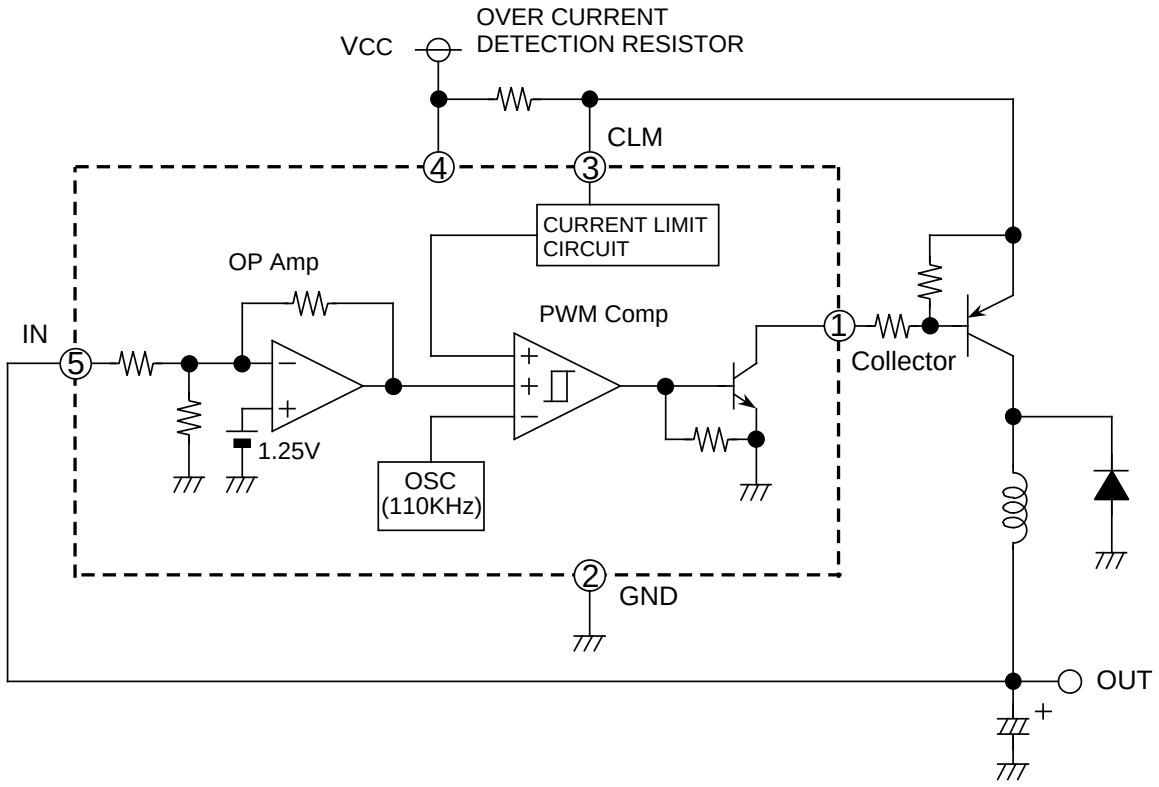
FEATURES

· Wide operation supply voltage range ····· 4 to 15V
· Low power consumption ····· 900µA(max.)
· Built-in oscillator without external components (110kHz typ.)
· Built-in over current protection circuit
· Small size 5-pin SIP and 8-pin SOP packages

APPLICATIONS

CD-ROM, PDA, general purpose electric products

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise noted)

Symbol	Parameter	Conditions		Ratings	Unit
Vcc	Supply voltage			16	V
Io	Output current			100	mA
Pd	Power dissipation	Ta=25°C	5-pin SIP	450	mW
			8-pin SOP	440	mW
K_{THETA}	Thermal derating	Ta=25°C	5-pin SIP	4.5	mW/°C
			8-pin SOP	4.4	mW/°C
Topr	Operating temperature			-20 to +85	°C
Tstg	Storage temperature			-40 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=5V, unless otherwise noted)

Block	Symbol	Parameter	Test Conditions	Limits			Unit
				Min.	Typ.	Max.	
All block	Vcc	Supply voltage		4.0		15	V
	Icc	Supply current	Without load	-	660	900	µA
Error Amp.	Vo	Output voltage		3.15	3.30	3.45	V
	Vreg-L	REF line regulation	Vcc = 4 to 12V		5	15	mV
	Iin	IN input current		-	100	300	µA
Oscillator	fosc	Oscillator frequency		65	110	155	KHz
	TDUTY	Maximum on duty			90		%
CLM	VTHCLM	Current limit voltage	Vcc - CLM	120	150	180	mV
Output	ICL	Output leakage current	Vcc = 12V, Vc = 12V	-1	-	1	µA
	Vsat	Output saturation voltage	Io = 100mA	-	0.4	0.7	V

Application Circuit (3.3V Output DC-DC Converter)

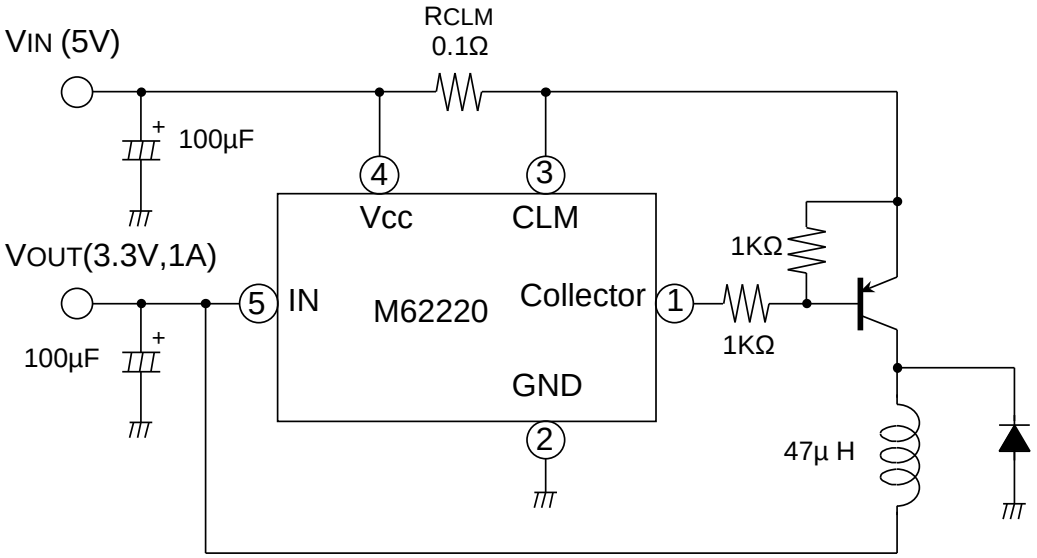


Fig.1 Example of the M62220L/FP application circuit

Current Limit Detection:

When the voltage drop between pin 3 and pin 4 becomes more than 150mV, the Current Limit Detection circuit begins operating. The peak switch current "Ipk" is limited to 150mV / RCLM. In the example of application (fig.1), the current is limited to 1.5A.

THE EXPRESSION OF CIRCUIT CONSTANTS

CONSTANTS	EXPRESSIONS
$\frac{TON}{TOFF}$	$\frac{VO+VF}{VIN - VCE(sat) - VO}$
$(TON+TOFF)MAX$	$\frac{1}{fosc}$ fosc:110KHz(Vcc=5V)
$TOFF(MIN)$	$(TON + TOFF) / (1 + \frac{TON}{TOFF})$
$TON(MAX)$	$\frac{1}{fosc} - TOFF$
$L(MIN)$	$\frac{(VIN - VCE(sat) - VO) \cdot TON(MAX)}{\Delta Io}$
Ipk	$Io + \frac{1}{2} \Delta Io$
RCLM	$\frac{0.15}{Ipk}$ ΔVCLM:150mV(Vcc=5V)

- VF : Forward voltage drop of an external diode.
- Vsat : Output saturation voltage of an external switching transistor.
- ΔIo : It should be set between 1/3 and 1/5 of maximum output current.
- An external transistor, diode and inductor should have a peak current capability of greater than "Ipk".