

IF detector for pagers

BA4118FV

The BA4118FV is an IF detector IC developed for use with pagers.

●Applications

Pagers, portable terminals

●Features

- 1) Internal detector circuit and IF amplifier circuit which accommodates 455kHz.
- 2) Low current dissipation of 550 μ A.
- 3) Built-in RSSI function.
- 4) Built-in FSK waveform rectification circuit.
- 5) Handles transmission at 1200bps.
- 6) Equipped with internal battery alarm.
- 7) Built-in constant-voltage source.

●Absolute maximum ratings (Ta = 25°C, for measurement circuit)

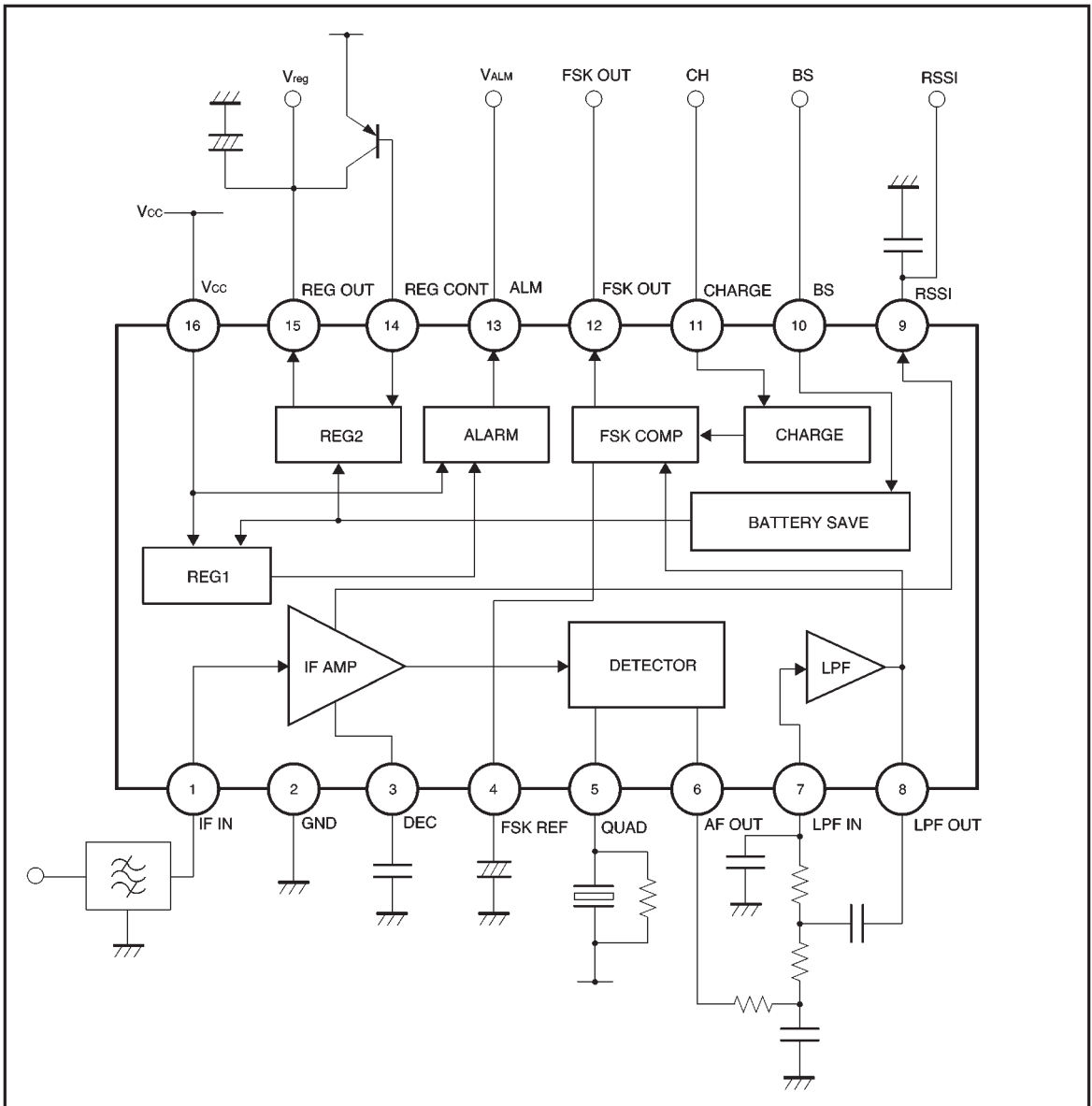
Parameter	Symbol	Limits	Unit
Power supply voltage	V _{CC}	5.0	V
Power dissipation	P _d	350 *1	mW
Operating temperature	T _{opr}	-30~+85	°C
Storage temperature	T _{stg}	-55~+125	°C

*1 Reduced by 3.5mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions

Parameter	Symbol	Limits	Unit
Operating power supply voltage	V _{CC}	1.1~3.5	V

● Block diagram



- Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$, $V_{CC} = 1.4\text{V}$, $f_{IN (IF)} = 455\text{kHz}$, $\Delta f = +4\text{kHzdev}$, $f_{mod} = 600\text{Hz}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I_Q	—	550	800	μA	No input
Battery save quiescent current	$I_Q (BS)$	—	0	5	μA	No input
IF amplifier input resistance	R_{IF}	—	2	—	$\text{k}\Omega$	—
Signal-to-noise ratio 1	$S / N1$	50	62	—	dB	$V_{IN (IF)} = 60\text{dB } \mu\text{V EMF}$
Signal-to-noise ratio 2	$S / N2$	28	33	—	dB	$V_{IN (IF)} = 25\text{dB } \mu\text{V EMF}$
-3dB limiting sensitivity	$L.S$	19	24	29	$\text{dB } \mu\text{V EMF}$	—
Demodulation output level	V_{OD}	20	30	44	mV_{rms}	$V_{IN (IF)} = 60\text{dB } \mu\text{V EMF}$
AM rejection ratio	AMR	35	45	—	dB	$V_{IN (IF)} = 60\text{dB } \mu\text{V EMF}$ $AM=30\%$
Waveform rectification output duty ratio	DR	40	50	60	%	$V_{IN (IF)} = 60\text{dB } \mu\text{V EMF}$
Alarm detection voltage	V_{ALM}	1.05	1.10	1.15	V	pin13 “H”
Regulator output voltage	V_{reg}	0.95	1	1.05	V	$R_L=430\Omega$
Output low level voltage (ALM)	$V_{ALM L}$	—	0	0.4	V	$I_L=100\mu\text{A}$
Leakage high level current (ALM)	$I_{ALM H}$	—	0	2	μA	—
Output low level voltage (FSK)	$V_{FSK L}$	—	0	0.4	V	$I_L=100\mu\text{A}$
Leakage high level current (FSK)	$I_{FSK H}$	—	0	2	μA	—
Output low level voltage (REG CONT)	$V_{REG L}$	—	—	0.6	V	$I_L=100\mu\text{A}$
RSSI output voltage	V_{RSSI}	0.48	0.62	0.76	V	$V_{IN}=80\text{dB } \mu\text{V EMF}$
RSSI output resistance	R_{RSSI}	—	82	—	$\text{k}\Omega$	—
Rapid charging/discharging current	I_{CH}	35	65	110	μA	$V_4=GND, V_8=0.18\text{V}$

● Measurement circuit switches

Parameter	Meter	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	V1
Quiescent current	I _Q	1	2	3	1	1	1	1	1	1	2	2	0
Battery save quiescent current	I _Q	1	1	1	2	1	2	1	2	1	2	2	0
Signal-to-noise ratio 1	S/N	1	1	1	1	1	1	1	1	1	1	1	0
Signal-to-noise ratio 2	S/N	1	1	1	1	1	1	1	1	1	1	1	0
-3dB limiting sensitivity	L.S	1	1	1	1	1	1	1	1	1	1	1	0
Demodulation output level	V _{OD}	1	1	1	1	1	1	1	1	1	1	1	0
AM rejection ratio	AMR	1	1	1	1	1	1	1	1	1	1	1	0
Waveform rectification output duty ratio	DR	1	1	1	1	1	1	1	1	1	1	1	0
Alarm detection voltage	V _{ALM}	1	1	1	1	1	1	1	1	1	1	1	0
Regulator output voltage	V _{reg}	1	1	1	1	1	1	1	1	1	1	1	0
Output low level voltage (ALM)	V _{ALM L}	1	1	1	1	1	1	1	3	1	1	1	0
Leakage high level current (ALM)	I _{ALM H}	1	1	1	1	1	1	1	1	2	1	1	0
Output low level voltage (FSK)	V _{FSK L}	2	3	2	1	1	3	1	1	1	1	1	0
Leakage high level current (FSK)	I _{FSK H}	2	3	2	1	1	1	2	1	1	1	1	0.36
Output low level voltage (REG CONT)	V _{reg L}	1	1	1	1	1	1	1	1	1	3	2	0
RSSI output voltage	V _{RSSI}	1	1	1	1	1	1	1	1	1	1	1	0
Rapid charging/discharging current	I _{CH}	2	3	2	1	2	1	1	1	1	1	1	0

● External dimensions (Units: mm)

