

# IF detector for pagers

## BA4118FV

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

### ●Applications

Pagers

### ●Features

- 1) Internal detector circuit and IF amplifier circuit which accommodates 455kHz.
- 2) Low current consumption of 550  $\mu$ 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)

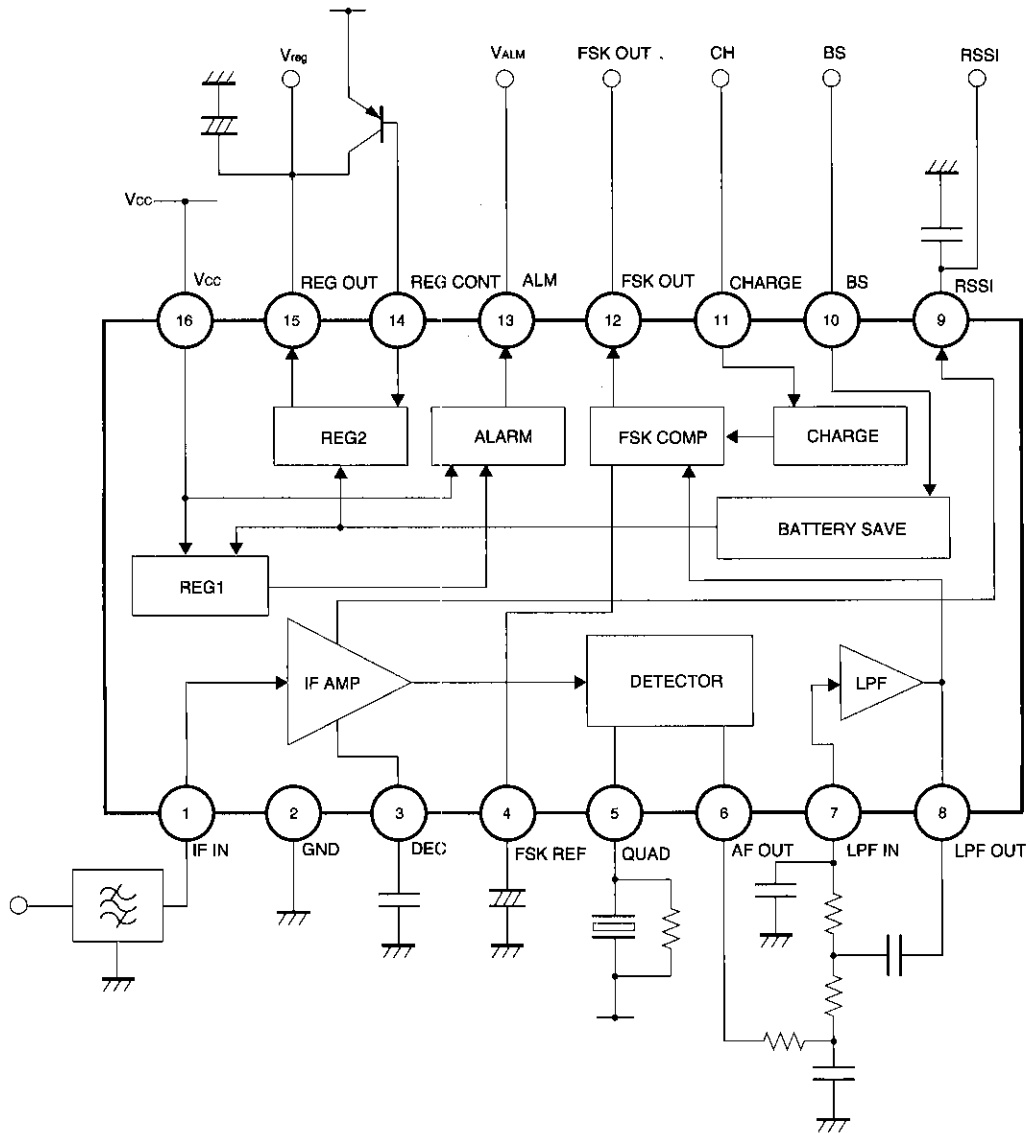
Parameter	Symbol	Limits	Unit
Power supply voltage	V <sub>CC</sub>	5.0	V
Power dissipation	P <sub>d</sub>	350 *1	mW
Operating temperature	T <sub>opr</sub>	-30~+85	°C
Storage temperature	T <sub>stg</sub>	-55~+125	°C

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

### ●Operating range

Parameter	Symbol	Limits	Unit
Operating voltage	V <sub>CC</sub>	1.1~3.5	V

● Block diagram



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	$I_Q$	—	550	800	$\mu\text{A}$	No input
Battery save quiescent current	$I_Q(\text{BS})$	—	0	5	$\mu\text{A}$	No input
IF amplifier input resistance	$R_{IF}$	—	2	—	$\text{k}\Omega$	—
Signal-to-noise ratio 1	$S/N_1$	50	62	—	dB	$V_{IN(IF)}=60\text{dB}\mu\text{V EMF}$
Signal-to-noise ratio 2	$S/N_2$	28	33	—	dB	$V_{IN(IF)}=25\text{dB}\mu\text{V EMF}$
-3 dB limiting sensitivity	$L.S$	19	24	29	$\text{dB}\mu\text{V EMF}$	—
Demodulation output level	$V_{OD}$	20	30	44	mVrms	$V_{IN(IF)}=60\text{dB}\mu\text{V EMF}$
AM spression 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	13pin "H"
Regulator output voltage	$V_{REG}$	0.95	1	1.05	V	$R_L=430\Omega$
"L" output voltage (ALM)	$V_{ALM L}$	—	0	0.4	V	$I_L=100\mu\text{A}$
"H" leakage current (ALM)	$I_{ALM H}$	—	0	2	$\mu\text{A}$	—
"L" output voltage (FSK)	$V_{FSK L}$	—	0	0.4	V	$I_L=100\mu\text{A}$
"H" leakage current (FSK)	$I_{FSK H}$	—	0	2	$\mu\text{A}$	—
"L" output 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	$\mu\text{A}$	$V_A=GMD, V_B=0.18\text{V}$

IFs for radio communications

Cellular phones/PHS/Pagers

● Measurement circuit

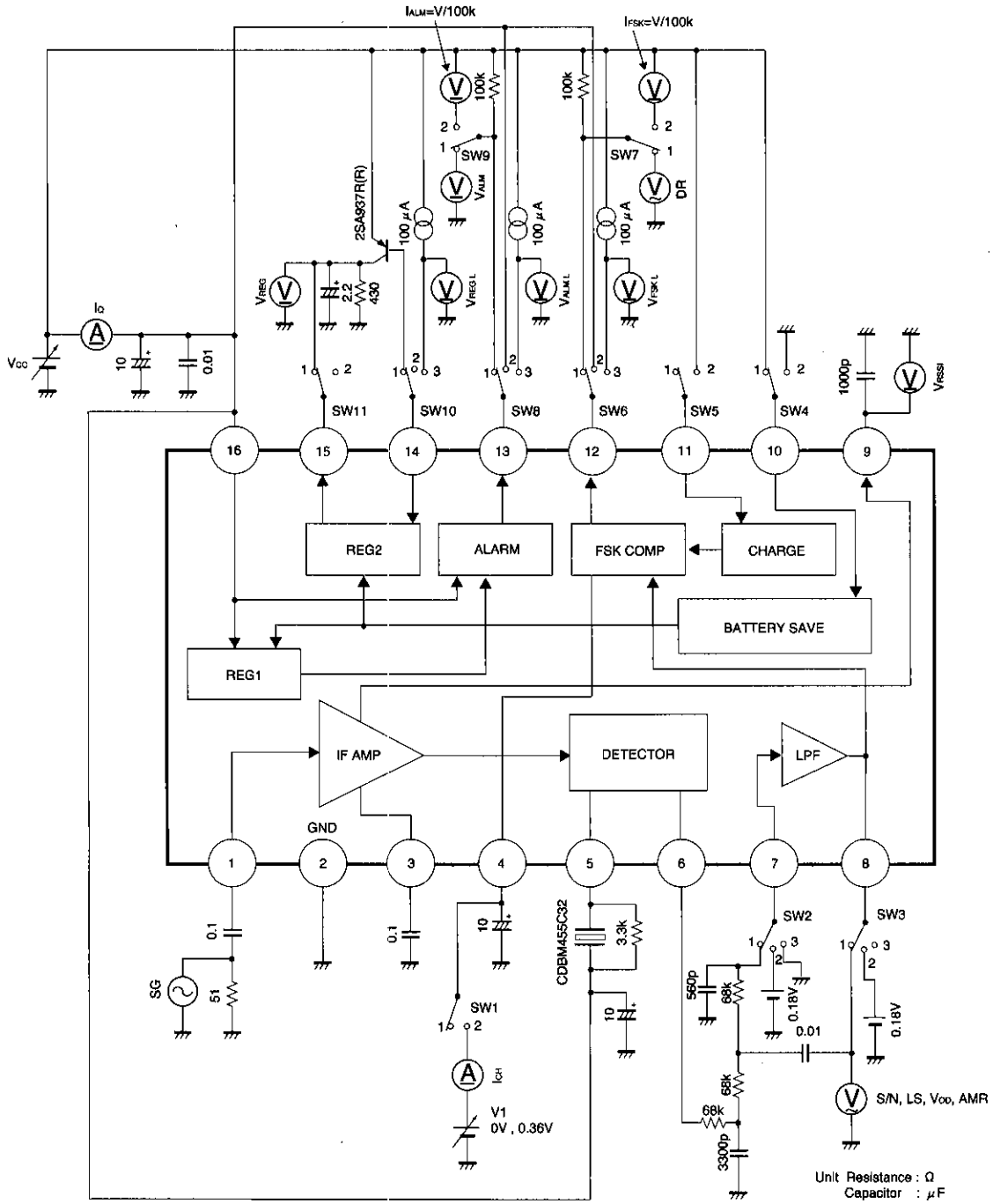
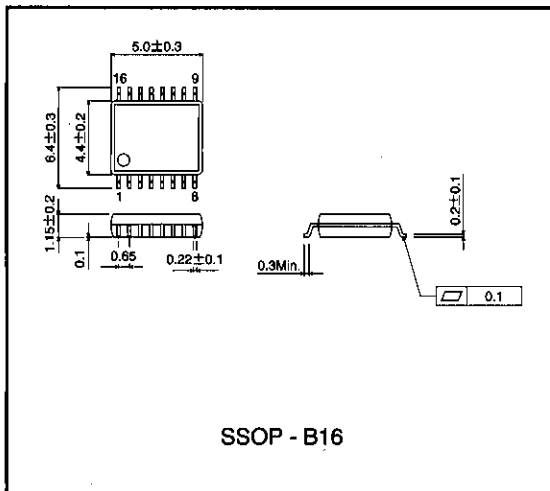


Fig. 1

● Measurement circuit switches

Parameter	Meter	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	V1
Quiescent current	I <sub>Q</sub>	1	2	3	1	1	1	1	1	1	2	2	0
Battery save quiescent current	I <sub>Q</sub>	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
-3 dB limiting sensitivity	L.S	1	1	1	1	1	1	1	1	1	1	1	0
Demodulation output level	V <sub>OD</sub>	1	1	1	1	1	1	1	1	1	1	1	0
AM suppression 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 <sub>ALM</sub>	1	1	1	1	1	1	1	1	1	1	1	0
Regulator output voltage	V <sub>REG</sub>	1	1	1	1	1	1	1	1	1	1	1	0
"L" output voltage (ALM)	V <sub>ALM L</sub>	1	1	1	1	1	1	1	3	1	1	1	0
"H" leakage current (ALM)	I <sub>ALM H</sub>	1	1	1	1	1	1	1	1	2	1	1	0
"L" output voltage (FSK)	V <sub>FSK L</sub>	2	3	2	1	1	3	1	1	1	1	1	0
"H" leakage current (FSK)	I <sub>FSK H</sub>	2	3	2	1	1	1	2	1	1	1	1	0.36
"L" output voltage (REG CONT)	V <sub>REG L</sub>	1	1	1	1	1	1	1	1	1	3	2	0
RSSI output voltage	V <sub>RSSI</sub>	1	1	1	1	1	1	1	1	1	1	1	0
Rapid charging/discharging current	I <sub>CH</sub>	2	3	2	1	2	1	1	1	1	1	1	0

● External dimensions (Units: mm)



Cellular phones / PHS / Pagers IFs for radio communications

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