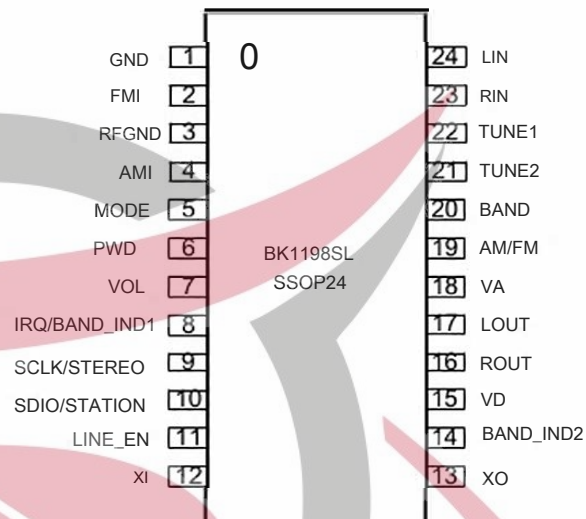# Mechanical tuning AM/FM/short wave radio receiver BK1198

characteristic

- Support 60~112MHz FM frequency band

- Support 504~1750kHz AM frequency band

- Support shortwave frequency band (2.2-23M ratio)

- Built-in M to freely configure each working mode

- Automatic FM stereo/mono switching control

- Automatic noise suppression

- Support normal potentiometer and encoder tuning

- Support button gear adjustment (SSOP24)

- Support digital frequency display function

- Support Line-in function (SSOP24)

- Supply voltage 1.8 ~ 3.6 V

- Support radio and (stereo SSOP24) LED indication

- 24-pin SSOP, 16-pin SOP package

GND	1	24	LIN
FMI	2	23	RIN
RFGND	3	22	TUNE1
AMI	4	21	TUNE2
MODE	5	20	BAND
PWD	6	19	AM/FM
VOL	7	18	VA
IRQ/BAND_IND1	8	17	LOUT
SCLK/STEREO	9	16	ROUT
SDIO/STATION	10	15	VD
LINE_EN	11	14	BAND_IND2
XI	12	13	XO

BK1198SL SSOP24

SSOP24 Pin definition diagram (top view)

application

- Desktop and handheld receivers

- CD/DVD player

- Crest frequency module

· Clock

- Boombox

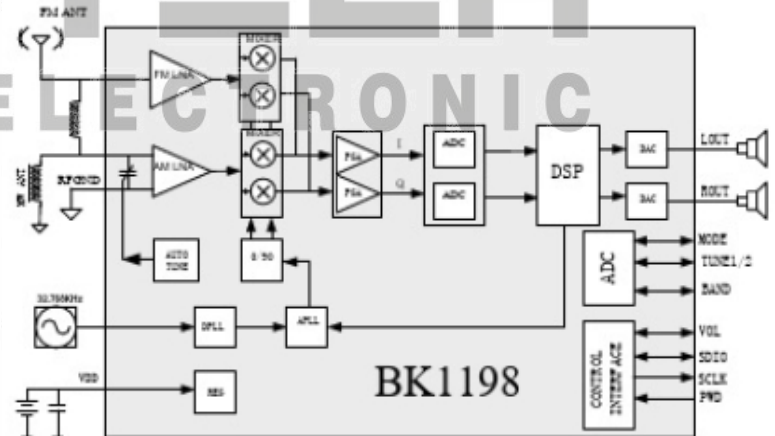- Consulting Entertainment System

General description

BK1198 is new One Enhanced hand feel on behalf of the AM/FM receiver

supporting potentiometer mechanical tuning. Chip uses low-IF architecture, Pool

frequency signal image suppression and all digital demodulation techniques. This

allows users to easily achieve low power consumption.

Complete broadcast receiving system with small size and minimum number of

external components. And it can avoid the complicated

Manual correction process. BK 1198 built-in MTP, free

Configure various application scenarios. The minimum working voltage of BK

1198 can reach 1.8V, which greatly improves the utilization of the battery.

Functional block diagram

BK1198

1 Table of contents
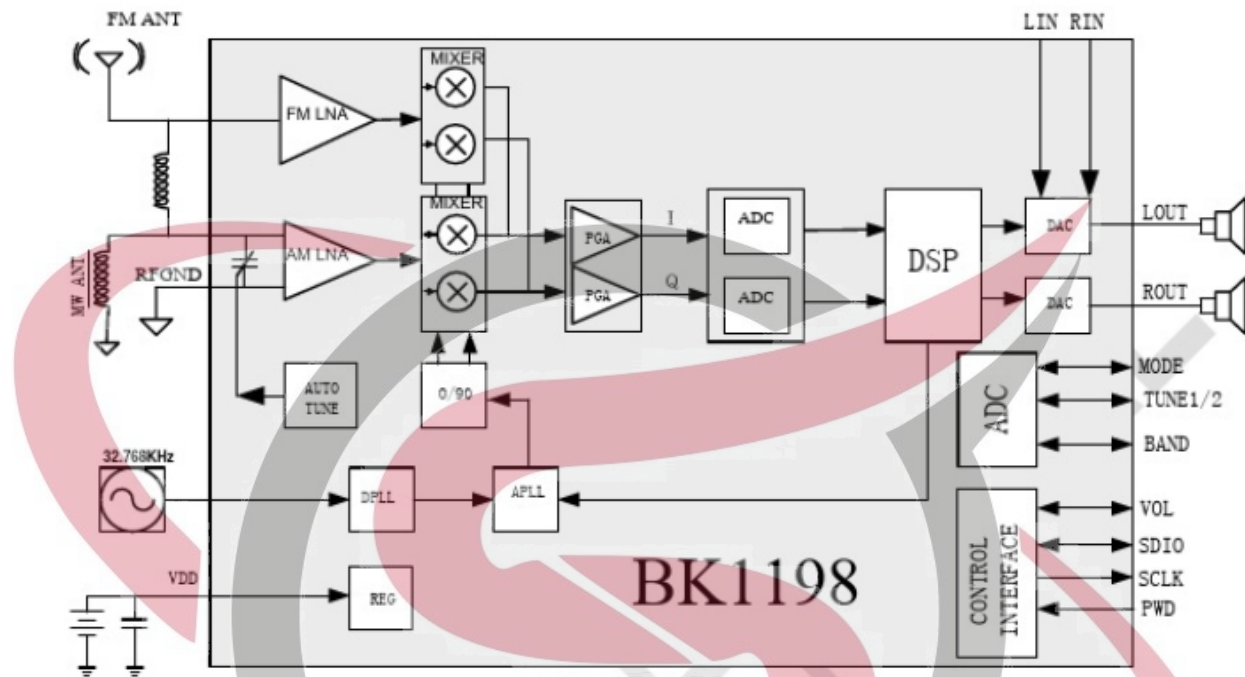
2 function description

Figure 1BK 1198 Functional block diagram

2.1 FM grazing device

The FM receiver adopts a digital low-IF architecture that can reduce the number of peripheral components. The internal part is a low-noise amplifier (LNA) that supports the world's FM broadcasting band (60-112MHz), The automatic gain controller (AGC) that can control the gain of the LNA to optimize sensitivity and suppress large interference signals, and the image rejection trickler that can convert radio frequency signals into low-IF signals. The output of the mixer passes One A programmable gain control amplifier (PGA) to amplify, and then One A high-resolution analog-to-digital converter (ADC) converts into a digital signal. An audio digital signal processor (CDSP) completes the functions of channel selection, FM demodulation, stereo multiplexer and output audio signal. Multi-channel decoder can automatically convert from stereo to mono decoding,

This limits the output noise.

2.2 Medium-Polish pastoralist

BK1198 supports the worldwide AM frequency band (504-l 750kHz) through 3 bands. It uses a low-IF architecture to minimize the number of peripheral devices. Using this architecture can achieve high-precision filtering, thereby achieving excellent sensitivity and noise suppression. Similar to the FM receiver, the AM receiver is woven into LNA and AGC, which optimizes sensitivity and suppresses large interference signals, so that weak signal stations can also have good reception. BK1198 provides high-accuracy digital AM automatic tuning, thus eliminating the need for production line debugging. In order to provide maximum flexibility, the receiver can support the magnetic rod line circle in the range of 180~300μH for the thousand medium wave

2.3 Shortwave receiver

The shortwave operating frequency range supported by BK1198 is

From 2.2MHz to 23MHz, it is divided into 12 short wave bands.

Shortwave antennas can be designed to share antennas with FM.

2.4 Built-in MTP

BK1198 internal woven One 128 Minute 8-bit multiple erasable

memory (CMTP). The user can freely configure the start

frequency point, end frequency point, channel tuning mode,

volume adjustment mode, stereo indicator threshold, effective

channel indicator threshold, etc. of each band through the

memory to achieve personalized design. Configure MTP to

communicate through I2C.

2.5 Working sputum

BK1198 can be divided into 4 working modes, which are defined

as:

Mode 1: MTP programming and verification mode;

Mode 2: Default configuration working mode;

Mode 3: MTP custom configuration working mode; Mode 4:

Displayable frequency working mode;

Among them, modes 2, 3 and 4 can be combined. The choice of

working mode is configured by different voltage values of the

MODE pin.

Voltage	Mode 1	Mode 2	Mode 3	Mode 4
0		t		
0.38Vcc	t	t		t
0.63Vcc	t		t	t
Vee			t	

Table 1 Working mode configuration table

2.6 Band Definition

BK1198 supports a total of 3 FM bands, of which 3

The wave band and 12 short wave bands can cover broadcast

receiving applications worldwide. Table 2 is the band definition

table of the default configuration. Except FM1, the other bands are

all MTP-configurable frequency range bands. Please refer to the

application documentation for details.

Band	Frequency Range	Channel spacing
FM!	87-108 MH z	100kHz
FM2	87-108.5 MH z	100kHz
FM3	64-108 MH z	50kHz
AM 1	510-1730 kHz	9/l0kHz
AM 2	513-1629 kHz	9/l0kHz
AM 3	513-1730 kHz	1kHz
SW I	4.70--5.10 MH z	5kHz
SW 2	5.50--6.50 MH z	5kHz
SW 3	6.70--7.70 MH z	5kHz
SW 4	9.10--10.1MHz	5kHz
SW 5	11.4-12.30MHz	5kHz
SW 6	13.30-14.30MHz	5kHz
SW 7	14.90-16.00 MH z	5kHz
SW 8	17.00-18.10 MH z	5kHz
SW 9	21.10-22.10 MH z	5kHz
SW I O	2.70- 10.25 MH z	5kHz
SWII	9.80--22.2MHz	5kHz
SW12	7.80--16.2 MH z	5kHz

Table 2 Default configuration band definition table

2.7 Band selection

BK1198 supports 4 kinds of band selection methods.

Method 1: Select by externally connecting the BAND pin and the

voltage divider resistor network between the TUNE I pin

Ren One Band

Method 2: Select the band by externally connecting the BAND pin

and the voltage divider resistor network between the TUNE I pin

and connecting the AM/FM pin with a single key switch.

Method 3: Select the band by externally connecting the BAND pin and the voltage divider resistor network between the TIJNF1 pin and connecting the two key switches of the AM/FM pin.

Method 4: External MCU control selection.

BK1198 uses band selection method 1 by default. If other methods are used, MTP must be configured first. For detailed peripheral circuit design, please refer to the application document.

2.8 Frequency is harmonic

BK1198 supports 3 frequency tuning methods.

Method 1: Adjust the channel by adjusting the potentiometer connecting TUNE1 and TUNE2. Method 2: By connecting the encoder of TUNE2 pin and the corresponding peripheral circuit, it can be said to be a good way;

Method 3: External MCU control selection

BK1198 uses frequency tuning method 1 by default, if other methods are used, MTP must be configured first. For detailed peripheral circuit design, please refer to the application document.

2.9 Open-hang method

BK1198 can realize startup and shutdown control through 3 different application methods.

Direct power-on boot mode: the chip directly enters the normal working state after pressing the power supply;

Single key switch control: After the external power supply, the chip enters the standby state, press the key switch to enter the normal working state, and press the key again to enter the standby state again;

Double button switch control: working status switching is similar to single button switch control, the difference is in the thousands One Buttons can only control booting, in addition One One

button can only control shutdown;

The above three switching methods can be achieved through the different external circuit of the PWD pin.

2.10 Frequency indication (SSO P24)

BK1198 can be configured as frequency display mode, every internal One A valid tuning signal, generated at IRQ/BAND _IND 1 pin One A falling edge interrupt signal, at this time, the external master can read the current working band and working frequency through the I2C port, and display it.

IRQ/BAND _IND 1 pin can also be configured as a wave The segment indicates the power output. In this configuration, with the BAND_IND2 pin, the LED can be used to indicate whether it is currently working in the FM band or the AM band. Please refer to the application document for detailed configuration.

3 parameter performance

Table 3 Recommended working conditions

parameter	symbol	Test Conditions	The smallest	typical	maximum	unit	
Supply voltage	VDD		1.8		3.6	v	
Power-on rise time	VDDRSIE		10			μS	
Ambient temperature	TA		15	25	85 °C		

Notes:

1 So **Have** regulation grid Hu Da Bitch **Small** value **is** safe use And pack **With** Qian Ting Yi work **Make a strip** Pieces Of Inside . **If** Non-voice Bright , typical value Yes in **V o ·Eight public One 3** OV and 2; · c

Use under . Unless stated, the typical value is measured during the sub-production process.

2 The low-quality working power is 1:1, which means that the J·K gradually decreases the main 18\' and it can still work normally.

Table 4 Power consumption specifications

parameter	symbol	Test Conditions	The smallest	typical	maximum	unit	
Working current (FM mode)	In1			24		m A	
Working current (heart M mode)	I hate			21		m A	
Working current (audio input mode)	ILINE		5			m A	
Shutdown quiescent current	I Bang			25		ftA	

Table 5 FM receiver characteristics

parameter	Test Conditions	The smallest	typical	maximum	unit
Input frequency		60		112	MH z
Sensitivity 2, 3. 4, 5. 6	(S+N)/N=26 dB				
LNA input impedance 7		2.5	3.	3.5	k Q
Enter IP3 8			92		dB V EMF
AM suppression 2. 3. 4 5, 7	m = 0.3	40	45		dB
Neighboring letter selection	±200kHz	40	50		dB
Interval selectivity	±400kHz	50	60		dB
Audio output voltage 2, 3, 4, 7			120		mV RMS
Audio stereo separation is bad 5, 7		30			dB
Audio signal-to-noise ratio 2, 3.4.5, 7,			55		dB
Audio total harmonic distortion 2, 3. 5, 7			0.1	0.3	%
De-emphasis time constant 9			50	75	s
Audio total voltage 12	E NA BLE-I	0.8	0.9	1.0	V
Audio output load resistance	Single-ended		32		Q
Power on time				500	ms
Band switching time				150	ms

Notes:

I. All test audio is set to record

2. F MOD = 1 kHz, 75 flS de-emphasis

3.   Single sound, the left and right channels are the same

4.   M = 2 2 5 kHz

5.   BAF = 300 H z   to 15 kHz, A-weighted

6.   No matching network sensitivity

7.   In V DI IF = I mV, Such as =64 to 108 MHz conditions do not test

8.   If2 fll >2 MHz ,   fO = 2 x fl f2.

9   M = 7 5 k H z

1 0. On the LOUT and ROUT pins

BK1198

Table 6 AM receiver performance

parameter	Test Conditions	The smallest	typical	maximum	unit
Input frequency	Medium Wave (MW)	504		1750	k H z
	Shortwave (SW)	2.2		23	MHz
Sensitivity 1, 2 3	(S+N) / N=26dB		18		V EM F
RF large signal withstand strength			100		mV Qinl S
Power ripple rejection ratio			40		d B
Audio output voltage			120		mV Qin iS
Audio signal-to-noise ratio 1, 2, 3, 5			55		d B
Audio total harmonic distortion 1, 2, 3, 5			0.1		%
Start Time	Start from power saving mode			500	ms

Comment I

1. F MOD   =! kH z, 30% modulation , A-weighted, 2 kHz frequency forcing filter

2. BAF   = 300 H z to 15 kHz, A-weighted

3. f RF = IOOOkHz

4. Guaranteed   by characterization

5. VIN = 5mVR., Dal

Table 7 External audio input performance (S SOP24)

parameter	Test Conditions	The smallest	typical	maximum	unit
Input frequency range	<3dB	30		12kHz	H z
Record large input performance intensity	THD <1 %		400		mV Œ{S
Audio output signal to noise ratio			65		d B
Audio output distortion			0.1		%
Audio output common mode voltage			1.1		V
Left and right sound isolation			70		d B
Audio input/FM demodulation output isolation		70	80	90	d B

4 Built-in register/MTP definition table

Note: BKI 198 work initialization configuration can be selected from the internal register default value or MTP programming value. Please refer to the application document for MTP programming.

REG16H (default value of built-in register: 3A71)

Bit	name	Defaults	description
(15)	MONO	1'h0	0 Normal demodulation output mode; 1 Forced mono demodulation output;
(14)	RESERVED	1'h0	Keep the control word, please keep the default value without any modification
(13)	RESERVED	1'h1	Keep the control word, please keep the default value without any modification
(12)	SKMUTE _ AM	1'h1	AM working mode – Bu 0 Keep the output sound screen when tuning 1 Automatic soft mute when tuning (the sound is reduced One Value)
[II]	SKMUTE _ FM	1'h1	FM working mode 0 Keep the output sound screen when tuning 1 Automatically soft mute when tuning (the sound sting is reduced One Value)
10	RESERVED	1'h0	Keep the control word, please keep the default value without any modification
(9).	CKSEL	1'h1	Clock source selection 0External clock 1Internal crystal oscillator
(8).	DE	1'h1	De-emphasis time constant setting 0. 75uS !:50uS
(7:6)	RESERVED	2'h1	
(5:4)	BAND _ MODE 1:0	2'h3	Band selection mode 0 level + band switch selection mode 1 One-button switch + band switch selection mode 2 Double key switch + band switch selection mode 3-band switch selection mode
(3:2))	CHAN _ MODE 1:0	2'h0	Frequency control mode O.PVR control; 1 rotation control 2: I2C control (BAND is also controlled by I2C at this time, and no longer responds to band opening

			Off selection)
(!)	SHMODE	1'h0	Effective platform to maintain energy
(1:0)	DCLK_ADJ_EN	1'h1	Avoid digital interference

REG17H (default value of built-in register: 031B)

Bit	name	Defaults	description
(15)	IRQ_SEL	1'h0	IRQ pin output selection, 1 band normal working output; 0: interrupt output
(14:13)	FMBAND_SEL	2'h0	FM working band setting in key band selection mode
"12:71	SKSNR_FM (5 OJ	6'h6	FM mode effective station lighting stop value setting (signal to noise ratio)
(6:0)	SKTH_FM [6 0]	7'h1b	FM mode effective station lighting reading value setting (signal strength)

REGISH (default value of built-in register: 0A15)

Bit	name	Defaults	description
(15)	AM_SAGC_SEL	1'h0	In AM working mode, slow AGC time configuration
(14.13)	MW_FAFC_SEL	2'h2	In medium wave mode, fast AGC time with basket
(12:7)	SKSNR_AM [5 0]	6'h14	AM mode effective station lighting stop value setting (signal to noise ratio)
(6:0)	SKTH_AM (6 OJ	7'h15	AM mode effective station lighting threshold setting (signal strength)

REG19H (default value of built-in register: 431A)

Bit	name	Defaults	description
[15:13]	SMUTEA_FM (20)	3'h2	FM mode soft mute attenuation control 0.12dB 1 14dB... (2dB/file)
(12:7)	MUTESNR_FM	6'h6	FM mode soft mute threshold setting (signal to noise ratio)

	[5 0]		
(6:0)	MUTETII_FM (6 OJ	7'h1a	rM mode soft mute threshold setting (signal strength)

REGIAH (default value of built-in register: 8A15)

Bit	name	Defaults	description
[15:13]	SMUTEA _ AM (20)	3'h2	AM mode soft mute attenuation control 0.12dB 1 14dB...　　　(2dB/file)
(12:7)	MUTESNR_FM (5 OJ	6'h14	AM mode soft mute reading setting (signal to noise ratio)
(6:0)	MUTETii_AM (6 OJ	7'h15	AM mode soft mute threshold setting (signal strength)

REGIBH (default value of built-in register: 026A)

Bit	name	Defaults	description
[15:11)	SW_CRN	5'hF	AFC and active station keep number setting (only for 1000 short wave frequency band greate than 7.5MH band effective)
(10)	CRN_EN	1'h1	Active stations within the AFC range remain enabled
(9).	AFCMUTE	1'h1	0: No soft mute when AFCRL ; I: Soft mute when A FCR L
(8:7)	DEMOD_SEL (1 OJ	2'h0	Demodulator bandwidth selection 0 curtain belt mode 1Narrowband mode 2 Intelligent selection mode (Intelligent selection according to PVR rotation speed)
(6:4)	STSNR[2:0]	3'h6	Stereo indication threshold (SNR) setting
(3:0)	BLNDADJ[3 OJ	4'ha	Stereo indication threshold (RSSI) setting

REGICH (default value of built-in register: 02F8)

Bit	name	Defaults	description
(15:0) (15:0)	FM2_START	16'h02f8	Band'FM2 · Starting frequency setting (default starting frequency 76M ratio) Note that the unit is 100KHz. If the starting frequency is set to 87MHz, set Set the value to '0366'

RFG In H (default value of built-in register '0 . fly 9ll)

Bit	name	Defaults	description
(15:0)	FM2_STOP (15 OJ	16'0398	Band'FM2 · End frequency setting (default stop frequency 92M pressure)

REGIEH (default value of built-in register: 0280)

Bit	name	Defaults	description
(15:0)	FM3_START (15:0)	16'h0280	Band'FM3 · Starting frequency setting (default starting frequency 64M pressure)

REGIFH (default value of built-in register: 0366)

Bit	name	Defaults	description
(15:0)	FM3_STOP (15 OJ	16'0366	Band'FM3 · End frequency setting (default stop frequency 87M pressure)

REG20H (default value of built-in register: 0034)

Bit	name	Defaults	description
(15:0)	AM1_START (15 OJ	16'h0034	Band'AMI · Start frequency setting (default start frequency 520kH z) Note: !OKHz as the unit . If the starting frequency is set to 520K Hz, then set Set the value to '0034'

REG21H (default value of built-in register: OOAB)

Bit	name	Defaults	description
(15:0)	AMI_STOP [15 OJ	16'h00ab	Band'AMI' end frequency setting (default stop frequency! 710kHz)

REG22H (default value of built-in register ₁003A)

Bit	name	Defaults	description
(15:0)	AM2_START (15 OJ	16'h003a Band'AM2 · Starting frequency setting (default starting frequency is 522kH z) Note with 9KH z as unit . If the starting frequency is set to 522K Hz, then set Value is 003A>

REG23H (default value of built-in register: OOB4)

Bit	name	Defaults	description
(15:0)	AM2_STOP [15 O]	16'h00b4 Band'AM2 · End frequency setting (default stop frequency! 620kH z)

REG24H (default value of built-in register: OIFS)

Bit	name	Defaults	description
(15:0)	AM3_START (15 OJ	16'h0lf8	Band'AM3 · Start frequency setting (default start frequency 504kH z) Note with! KH z as unit . If the starting frequency is set to 504K Hz, then set Value is 01F8'

REG25H (default value of built-in register: 06AE)

Bit	name	Defaults	description
[15:01	AM3_STOP (15 OJ	16'h06ae Oil section · AM 3 · End frequency light (default stop frequency 17!0kH z)

REG26H (default value of built-in register: 0163)

Bit	name	Defaults	description
(15:0)	SW!_START[l5 OJ	1'h0163	Band'SW! · Starting frequency setting (default starting frequency 3.55MH z) Note with! OK H z as unit . If the starting frequency is set to 10M Hz, then set Value is 03E8A'

BK1198

REG27H (default value of built-in register ⌐OICF)

Bit	name	Defaults	description
(15:0)	SWI_STOP (15 OJ	16'h01CF	Band'SW!', end frequency setting (default end 11::frequency 4.63MHz)

REG28H (default value of built-in register ⌐OIAB)

R EG2 2 (R/W Ox   02a8)

𝔴	name	Defaults	description
(15:0)	SW2_START (15:0)	16'h01AB	Band·SW 2· Starting frequency setting (default starting frequency 4.27MH z)

REG29H (default value of built-in register: 023D)

Bit	name	Defaults	description
(15:0)	SW2_STOP (15 OJ	16'h023D	Band·SW 2· End frequency setting (default stop frequency 5.73MH z)

REG2AH (default value of built-in register: 0218)

Bit	name	Defaults	description
(15:0)	SW3_START (15:0)	16'h0218	Blow W and keep the starting point frequency setting (default starting frequency S.1/iMH points

REG2BH (default value of built-in register: 0270)

Bit	name	Defaults	description
(15:0)	SW3_STOP (15 OJ	16'h027d	Band· SW 3· End frequency setting (default stop frequency 6.37MH z)

BK1198

REG2CH (default value of built-in register, 027D).

Bit	name	Defaults	description
(15:0)	SW4 _ START 16'h027d (15:0)		Band' SW4 - Start frequency setting (default start frequency 6.37MHz)

REG2DH (default value of built-in register: 0302)

Bit	name	Defaults	description
(15:0)	SW4 _ S TOP (15 OJ		16'h0302 Band' SW4 - End point frequency setting (default end frequency is 7.7MHz)

REG2EH (default value of built-in register: 039E)

Bit	name	Defaults	description
(15:0)	SWS _ START 16'h039e (15:0)		Band' SW5 - Start frequency setting (default start frequency is 9.26MHz)

REG2FH (default value of built-in register: 0435)

Bit	name	Defaults	description
(15:0)	SW5 _ S TOP (15 OJ		16'h0435 Band - SW5 - End frequency setting (default stop frequency 10.77MH B)

R EG3 0H (default value of built-in register 0405)

Bit	name	Defaults	description
(15:0)	SW6 _ START 16'h0405 (15:0)		Band'SW6', starting frequency setting (default starting frequency 10.29MHz)

REG31H (default value of built-in register: 04BE)

Bit	name	Defaults	description

(15:0)	SW6 _ S TOP (15:0)	16'h04be I Band' SW6 · Start frequency setting (default start frequency 12.14MHz)

REG32H (default value of built-in register: 04EF)

Bit	name	Defaults	description
(15:0)	**SW7 _ START 16'h04ef** Band · SW7 · End point frequency setting (default end, 11:: frequency 12.63MHz)		
	(15 OJ		

R EG3 3H (default value of built-in register 1 05A8)

Bit	name	Defaults	description
(15:0)	SW7 _ S TOP	16'h05a8 Band · SW7 · End point frequency setting (default end frequency is 14.48MHz)	
	(15 OJ		

REG34H (default value of built-in register, 05B6).

Bit	name	Defaults	description
(15:0)	**SW8 _ START 16'h05b6** Band · SW8 · Start frequency setting (default start frequency 14.62MHz)		
	(15:0)		

REG35H (default value of built-in register: 0666)

Bit	name	Defaults	description
(15:0)	SW8 _ S TOP	16'h0666 Band · SW8 · end frequency rate Assume set (silent End , 1 + frequency rate 16 . 38MHz)	
	(15 OJ		

REG36H (default value of built-in register: 06A2)

Bit	name	Defaults	description
(15:0)	**SW9 _ START 16'h06 Li** Band · SW9 · Start frequency setting (default start frequency 16.98MHz)		
	(15:0)		

BK1198

REG37H (default value of built-in register ¡0757)

Bit	name	Defaults	description
(15:0)	SW9_STOP (15 OJ	16'h0757	Band'SW9', end frequency setting (default end J ten frequency 18.79MHz)

REG38H (default value of built-in register: 07E3)

Bit	name	Defaults	description
(15:0)	SW!O_START (15:0)	16'h07e3	Band'SW!O · Starting frequency setting (default starting frequency 20.19M ratio)

REG39H (default value of built-in register, 08A7)

Bit	name	Defaults	description
(15:0)	SW!O_STOP (15 OJ	16'h08a7	Band'SW!O · End frequency setting (default stop frequency 22.15MH z)

REG3AH (default value of built-in register: 0257)

Bit	name	Defaults	description
(15:0)	SW!!_START (15:0)	16'h0257	Band'SW!! · Starting frequency setting (default starting frequency 5.99MH z)

REG3BH (default value of built-in register: 0708)

Bit	name	Defaults	description
(15:0)	SW!!_STOP (15 OJ	16'h708	Band'SW!! · End frequency setting (default stop frequency 18M Hz)

REG3CH (default value of built-in register: 031F)

Bit	name	Defaults	description
(15:0)	SW12_START (15:0)	16'h03e8	Band'SW! 2 · Starting frequency setting (default starting frequency 7.99MH z)

REG3DH (default value of built-in register, 0708)

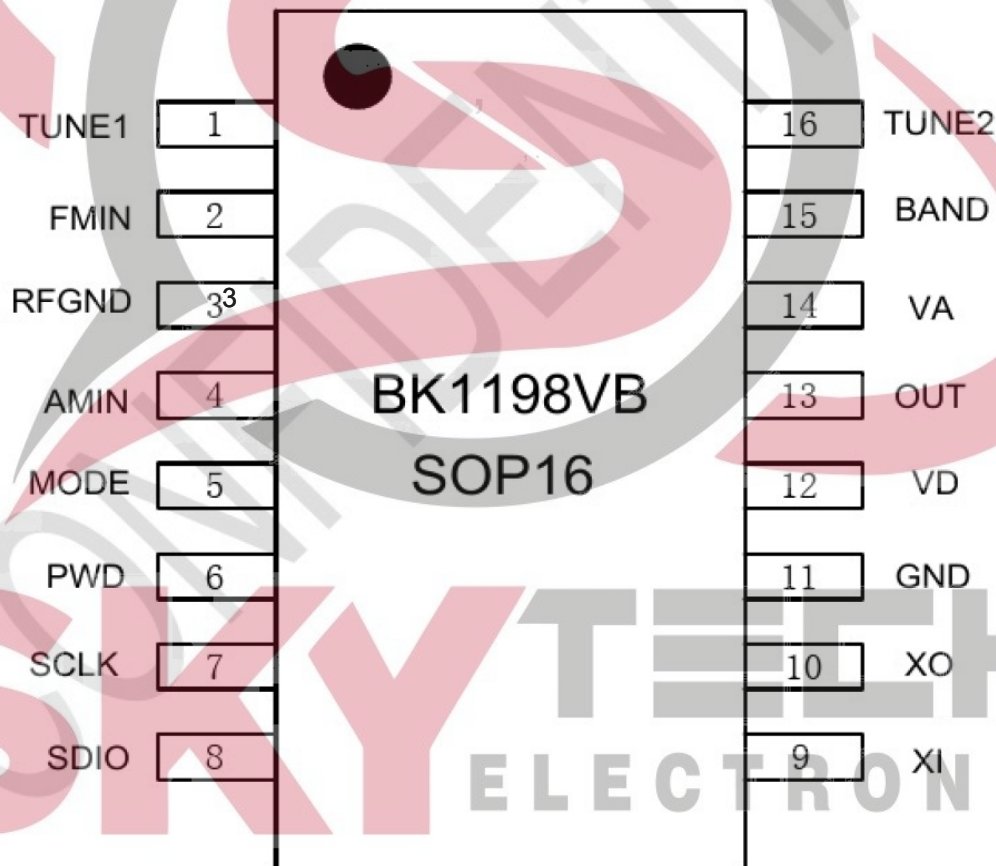| Bit	name	Defaults	description
(15:0)	SW!2_STOP (15 OJ	16'h0708	Band'SW! 2 · End frequency setting (default stop frequency 18M Hz)

5 pin definition
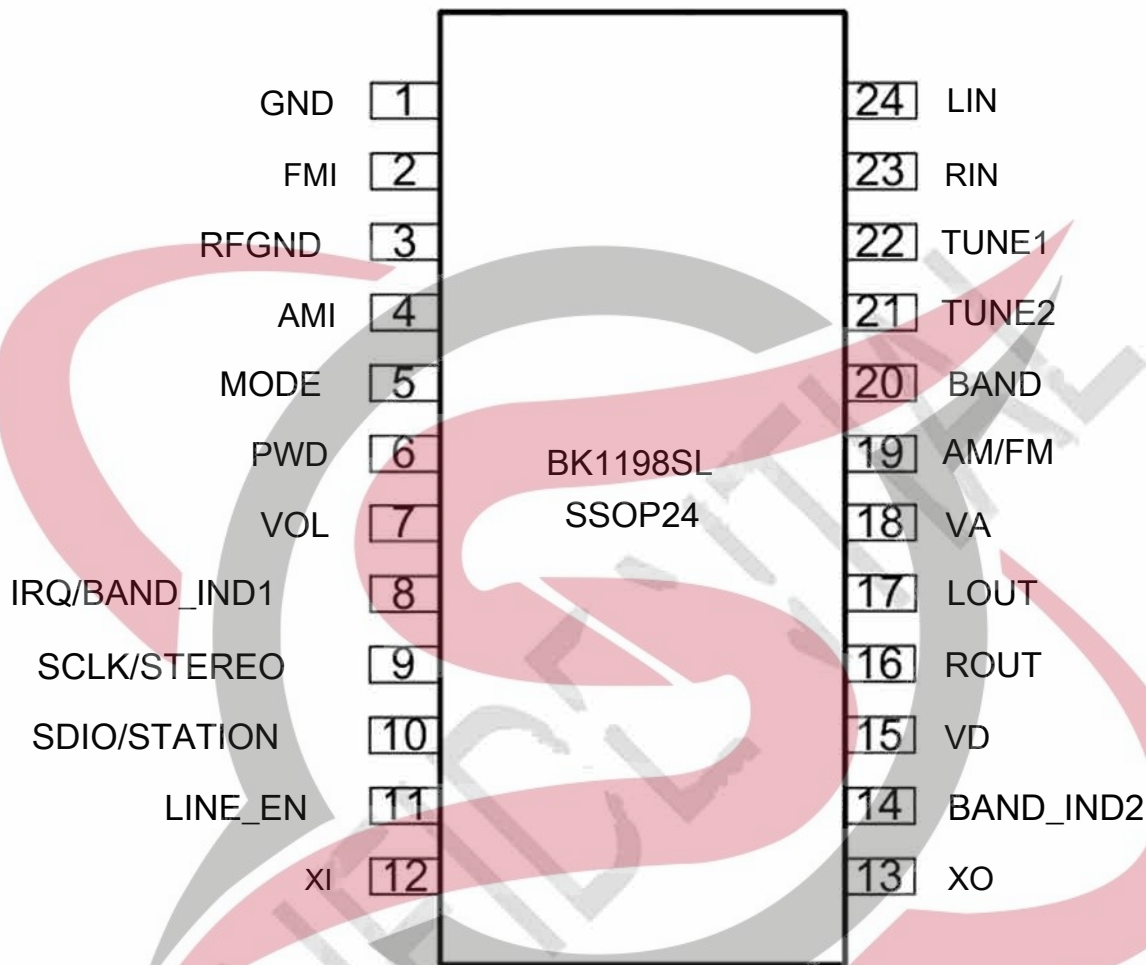

Figure 2BK1198VB SOP16 -pin package pin definition diagram

Figure 3BK1198SLSSOP 24-pln package pin definition diagram

Pin number	name	Description (SOP16 package pin name corresponds to the same function as SSOP24)
1	GND	Ground
2	FMI	FM signal input
3	RFGND	RF grounding
4	AMI	AM signal input (medium wave, short wave)
5	MODE	Working mode configuration selection
6	PWD	Power on/off control
7	VOL	Soundboard console
8	IRQ/BAND_INDI	The interrupt request/frequency setting is completed, the current working frequency or band index can be read. Show power output pin (multiplexed)
9	SCLK/STEREO	I2C communication clock line or stereo indicator output (multiplexed)

| 10	SDIO/STATION	I2C communication data line or effective station indication output (multiplexed)
11	LINE_EN	External audio input enable, effective when connected to high
12	XI	Crystal oscillator circuit input
13	XO	Crystal oscillator circuit output terminal or external clock input
14	BAND_ IND2	Band indicator status output
15	VD	Digital circuit power input
16	ROU T	Right channel output
17	L OU T	Left acoustic reverse output analog
18	VA	circuit power input
19	AM / FM	Band switching key switch input
20	B AND	Band selection input
21	TUNE2	Frequency point selection input
22	TUNE !	Band/frequency reference voltage
23	LIN	Left channel input
24	RIN	Right sound inverse input
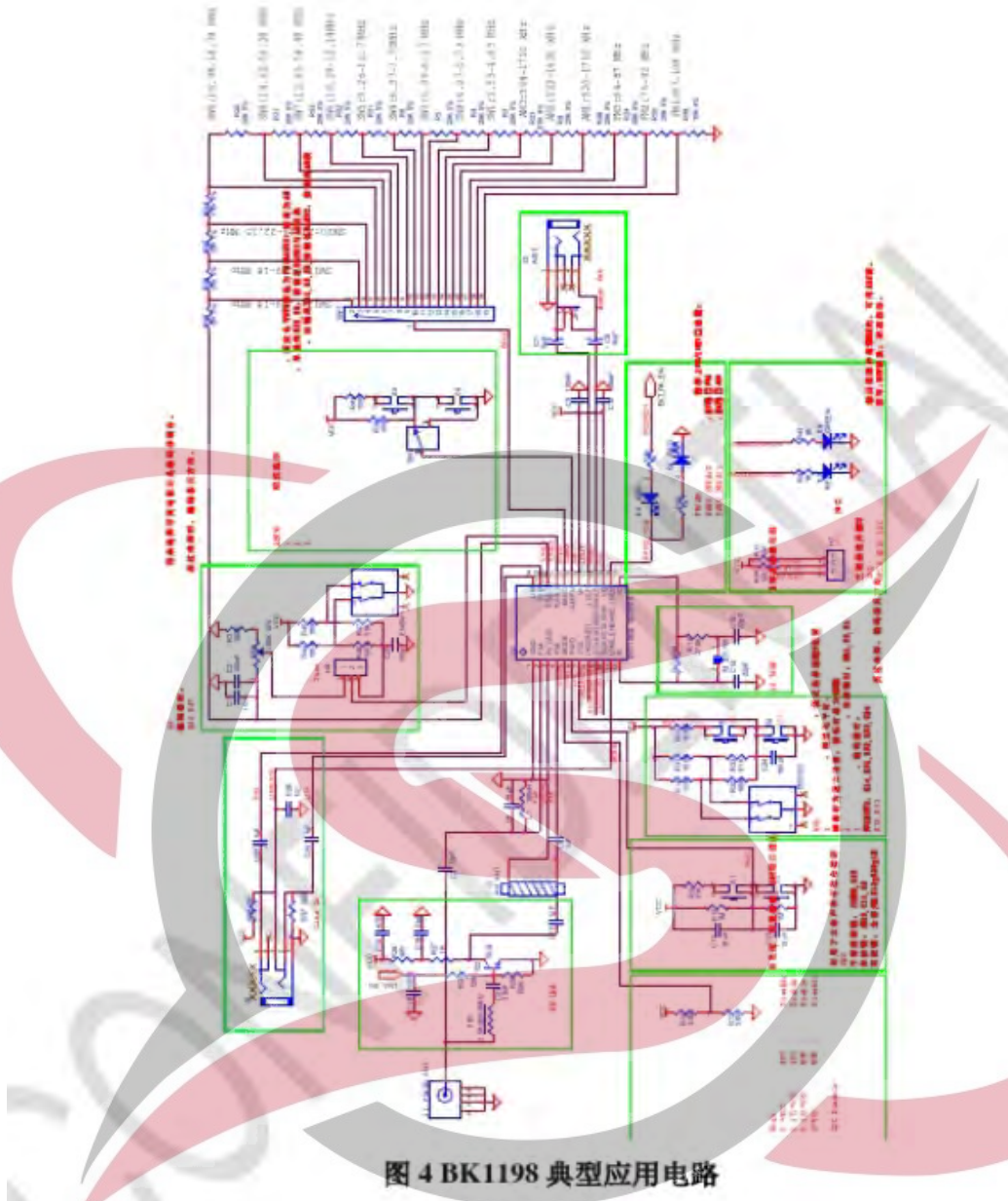
图 4 BK1198 典型应用电路

Figure 4 BK1198 typical application circuit

I. Please refer to the detailed application circuit diagram " BK II 98 angry Manual " and " single alone Annoyed original Diagram " :

2. As large as possible , FMI, AMI input terminal needs to keep the ground level and clean , Resonant circuit inductance and capacitance at FM input As close as possible to the FMI input of the chip :

3. The power decoupling capacitor is as close as possible to the chip and let go

4. The 32K crystal is as close to the chip as possible :

5. TUNEI, TUNE2 two lines are wiped and run in parallel One From:

6. The placement of isolation beads is also close to the headphone socket , The unisolated audio cable is as short as possible:

7. The ferrite magnet should be placed away from the chip One A certain distance to prevent interference from inside the chip, but also far away from the system Other noise sources (such as batteries) . Conditions allow Xu's words , magnetic Baton day Line and whole A system Put in between Set One Layer dry net of Ground Plane bend away :

8. Avoid using high-noise devices as much as possible , Such as C fas s -D PA , switch Electricity Source etc. : Such as Fruitless Avoid Free , high noise sound Device Piece Must be far away from the low noise receiver , or Put P C B board child of Two and :

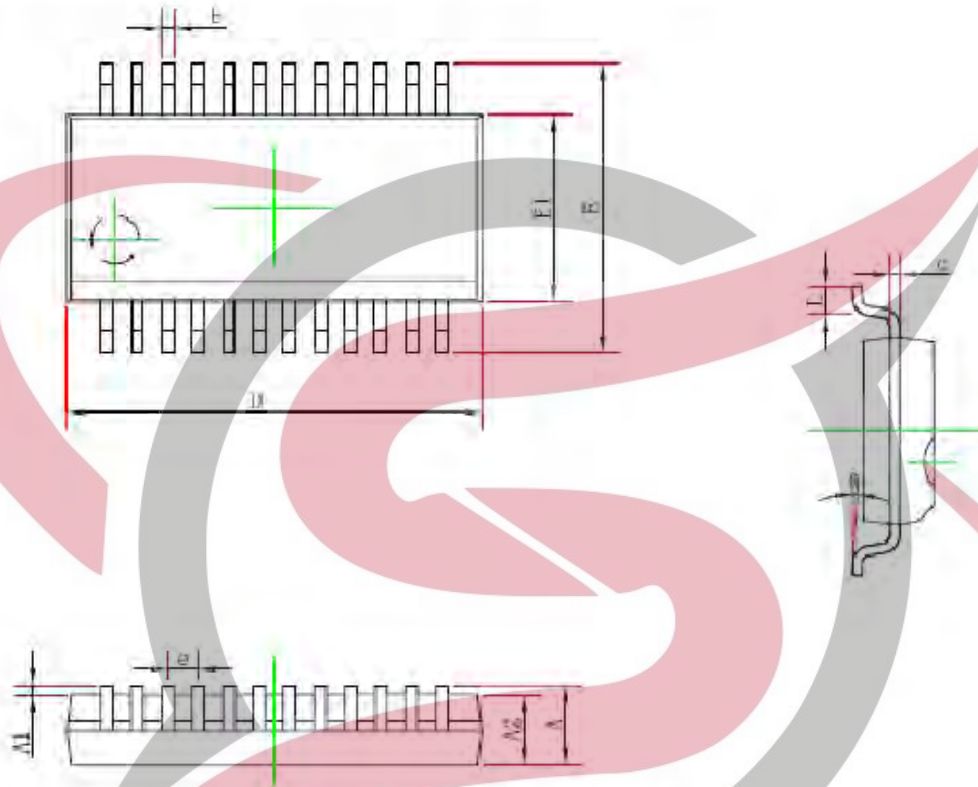## 7 封装信息

BK1198 提供 SSOP 24-pin 封装。以下是详细的封装信息:

图 5SSOP- 24 Pin 封装图

表 8SSOP- 24 Pin 封装尺寸

参数	最小	最大	单位
A	---	1.750	mm
A1	0.100	0.250	mm
A2	1.250	---	mm
b	0.203	0.305	mm
c	0.102	0.254	mm
D	8.450	8.850	mm
E1	3.800	4.000	mm
E	5.800	6.200	mm
e	0.635（BSC）		
L	0.400	1.270	mm
Θ	0°	8°	

BK1198

BK1198 提供 SOP -16pin 封装。以下是详细的封装信息：
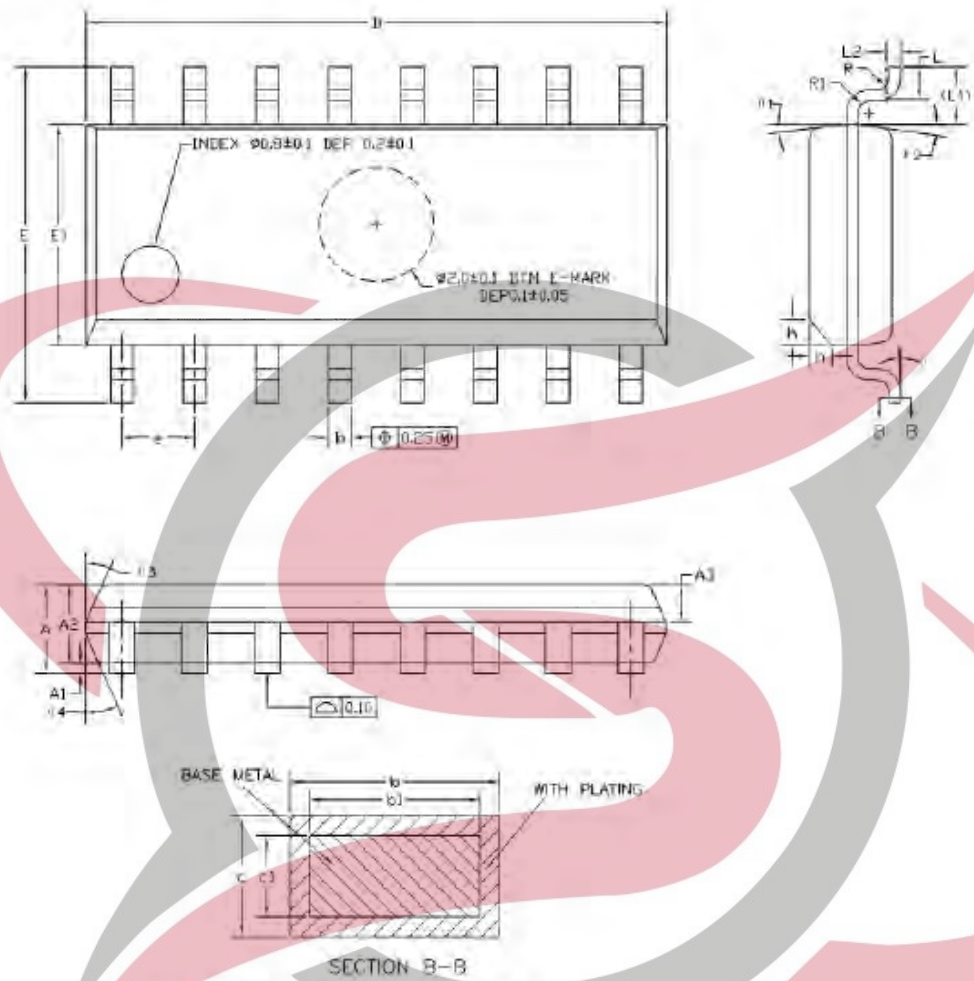
图 6 SOP - 16 Pin 封装图

表 8 SSOP- 24 Pin 封装尺寸

参数	最小	最大	单位
A	---	1.750	mm
A1	0.100	0.250	mm
A2	1.250	---	mm
b	0.31	0.51	mm
c	0.102	0.254	mm
D	9.850	10.150	mm
E1	3.800	4.200	mm
E	5.800	6.200	mm
e	1.27 （BSC)		
L	0.400	1.270	mm
θ	0°	8°	

焊层物质厚度

物质	厚度	单位
Ni	0.5-2.0	um
Pd	0.02-0.15	um
Au	0.003-0.015	um

储存注意事项

1. 储存条件温度在 40℃以下，相对湿度 90%以下，在真空密封袋中的寿命为 12 个月。

2. 封装片峰值温度 260℃。

3. 当真空包装袋打开后，器件进行回流焊或者其他更高温度的工序时必须满足以下条件：

   a) 工厂条件为温度小于 40℃，相对湿度小于 60%，168 小时内操作。

   b) 存储在相对湿度 10%的条件下。

8 回流焊信息
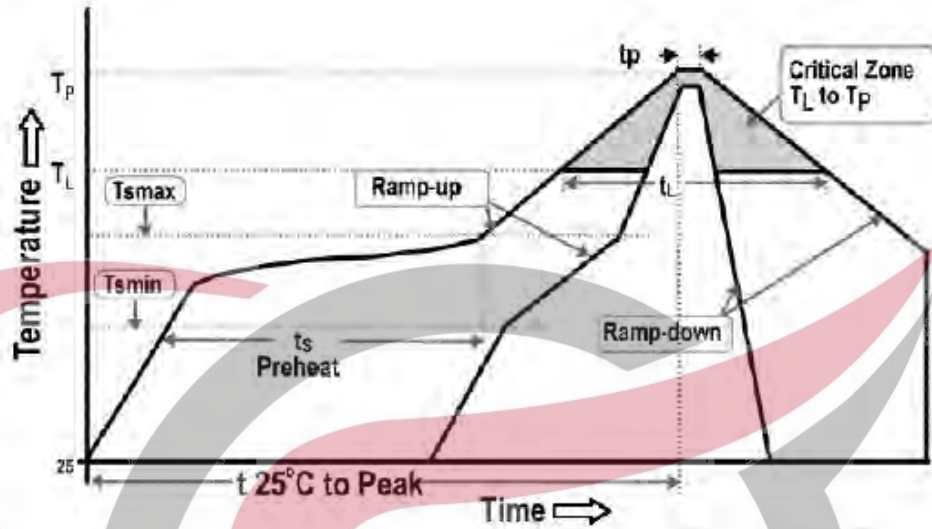
图 7 分类回流焊焊曲线

曲线特性		规格
平均上升速率（从 Tsmax 到 tp）		最大3 C/秒
预热	最小温度（T_{smin}）	150 C
	最大温度（T_{smax}）	200 C
	时间（t_s）	60-180秒
温度保持时间	温度（T_L）	217 C
	时间（t_L）	60-150秒
峰值温度（T_p）		260 C
在实际峰值温度5 C 范围之内的保持时间（t_p）		20-40秒
下降速率		最大6 C/秒
25 C 到峰值温度的时间		最大8分钟

符合RoHS标准

按照2002/95/EC(RoHS)标准，该产品不含有铅、汞、镉、六价铬、PBB和PBDE这些物质。

ESD敏感度

集成电路都是ESD敏感的，他们会被静电破坏。所以在接触这些器件时必须使用正确的ESD保护技术。

9 订购信息

Part number	封装	package	MOQ (ea)
BK1198SL	SSOP24	Tube	3K
BK1198VB	SOP16		3K

备注
MOQ   Small Order Basket

10   Other references

BK1198   Application Manual
BK1198MTP Burning software

11 update records

version	Summary of changes	E period	Author
Rev.0.1	initial version	09-27-2013	J\V
Rev.LO	Official Firefly version	03=05-2014	JW
Rev.II	Add support for Line-in function, modify default	06-24-2014	J\V
Rev.1.2	frequency and add SOP16 package	12-02-2014	JW