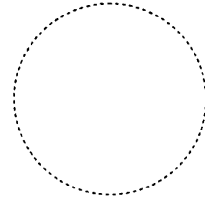


REFERENCE DATA

SPECIFICATION

TABLE OF CONTENTS

1. Purpose
2. TOKO Part Number
3. Function
4. Applications
5. Structure
6. Package Outline
7. Absolute Maximum Ratings
8. Electrical Characteristics
9. Test Circuit
10. Pin Assignment
Block Diagram
11. Package Outline Dimensions/Marking
12. Cautions
13. Others



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REFERENCE DATA

1. Purpose

This specification is applicable to TK14586V which is designed for FM-IF system in communication apparatus.

2. TOKO Part Number

TK14586V

3. Function

Narrow Band FM IF System

4. Applications

Communication Apparatus

5. Structure

The structure is a silicon monolithic bipolar circuit

6. Package Outline

28Lead—Thin Shrink Small Outline Package TSSOP-28

7. Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit	Condition
Supply Voltage	VCC MAX	6.0	V	
Power Dissipation	Pd	400	mW	※
Operating Voltage Range	VOP	2.5 ~ 5.5	V	
Storage Temperature Range	Tstg	-55 ~ +150	°C	
Operating Temperature Range	TOP	-20 ~ +75	°C	
IF Amp. Operating Frequency Range	fIF	~ 21	MHz	
Demodulator Operating Frequency Range	fOP	5 ~ 21	MHz	

※ Pd must be derated at rate of 3.2mW/°C for operation at 25°C.

• This IC is implemented on high frequency process, therefore some terminals are sensitive ESD.

8. Electrical Characteristics (1)

Condition : $T_a=25^{\circ}\text{C}$, $V_{cc}=2.7\text{V}$, $f_{in}=10.7\text{MHz}$
 (Supply current don't include comparator output current)

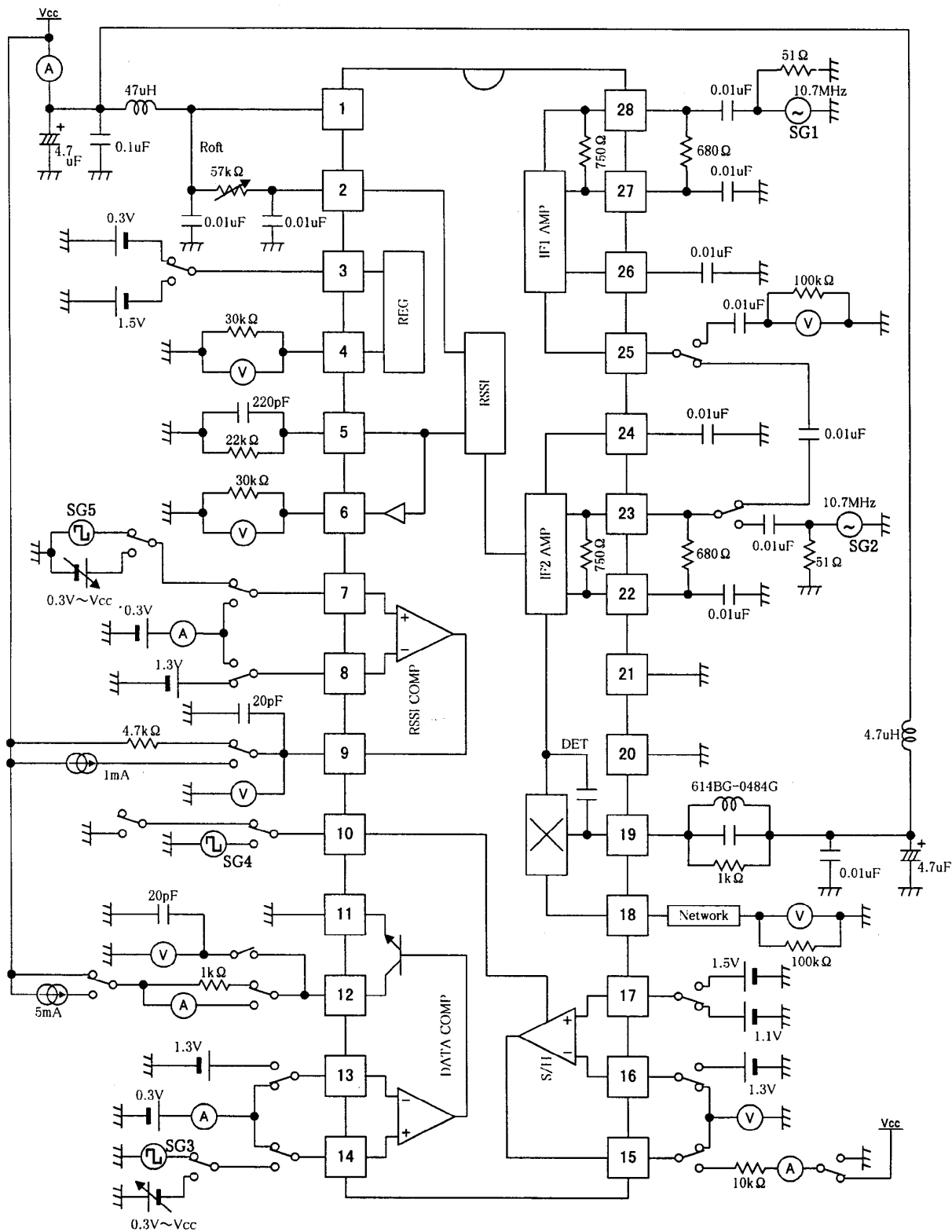
Parameter	Symbol	Value			Unit	Condition
		MIN	TYP	MAX		
Supply Current 1	ICC 1		5.4	7.4	mA	No Input Signal
Supply Current 2	ICC 2		1.2	2.3	mA	No Input Signal, P.S ON
IF1 Amp. Input Resistance	Rin		750		Ω	DC Measurement
IF1 Amp. Output Resistance	RO		260		Ω	
IF2 Amp. Input Resistance	RLA		750		Ω	DC Measurement
IF1 Amp. Gain	GA	33	40	46	dB	SG1 Input:-100dBm
IF2 Amp. SINAD12dB	LA		-70		dBm	SG2 Input, Dev= $\pm 25\text{kHz}$, fm=1kHz, LPF=30kHz, HPF=400Hz
RSSI						
Slope	ΔRSSI	3	9	15	mV/dB	IF1 Input:-51dBm \sim -39dBm
Relative Accuracy	RA			± 3	dB	IF1 Input:-51dBm \sim -39dBm
Output Voltage 1	Vo 1	600	800	1000	mV	IF1 Input:-60dBm, Rof=22k Ω
Output Voltage 2	Vo 2	1050	1250	1450	mV	IF1 Input:-20dBm, Rof=22k Ω
Offset 1	Voo 1			900	mV	IF1 Input:-45dBm, Rof=10k Ω
Offset 2	Voo 2	820			mV	IF1 Input:-45dBm, Rof=57k Ω
Rise Time 1	tr 1			60	uSec	Input Signal OFF \rightarrow ON, Input Level=-50dBm, CL=220pF
Fall Time 1	tf 1			60	uSec	Input Signal ON \rightarrow OFF, Input Level=-50dBm, CL=220pF
Rise Time 2	tr 2			60	uSec	P/S L \rightarrow H, Input Level=-50dBm, CL=220pF
Fall Time 2	tf 2			250	uSec	P/S H \rightarrow L, Input Level=-50dBm, CL=220pF
Demodulator						
Output Voltage	Vo		150		mVrms	IF2 Amp. Input Level=-20dBm, fmod=1kHz, DEV= $\pm 25\text{kHz}$
Total Harmonic Distortion	THD			3	%	
Output Voltage High Level	VOH	1.7			V	Output Saturation High Level
Output Voltage Low Level	VOL			0.3	V	Output Saturation Low Level
Frequency Response	fr			± 0.7	dB	IF2 IN=-20dB, C=100pF, R=100 Ω fmod=50Hz \sim 40kHz, DEV= $\pm 25\text{kHz}$

Electrical Characteristics (2)

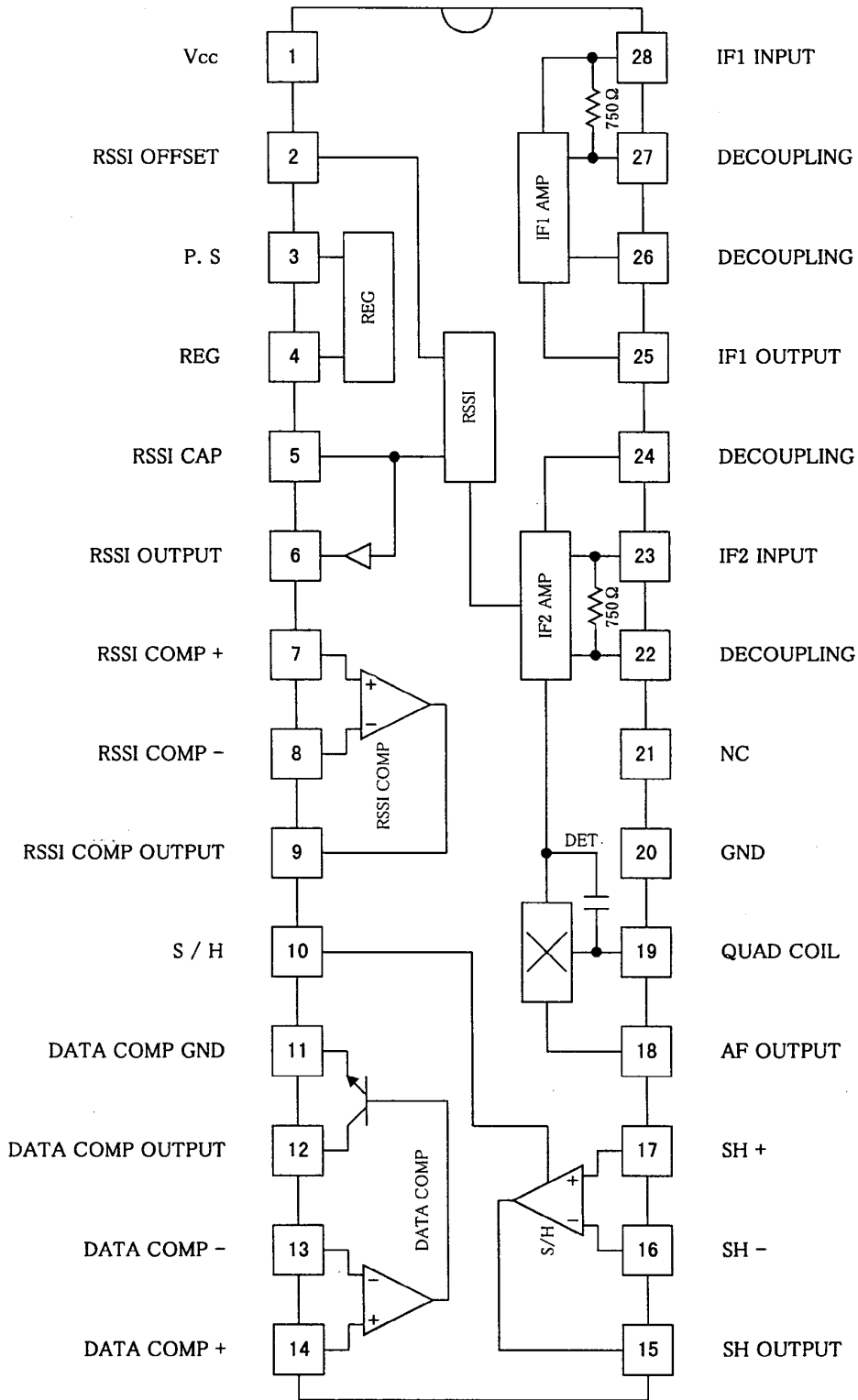
Condition : $T_a=25^{\circ}\text{C}$, $V_{CC}=2.7\text{V}$, $f_{in}=10.7\text{MHz}$
 (Supply current don't include comparator output current)

Parameter	Symbol	Value			Unit	Condition
		MIN	TYP	MAX		
Regulator Output Voltage	VOR		1.22		V	$I_o=40\mu\text{A}$
Data-Comparator						
Saturation Voltage	Vsat 1			0.5	V	$V_{in}=1.1\text{V}$, $I_{SINK}=5\text{mA}$ (12Pin)
Leak Current	I_{Leak}			1.0	μA	
Input Bias Current	$I_{IB 1}$	-200			nA	
Rise Time	tr 3			200	nSec	$V_{in}=\text{DC}1.3\text{V}$, 100kHz, 0.5Vp-p, $R_L=1\text{k}\Omega$, $C_L=20\text{pF}$
Fall Time	tf 3			200	nSec	
Rise Propagation Delay Time	tdr 1			500	nSec	
Fall Propagation Delay Time	tdf 1			500	nSec	
Input Dynamic Range	Din 1		$0.3\sim V_{CC}$		V	$V_{ref}=1.3\text{V}$
Input Offset Voltage	V_{IO}			5	mV	$V_{in}=1.3\text{V}$
RSSI-Comparator						
Saturation Voltage	Vsat 2			0.4	V	$V_{in}=1.1\text{V}$, $I_{SINK}=1\text{mA}$ (9Pin)
Input Bias Current	$I_{IB 2}$	-250			nA	
Rise Time	tr 4		150	500	nSec	$V_{in}=\text{DC}1.3\text{V}$, 100kHz, 0.5Vp-p, $R_L=4.7\text{k}\Omega$, $C_L=20\text{pF}$
Fall Time	tf 4		150	500	nSec	
Rise Propagation Delay Time	tdr 2		100	500	nSec	
Fall Propagation Delay Time	tdf 2		200	500	nSec	
Input Dynamic Range	Din 2		$0.3\sim V_{CC}$		V	$V_{ref}=1.3\text{V}$
Sample/Hold						
Leak Current High Level	I_{LH}			100	nA	
Leak Current Low Level	I_{LL}	-100			nA	
Control Voltage High Level	V_{CH}	$0.8V_{CC}$			V	
Control Voltage Low Level	V_{CL}			$0.13V_{CC}$	V	
Output High Level Off Current Time	toffH			3	μSec	Sample→Hold, $V_S=1.5\text{V}$
Output Low Level Off Current Time	toffL			3	μSec	Sample→Hold, $V_S=1.1\text{V}$

9. Test Circuit



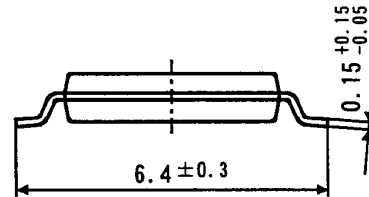
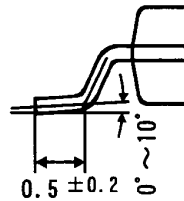
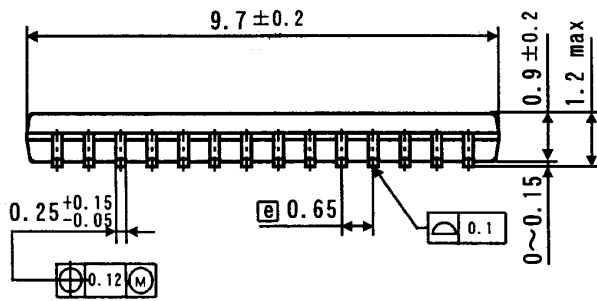
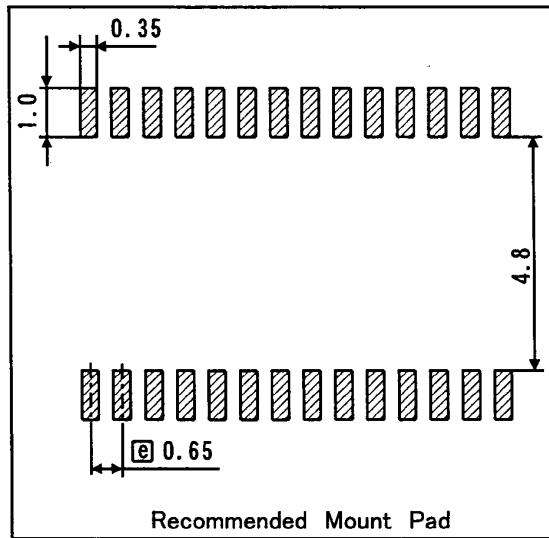
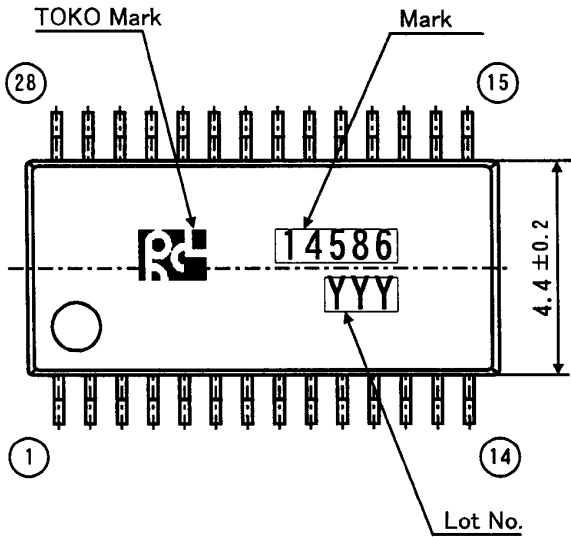
10. Pin Assignment / Block Diagram



11. Package Outline Dimensions/Marking

REFERENCE DATA

TSSOP-28



Molded Resin	:	Epoxy Resin
Lead Frame	:	Copper Alloy
Terminal Treatment	:	Solder Plating(5~15 μ m)
Mark Method	:	Ink or Laser
Country of Origin	:	Philippines
Weight	:	0.10g

Unit : mm
 General Tolerance : ± 0.2

12. Cautions**REFERENCE DATA**

12-1. WARNINGN - Life support applications policy

TOKO,INC. products shall not be used within any life support systems without the specific written consent of TOKO,INC. A life support system is a product or system intended to support or sustain life which, if it fails, can be reasonably expected to result in a significant personal injury or death.

12-2. Examples of characteristics given here are typical for each product and being technical data, these do not constitute a guarantee of characteristics or conditions of use.

The circuits shown in this specification are intended to explain typical applications of the products concerned. Accordingly, TOKO is not responsible for any circuit problems, nor for any infringement of third party patents or any other intellectual property rights that may arise from the use of these circuits. Moreover, this catalog does not signify that TOKO agrees implicitly or explicitly to license any patent rights or other intellectual property rights which it holds.

12-3. This part is not designed for anti-nuclear radiation structure.

Please do not use this part in an environment where nuclear radiation may occur.

12-4. We may not accept the return of parts damaged by careless handling.

13. Others

13-1. No Ozone Depleting Substances were used in the manufacture of these parts.

13-2. No material used in this part contains brominated PBBs or PBBs as the flame-retardant.

13-3. In the event of any confusion concerning this "Specifications", both parties shall settle such confusion through reasonable discussions.

13-4. The announcement number of CISTEC list is as follows.

TK14586***** No. : 0002500010000371 Announcement time : August 1997

13-5. For the cautions to storage and device mounting, please refer to the Quality Specification No. QH7-B114.

13-6. For the package, please refer to the Package Specification No. DP3-J004.