

TELEPHONE SPEECH NETWORK IC

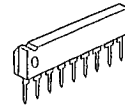
■ GENERAL DESCRIPTION

The NJM2105 is a Telephone Speech Network IC produced in a 9-pin single-in-line package which complies with foreign regulations such as FCC and DOC rules.

This IC incorporates adjustable transmit, receive and sidetone functions, a DC loop interface circuit, tone dialer interface and a regulated output voltage for a pulse/tone dialer. Also included is a gain control circuit to keep constant transmission/reception levels under loop current variations.

External components around this IC are minimized and it is the most suitable speech network IC for a compact size portable telephone.

■ PACKAGE OUTLINE

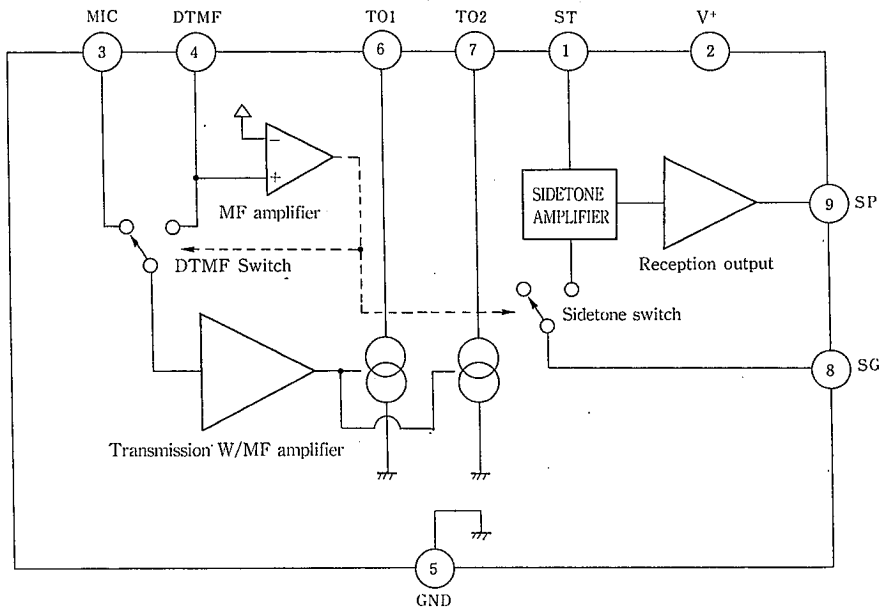


NJM2105S

■ FEATURES

- Operates with 20 to 120 mA of loop current
- Either voice signal or DTMF is selected for transmission.
- Either line input or DTMF sidetone is selected for receiver output.
- DTMF sidetone level can be controlled by external components (C, R).
- ECM, Magnetic, Dynamic, Ceramic etc., type are applicable for MIC.
- Dynamic, Ceramic etc., type are applicable for receiver.
- Due to wide operation voltage from 2.5 to 15 volts, parallel phone performance is excellent, 600, 601 type are possible to connect in parallel.
- SIP-9 with minimum external components.
- Package Outline SIP9
- Bipolar Technology

■ BLOCK DIAGRAM



NJM2105S

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

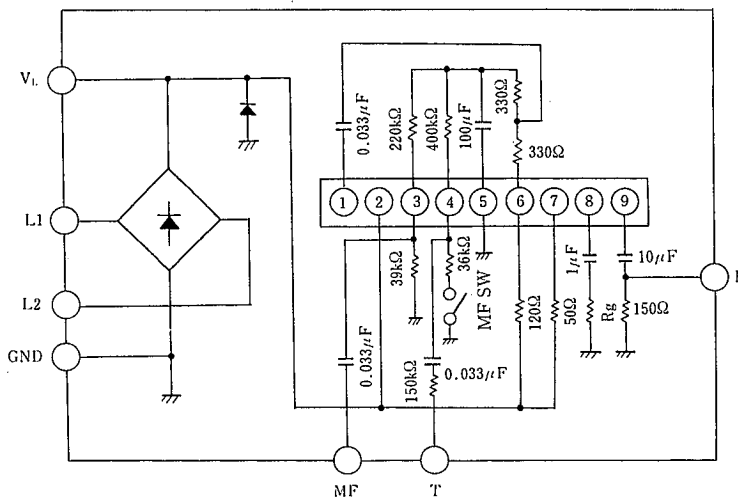
PARAMETER	SYMBOL	RATINGS	UNIT
Line voltage	V <sub>L</sub>	20	V
Line current	I <sub>L</sub>	300	mA
Power dissipation	P <sub>D</sub>	700	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

■ ELECTRICAL CHARACTERISTICS

(V<sup>\*</sup>=5V, Ta=25°C)

PARAMETER	SYMBOL	FIG.	CONDITION	MIN.	TYP.	MAX.	UNIT
Line voltage	V <sub>L</sub>	1	I <sub>L</sub> =20mA	3.0	3.5	4.0	V
		1	I <sub>L</sub> =120mA	10.5	11.5	13.5	V
Transmission amplifier gain	G <sub>T</sub>	2	I <sub>L</sub> =20mA	36.0	38.0	40.0	dB
		2	I <sub>L</sub> =120mA	36.0	38.0	40.0	dB
Reception amplifier gain	G <sub>R</sub>	4	I <sub>L</sub> =20mA	-10.0	-8.0	-6.0	dB
		4	I <sub>L</sub> =120mA	-10.0	-8.0	-6.0	dB
MF amplifier gain	G <sub>MF</sub>	3	I <sub>L</sub> =20mA	10.0	12.0	14.0	dB
		3	I <sub>L</sub> =120mA	10.0	12.0	14.0	dB
Transmission Dynamic Range	D <sub>T</sub>	2	Distortion 4% I <sub>L</sub> =20mA	2.0	—	—	V <sub>p,p</sub>
		2	Distortion 4% I <sub>L</sub> =120mA	5.0	—	—	V <sub>p,p</sub>
Reception Dynamic Range	D <sub>R</sub>	4	Distortion 10% I <sub>L</sub> =20mA	0.3	—	—	V <sub>p,p</sub>
		4	Distortion 10% I <sub>L</sub> =120mA	0.4	—	—	V <sub>p,p</sub>
Receiving Source Current	I <sub>S</sub>	—	I <sub>L</sub> =20~120mA	1.0	—	—	mA
Receiving output	V <sub>RO</sub>	—	I <sub>L</sub> =20~120mA	1.05	1.50	1.75	V

■ TEST CIRCUITS



## TEST CIRCUITS

Fig. 1

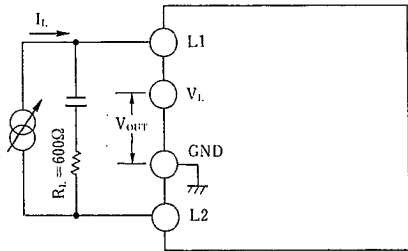


Fig. 2

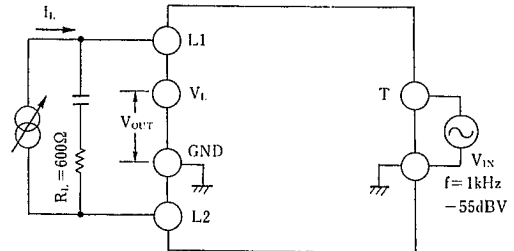


Fig. 3

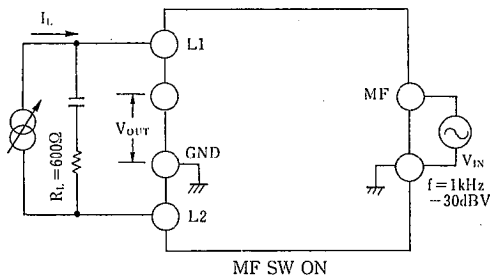
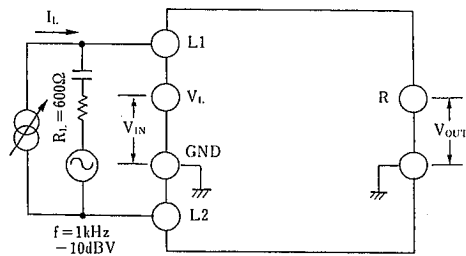
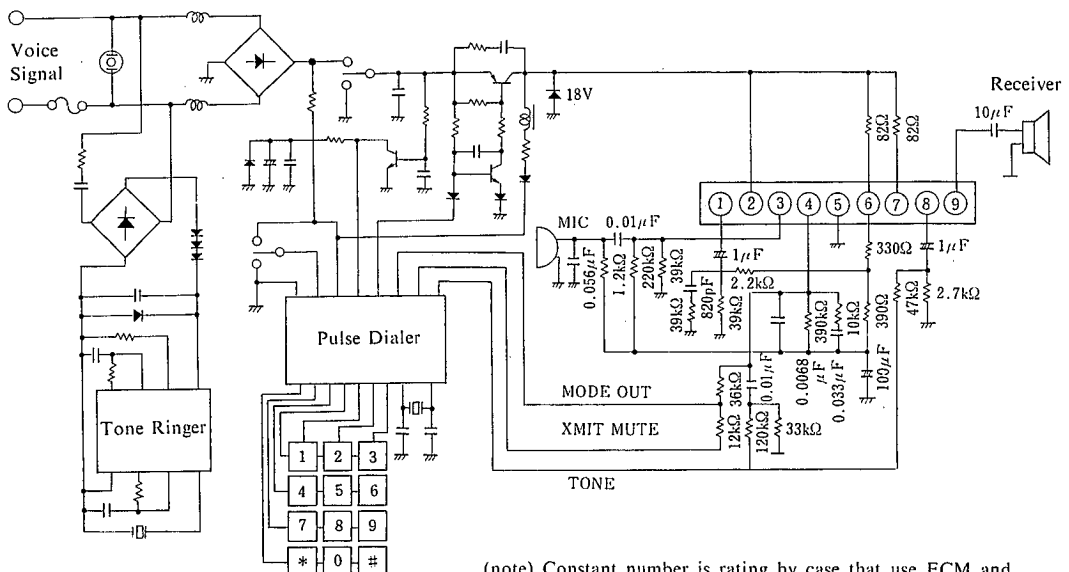


Fig. 4



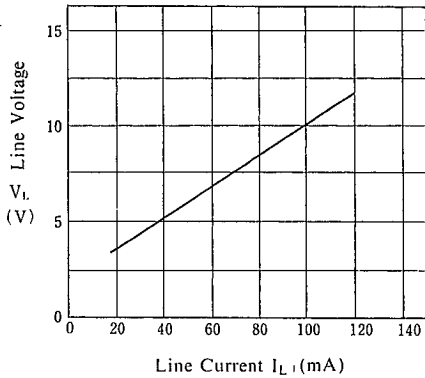
## TYPICAL APPLICATION



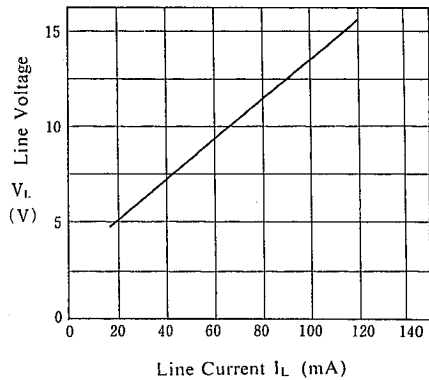
(note) Constant number is rating by case that use ECM and Dynamic Speaker.

■ TYPICAL CHARACTERISTICS

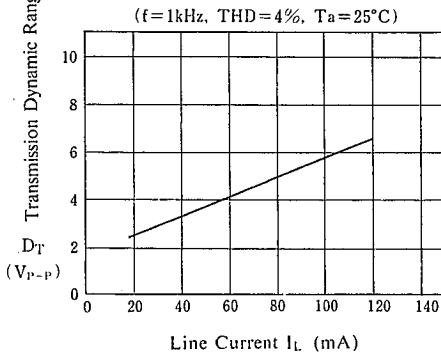
Line Voltage vs. Line Current  
( $T_a=25^\circ\text{C}$ )



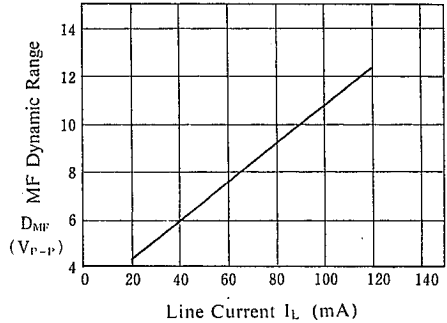
MF Line Voltage vs. Line Current  
(MF.SW.ON,  $T_a=25^\circ\text{C}$ )



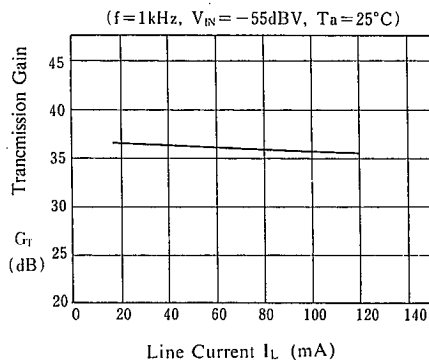
Transmission Dynamic Range vs. Line Current  
( $f=1\text{kHz}$ , THD=4%,  $T_a=25^\circ\text{C}$ )



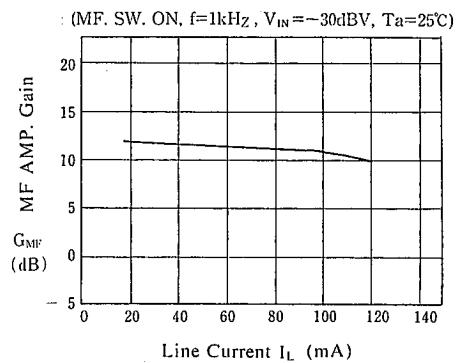
MF Dynamic Range vs. Line Current  
(MF. SW. ON,  $f=1\text{kHz}$ , THD=4%,  $T_a=25^\circ\text{C}$ )



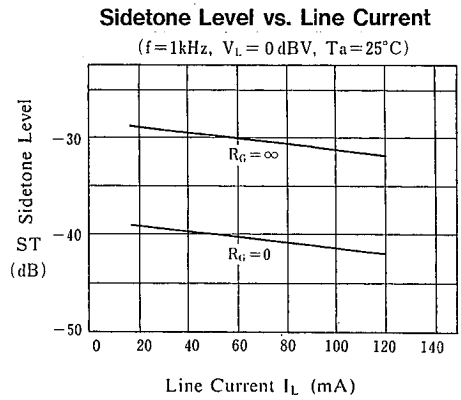
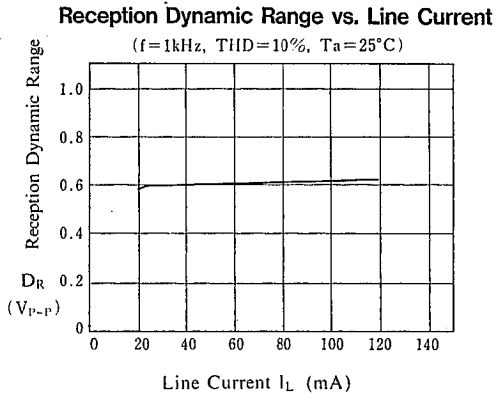
Transmission Gain vs. Line Current



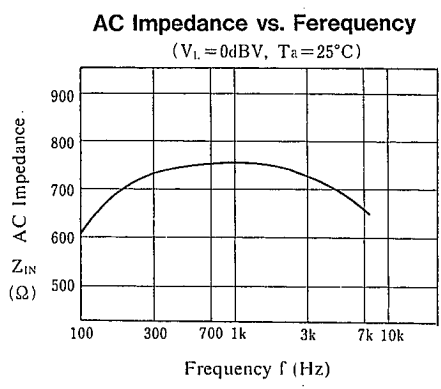
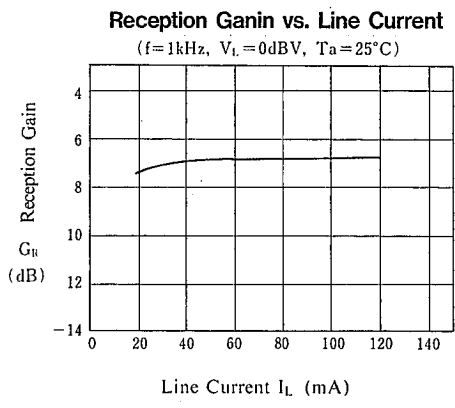
MF AMP. Gain vs. Line Current



## ■ TYPICAL CHARACTERISTICS



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## MEMO

[CAUTION]

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