TELEPHONE SPEECH NETWORK IC

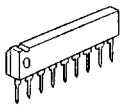
■ GENERAL DESCRIPTION

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 transmition/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

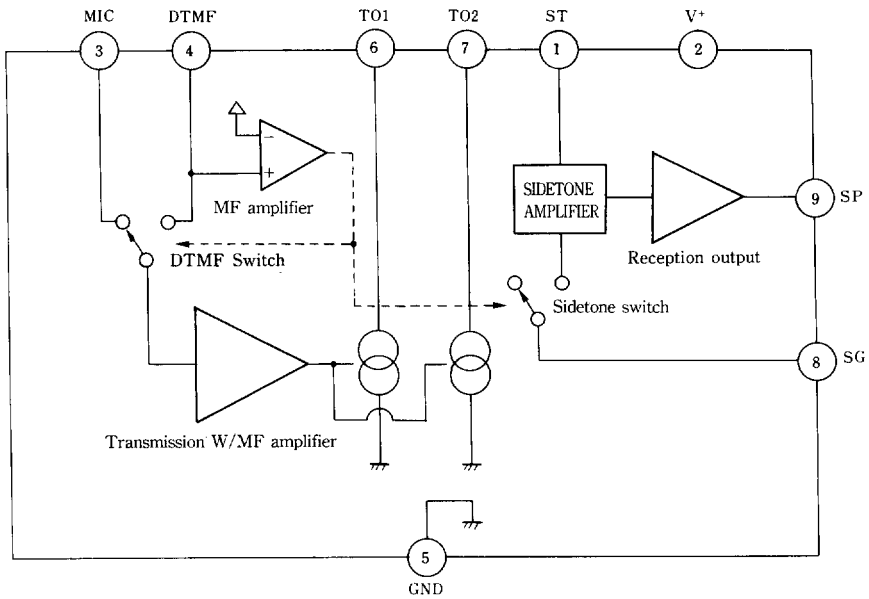


NJM2105S

■ 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 controled 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℃)

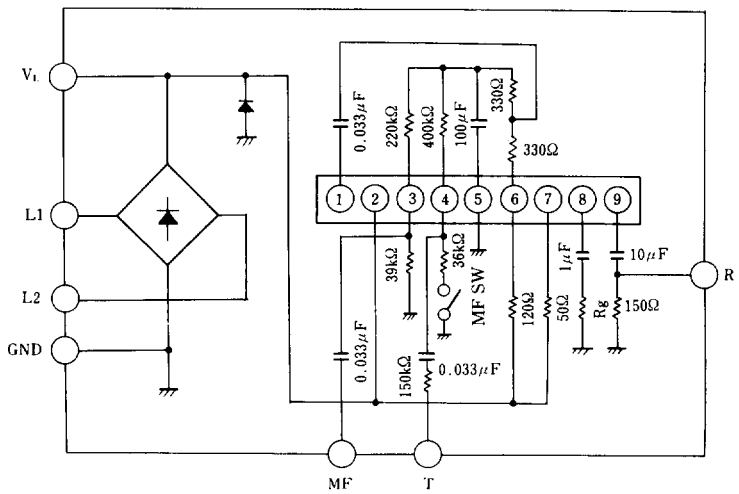
PARAMETER	SYMBOL	RATINGS	UNIT
Line voltage	V_L	20	V
Line current	I_L	300	mA
Power dissipation	P_D	700	mW
Operating Temperature Range	T_{opr}	−20～+75	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(V^+=5V, Ta=25℃)

PARAMETER	SYMBOL	FIG.	CONDITION	MIN.	TYP.	MAX.	UNIT
Line voltage	V_L	1	I_L =20mA	3.0	3.5	4.0	V
		1	I_L =120mA	10.5	11.5	13.5	V
Transmission amplifier gain	G_T	2	I_L =20mA	36.0	38.0	40.0	dB
		2	I_L =120mA	36.0	38.0	40.0	dB
Reception amplifier gain	G_R	4	I_L =20mA	−10.0	−8.0	−6.0	dB
		4	I_L =120mA	−10.0	−8.0	−6.0	dB
MF amplifier gain	G_{MF}	3	I_L =20mA	10.0	12.0	14.0	dB
		3	I_L =120mA	10.0	12.0	14.0	dB
Transmission Dynamic Range	D_T	2	Distortion 4% I_L =20mA	2.0	—	—	V_{P-P}
		2	Distortion 4% I_L =120mA	5.0	—	—	V_{P-P}
Reception Dynamic Range	D_R	4	Distortion 10% I_L =20mA	0.3	—	—	V_{P-P}
		4	Distortion 10% I_L =120mA	0.4	—	—	V_{P-P}
Receving Source Current	I_S	—	I_L =20～120mA	1.0	—	—	mA
Receiving output	V_{RO}	—	I_L =20～120mA	1.05	1.50	1.75	V

■ TEST CIRCUITS



■ TEST CIRCUITS

Fig. 1

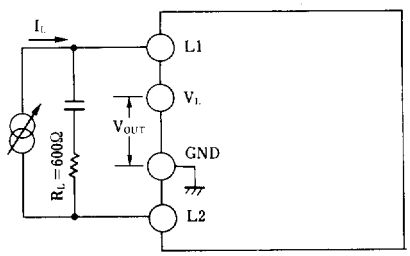


Fig. 2

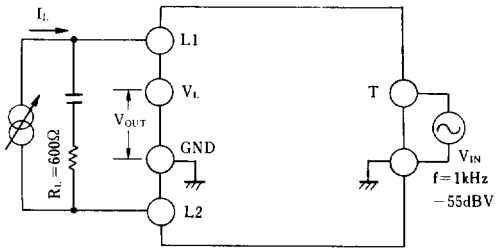
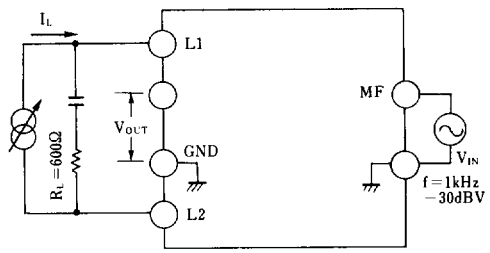
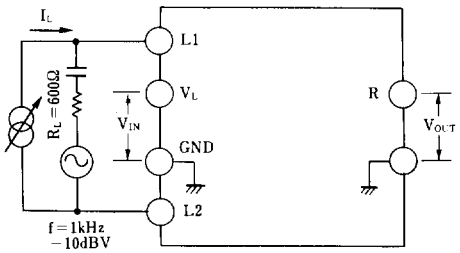


Fig .3

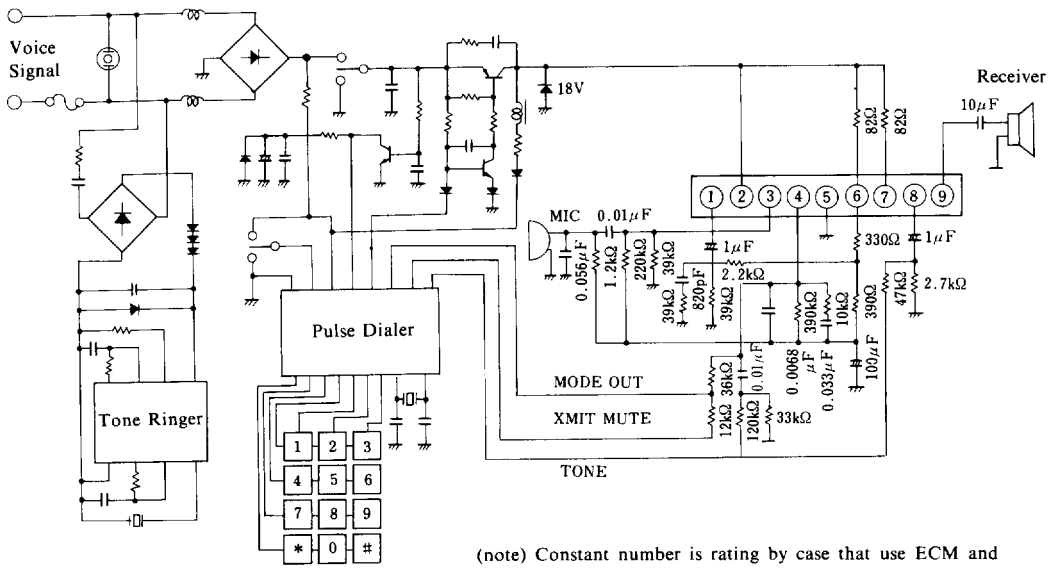


MF SW ON

Fig. 4



■ TYPICAL APPLICATION

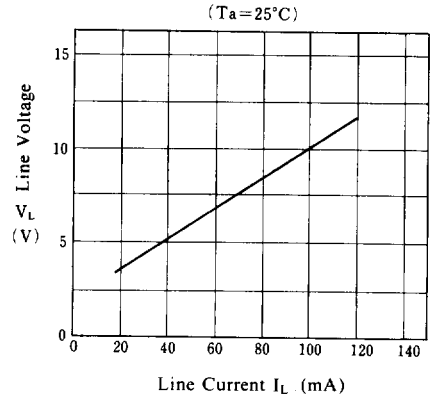


(note) Constant number is rating by case that use ECM and Dynamic Speaker.

■ TYPICAL CHARACTERISTICS

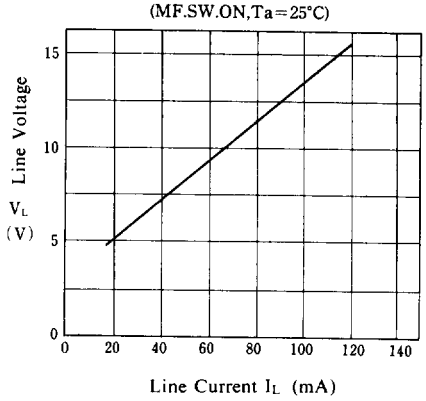
Line Voltage vs. Line Current

(Ta=25°C)



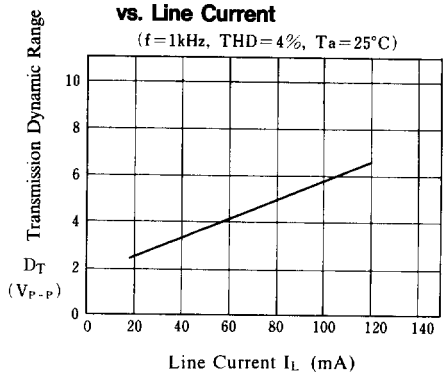
MF Line Voltage vs. Line Current

(MF.SW.ON,Ta=25°C)



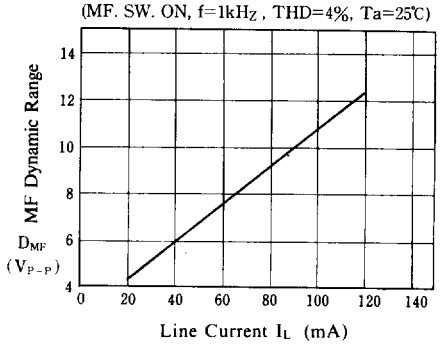
Transmission Dynamic Range vs. Line Current

(f=1kHz, THD=4%, Ta=25°C)



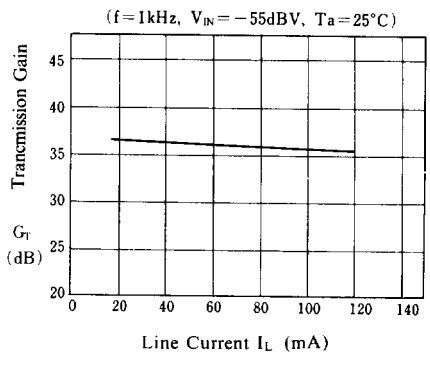
MF Dynamic Range vs. Line Current

(MF. SW. ON, f=1kHz, THD=4%, Ta=25℃)



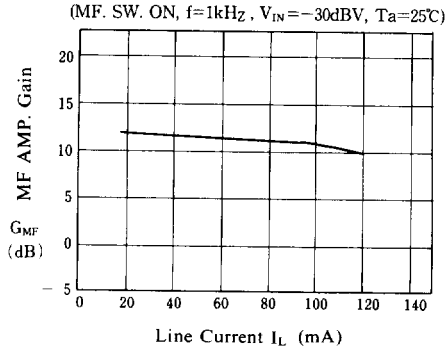
Transmission Gain vs. Line Current

(f=1kHz, V_{IN}=−55dBV, Ta=25°C)



MF AMP. Gain vs. Line Current

(MF. SW. ON, f=1kHz, V_{IN}=−30dBV, Ta=25℃)



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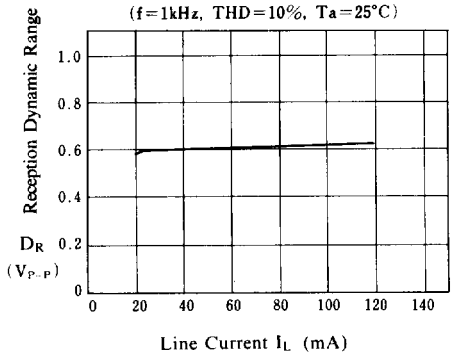
■ TYPICAL CHARACTERISTICS

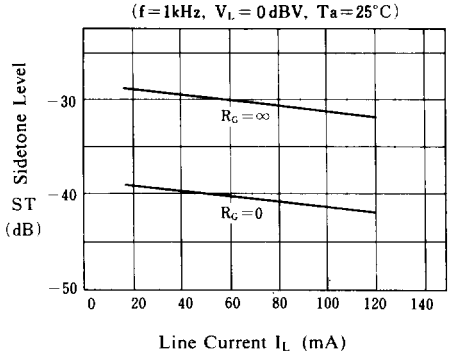
Reception Dynamic Range vs. Line Current

(f=1kHz, THD=10%, Ta=25°C)



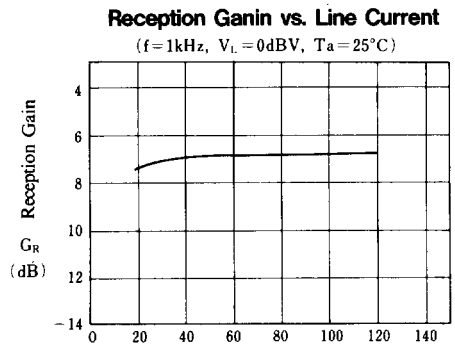
Sidetone Level vs. Line Current

(f=1kHz, V_L=0dBV, Ta=25°C)



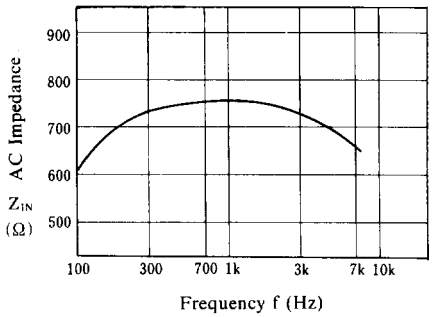
Reception Ganin vs. Line Current

(f=1kHz, V_L=0dBV, Ta=25°C)



AC Impedance vs. Ferequency

(V_L=0dBV, Ta=25°C)



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