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SINGLE CHIP TELEPHONES

The SA253x Family is a range of CMOS integrated circuits containing all the functions needed to form high performance electronic telephones. These universal single chip telephone IC's incorporate Pulse/Tone Switchable Dialling, Tone Ringer and a high quality Speech Circuit.

The versatility of the SA253x allows it to meet the wide range of PTT requirements and uses significantly fewer components than comparable less integrated solutions. The simplicity of the SA253x concept improves the reliability.

The universal and comfortable operating procedures provide improved user comfort and are adaptable to different PABX systems.

The speech circuit provides superior quality of conversation with soft clipping, volume control and very low noise levels (-72 dBmp). The main parameters, like gain, return loss and side tone are independently programmable to ensure fast and uncomplicated design effort.

Key Features

- Speech, Dialler and Tone Ringer in one CMOS circuit

- Last Number Redial of 31 digits with Moving Cursor Protocol

- Timed Tone burst and Pause (82msec)

- 14 Repertory Memories (SA2531)

- 2 Flash Keys (100 or 270msec) (optionally 100/600)

- Real or Complex Impedance set on chip

- Ring Frequency Discrimination

- Volume Control on Receive signal (SA2531)

- On-Chip Tone Filter (to CS203)

- Soft Clip to Avoid Distortion

- Low Noise

SA2531

The SA2531 includes LNR (Last Number Redial) and 14 number stores for direct or indirect repertory dialling. NO battery is required for retaining the stored numbers.

Latching Mute is provided along with an Audible warning tone when the Mute is active.

Receive Volume can also be adjusted via the Keypad.

The SA2532 is a Pin compatible variant of the SA2531 and is aimed at the Low End High Performance electronic telephone.

The Dialler of the SA2532 provides a 32 digit Last Number Redial store and is based on the same Moving Cursor Protocol as the SA2531. Dialling may be Pulse/Tone with a Soft Switch or Tone only.

Speech quality in the SA2532 is identical to the SA2531 with Line Loss Compensation, Low Noise and Soft Clipping.

The Tone Ringer Frequencies have been altered to allow a lower cost transducer to be used.

Design flexibility has been retained and all the Country Specific options of the SA2531 are also available.

PACKAGE (BOTH DEVICES):	DIP28, SOIC28, PLCC28
EQUIVALENT DEVICES:	AS2531
STATUS:	Production

Single Chip Telephone Electrical Characteristics

(I_{LINE} = 15mA; f = 800Hz; T = 25°C unless otherwise stated)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
I_{DD}	Operating Current	Speech/MF Dialling			5	mA
		LD dialling V_{DD}=2.5v		200		μA
		Ring mode V_{DD}=2.5v		300		μA
I_{DDQ}	Retention Current	Idle mode V_{DD}=2V		0.05		μA
	Transmit					
	Gain (M1/M2)	Z_{RL}=600Ω	34	35	36	dB
		Z_{RL}=1000Ω		36.5		
A_{RX}	**Receive**					
	Receive Gain (RO1/RO2)	Z_{RL}=600Ω	-1	1	3	dB
		Z_{RL}=1000Ω		-0.2		
V_{NO}	Noise Output Voltage				-72	dBmp
ST	**Sidetone**					
	Sidetone Cancellation	$V_{RI} \leq 0.5V_{RMS}$	26			dB
	LD					
t_{DR}	Dial Rate	±5%			10	pps
t_{MB}	Make/Break Period	±5%, MODE=low			40/60	ms
		±5, MODE=high			33/66	ms
t_{PDP}	Pre-Digit Pause			35		ms
t_{IDP}	Inter-Digit Pause		800	840	880	ms

Symbol	Parameter	Conditions	Min	Typ	Max	Units
DTMF						
$\triangle$F	Frequency deviation		-.679		+.533	%
V_{MF}	MF Tone Level (Low group)	SA253xB/G/U	-12.5	-11	-9.5	dB
		SA253xA/C/E	-9.5	-8	-6.5	dB
V_{LH}	Pre-emphasis Low to High	SA253xA/B/C/E/U	2.0	2.6	3.0	dB
V_{LH}	Pre-emphasis Low to High	SA253xG	2.0	2.6	3.2	dB
Flash						
t_{FD}	Flash Duration 1		100		102	ms
	Flash Duration 2	SA253xA/B/C/E/G	270		300	ms
	Flash Duration 2	SA253xU	600		650	ms
t_{PFP}	Post Flash Pause		2.9	3.0	3.1	sec
t_{AP}	Access Pause	SA253xA/B/E/G/U	2.9	3.0	3.1	sec
t_{AP}	Access Pause	SA253xC	5.8	6.0	6.2	sec
f_{MIN}	Min. Detection Frequency	SA253xC/G	19	20	21	Hz
f_{MIN}	Min. Detection Frequency	SA253xA/B/E/U	12	13	14	Hz
f_{MAX}	Max. Detection Frequency		58	59	60	Hz

TELEPHONY PRODUCT PIN OUT

SA2531/2

SA541, 545
SA589

Communications Products