STC2530C Series

Preliminary

CMOS TONE/PULSE DIALER WITH LCD DRIVER

- **DTMF/Pulse Output Switch**
- **10 Digit LCD Driver**
- **Ten 18-digit Repertory Memories and 24-digit Redial Memory**

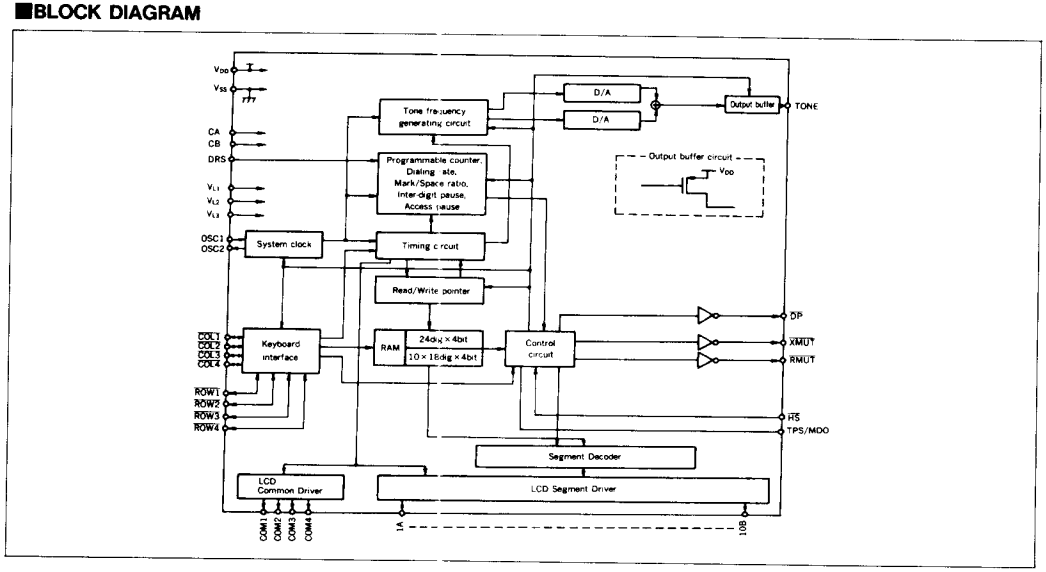
■DESCRIPTION

The STC2530C Series is CMOS LSI which is provided with a memory and LCD display driver for telephone numbers, and can selectively output either dual tone multi-frequency (DTMF) signals or a dialing pulse (DP) train. The LSI contains the DA conversion system used in a conventional tone dialer by connecting the minimum necessary interface circuit, the dialing pulse can also drive a telephone line.

■FEATURES

- ●Low-voltage operation and low power dissipation due to CMOS process.
- ●A built-in 10 digit LCD drivers for telephone numbers. (V−3V, 1/4duty)
- ●A built-in Ten 18-digit repertory memories and 24-digit redial memory.
- ●A built-in DA conversion system makes possible a DTMF signal.
- ●0.6sec Hooking (Flash) can be accessed directly by Flash key.
- ●This LSI can be connected to a standard 2 of 8 keyboard.
- ●The built-in signal generator requires 3.58MHz TV crystal oscillator.
- ●Package·····48 pin DIP (plastic)

■BLOCK DIAGRAM



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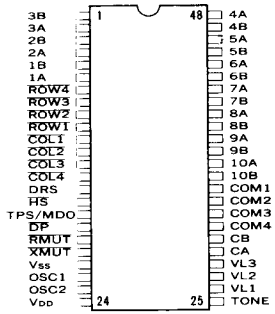
■PIN CONFIGURATION



■STC2530C Series

Type	Write to repartory memory	Tone/pulse output selection	Dial pulse mark/space
STC2531C$_{0A}$	OFF-Hook	Key	33.3/66.6
STC2531C$_{0B}$			40/60
STC2532C$_{0A}$	ON-Hook	Key	33.3/66.6
STC2532C$_{0B}$			40/60
STC2533C$_{0A}$	OFF-Hook	External pin	33.3/66.6
STC2533C$_{0B}$			40/60
STC2534C$_{0A}$	ON-Hook	External pin	33.3/66.6
STC2534C$_{0B}$			40/60

■PIN DESCRIPTION

Pin Name	Pin No.	Function
$\overline{ROW1}$ to $\overline{ROW4}$	7 to 10	[Scanning input/output of matrix keyboard]
$\overline{COL1}$ to $\overline{COL4}$	11 to 14	
TPS/MDO	17	[DTMF/DP mode select input] /[DTMF/DP mode signal output]
DRS	15	[Pulse rate select input in DP mode]
$\overline{HS}$	16	[Hook switch]
V_{SS}	21	[Power supply terminal (−)]
OSC1	22	[3.579545MHz crystal oscillator terminal]
OSC2	23	
V_{DD}	24	[Power supply terminal (+)]
TONE	25	[DTMF signal output]
$\overline{DP}$	18	[Dialing pulse output]
$\overline{RMUT}$	19	[Receiver mute output]
$\overline{XMUT}$	20	[Transmitter mute output]
VL1	26	[Doubler & Tripller capacitor]
VL2	27	
VL3	28	
CA	29	
CB	30	
COM1 to COM4	31 to 34	[Common Driver output]
1A to 10A 1B to 10B	1 to 6 35 to 48	[Segment Driver output]

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■ABSOLUTE MAXIMUM RATINGS

(V_{SS}=0V)

Parameter	Symbol	Ratings	Unit
Power supply voltage	V_{DD}	−0.3 to 7.5	V
Input voltage	V_I	−0.3 to V_{DD}+0.3	V
Output voltage	V_O	−0.3 to V_{DD}+0.3	V
Operating temperature	T_{opr}	−20 to 70	°C
Storage temperature	T_{stg}	−65 to 150	°C
Soldering temperature and time	T_{sol}	260°C, 10s (at lead)	—

■ELECTRICAL CHARACTERISTICS

●DC Characteristics

(V_{SS}=0V, Ta=25°C)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Operating voltage	V_{DD}	DP mode		1.5	—	6.0	V
		DTMF mode		2.5	—	6.0	
Data retention voltage	V_{DDR}	Stand-by mode		1.0	—	6.0	V
Average operating current	I_{DDA}	V_{DD}=3.0V, Ta=25°C, $\overline{HS}$=V_{SS}, $\overline{DP}$, TONE, $\overline{RMUT}$ and $\overline{XMUT}$ not loaded	Key input stand-by status	—	—	200	μA
			In DP mode dial pulse being output	—	—	400	μA
			In DTMF mode DTMF signal being output	—	—	1.5	mA
LCD operating voltage	V_{L2}	V_{L1}>V_{L2}>V_{L3}		—	$V_{DD}-2\times V_{L1}$	—	V
	V_{L3}			—	$V_{DD}-3\times V_{L1}$	—	

●AC Characteristics

(V_{SS}=0V, Ta=25°C, f_{OSC}=3.579545MHz)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Dial pulse rate	—	DRS=V_{DD}		—	19.42	—	pps
	—	DRS=V_{SS}		—	9.71	—	
Inter digit pause	t_{IDP1}	DP mode	Dial rate =19.42pps	—	463.4	—	ms
			Dial rate =9.71pps	—	823.9 (617.9)*	—	
	t_{IDP2}	DTMF mode auto dialing		—	—	112.9 (61.4)*	
DTMF make time	t_{TM}	DTMF mode auto dialing		93.1	—	—	ms
Oscillator frequency	t_{OSC}			—	3.579545	—	MHz
Tone output voltage	Vt_{one}	COL	V_{DD}=2.5V to 6.0V	—	−11.7	—	dBm
		ROW		—	−14.2	—	
Tone distortion	%DIS	V_{DD}=3.5V		—	—	10	%
Hooking (flash)	t_{HK}			—	617.5 (82.0)*	—	ms

Note: *Mask option

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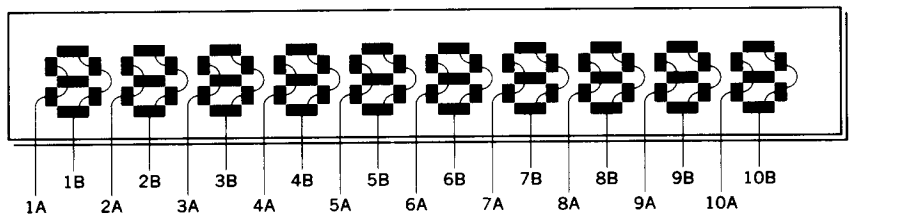
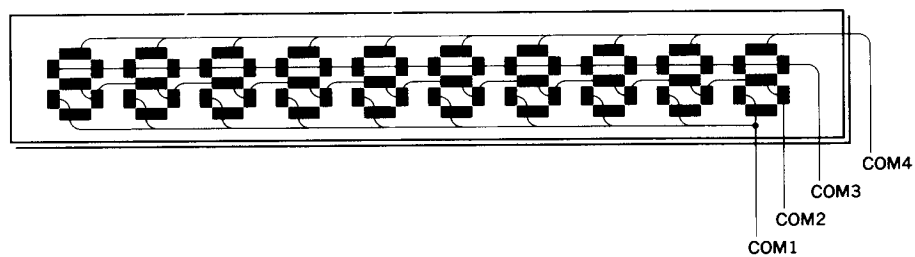
■LCD PATTERN LAYOUT





■PACKAGE DIMENSIONS

C48

48-pin DIP

Under Development

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