

LC7350, 7351



3007A



3021B

CMOS LSI

T-75-07-07

Pulse Dialer with Redial Function

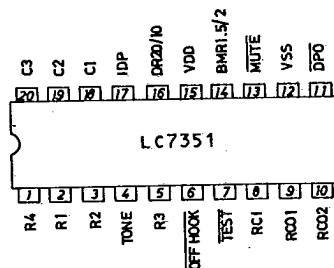
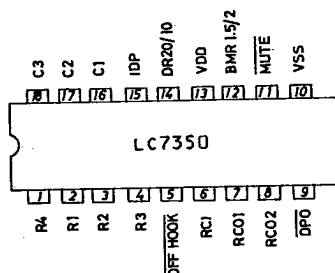
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The LC7350(18-pin package)/LC7351(20-pin package) are redial function-provided pulse dialer C-MOS LSIs for use in pushbutton telephones.

Features

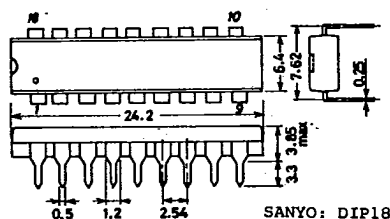
- (1) Low voltage C-MOS process for direct operation from telephone line.
- (2) Possible to use single contact or standard 2-of-7 key pad.
- (3) Contains inexpensive R-C oscillator ($f_{OSC}=5kHz$ typ.).
- (4) Two selections of output pulse rate (20pps or 10pps).
- (5) Two selections of output pulse break/make ratio (1.5 or 2.0).
- (6) Two selections of inter-digit pause (400ms or 800ms (Note)).
- (7) Provides PBX redial mode ("#" key) with access code (2 digits or less).
- (8) Contains 20-digit FIFO (First-In-First-Out) buffer memory.
- (9) Key touch tone output (1250Hz/625Hz alternating pacifier tone) capability for LC7351(20-pin package).
- (10) Supply voltage/operating temperature ---- $V_{DD}=1.5$ to $3.5V$ /Topg= -30 to $+70^{\circ}C$
- (11) Operating current ---- $I_{DD}=100\mu Amax(V_{DD}=3.5V)$, $I_{DD}=20\mu Amax(V_{DD}=1.5V)$
(Note) Inter-digit pause time 400ms/800ms is for DR=10pps.

Pin Assignment



Case Outline 3007A-D18IC
(unit:mm)

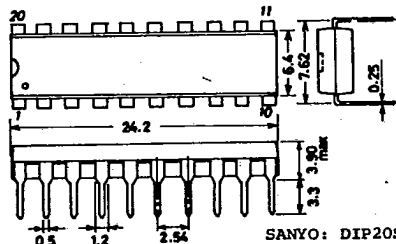
LC7350



SANYO: DIP18

Case Outline 3021B-D20SIC
(unit:mm)

LC7351



SANYO: DIP20S

8067KI/7184KI, TS No. 1529-1/4

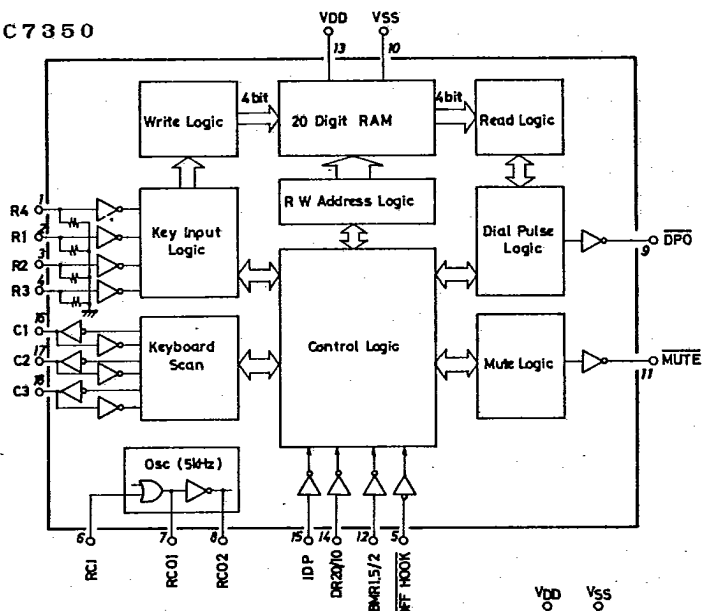
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LC7350,7351

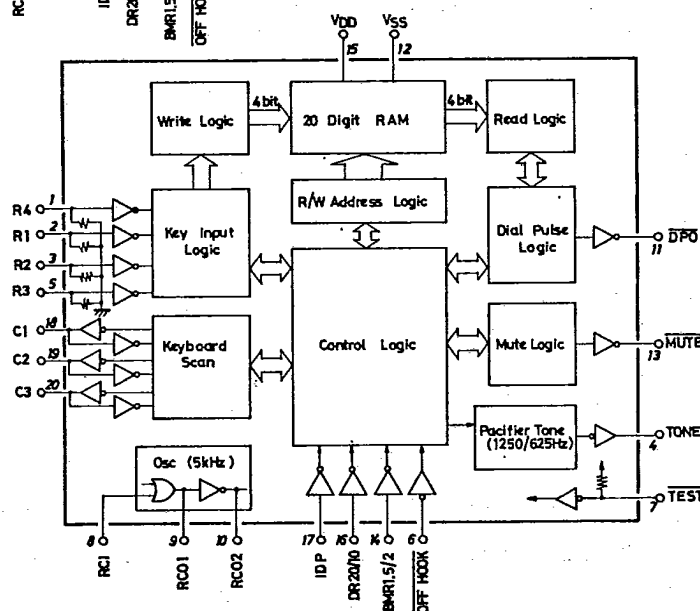
T-75-07-07

Equivalent Circuit Block Diagram

LC7350



LC7351



Function Table

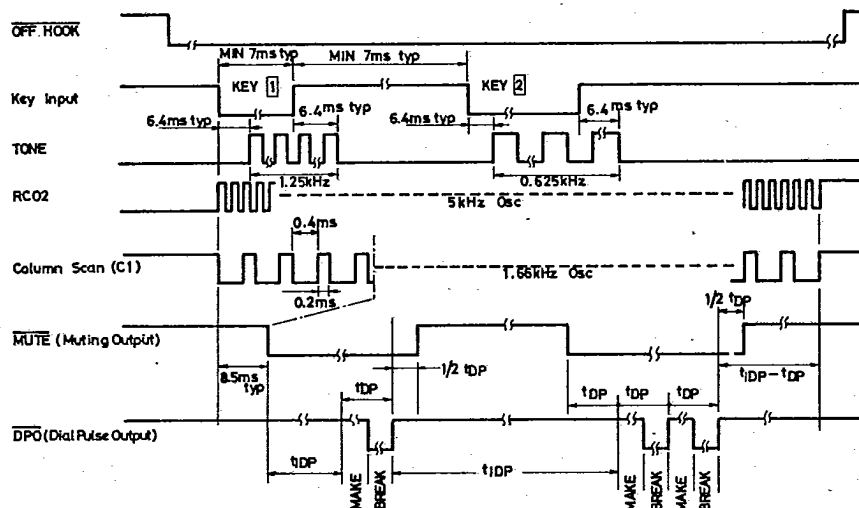
(fosc=5kHz)

Function	Pin Name	Input Logic Level	Selection	
Dial Pulse Rate	DR20/10	VSS	10pps (t _{DP} =100msec)	
		VDD	20pps (t _{DP} =50msec)	
Make/Break Ratio	BMR 1.5/2.0	VSS	Make=33 1/3(%), Break=66 2/3(%)	
		VDD	Make=40(%), Break=60(%)	
Inter-Digit Pause	IDP	-	D.P.R=10pps	D.P.R=20pps
		VSS	t _{IDP} =800ms	t _{IDP} =400msec
		VDD	t _{IDP} =400ms	t _{IDP} =200ms

LC7350, 7351

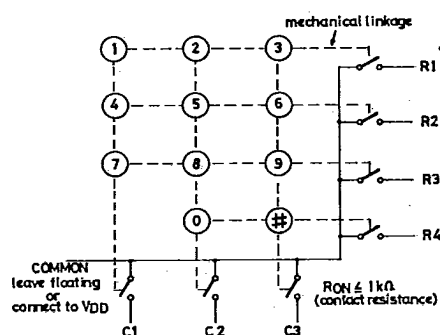
T-75-07-07

Timing

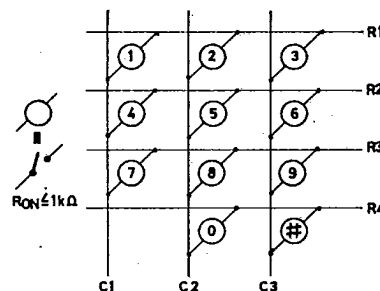


Keyboard Interface

Standard 2 of 7 Keyboard



Single Contact Keyboard

Absolute Maximum Ratings at $T_a = 25 \pm 2^\circ\text{C}$, $V_{SS} = 0\text{V}$

			unit
Maximum Supply Voltage	$V_{DD\max}$	-0.3 to +5.5	V
Maximum Input Voltage	$V_{I\max}$	-0.3 to $V_{DD} + 0.3$	V
Maximum Output Voltage	$V_{O\max}$	-0.3 to $V_{DD} + 0.3$	V
Allowable Power Dissipation	$P_{d\max}$	150	mW
Operating Temperature	T_{opg}	-30 to +70	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +125	$^\circ\text{C}$

 $T_a = -30$ to $+70^\circ\text{C}$

LC7350,7351

T-75-07-07

Allowable Operating Conditions at Ta=-30 to +70°C, V _{SS} =0V				min	typ	max	unit
Supply Voltage	V _{DD}			+1.5		+3.5	V
"H"-Level Input Voltage	V _{IH1}	R1,R2,R3,R4,C1,C2,C3		0.7V _{DD}		V _{DD}	V
	V _{IH2}	OFF-HOOK, TEST(LC7351 only)		0.8V _{DD}		V _{DD}	V
	V _{IH3}	BMR1.5/2.0, DR20/10, IDP		0.9V _{DD}		V _{DD}	V
"L"-Level Input Voltage	V _{IL1}	R1,R2,R3,R4,C1,C2,C3		V _{SS}		0.3V _{DD}	V
	V _{IL2}	OFF-HOOK, TEST(LC7351 only)		V _{SS}		0.2V _{DD}	V
	V _{IL3}	BMR1.5/2.0, DR20/10, IDP		V _{SS}		0.1V _{DD}	V
External Constants for Oscillation Guarantee	R _O	(LC7350)		176	300	360	kohm
		(LC7351)		176	220	360	kohm
	C _O	(LC7350)		243	270	396	pF
		(LC7351)		243	360	396	pF
	R _I	(LC7350)		675	820	1650	kohm
		(LC7351)		675	1200	1650	kohm
Oscillation Frequency	f _{OSC}	RCO2			5.0		kHz
Key Contact Resistance	R _{KI}					1.0	kohm
Keyboard Capacitance	C _{KI}					50	pF

Electrical Characteristics at Ta=25±2°C, V _{SS} =0V *V _{CC} (pin)				min	typ	max	unit
"H"-Level Input Current	I _{IH1}	V _{IN} =V _{DD} , *1.5 to 3.5V, (*)				1.0	uA
	I _{IH2}	" , *1.5V, (R1,R2,R3,R4)		3.0			uA
		" , *3.5V, (")				60	uA
"L"-Level Input Current	I _{IL1}	V _{IN} =V _{SS} , *1.5 to 3.5V, (*)		-1.0			uA
	I _{IL2}	" , *1.5V, (TEST)				-3.0	uA
		" , *3.5V, (TEST)		-140			uA
"L"-Level Input Floating Voltage	V _{IFL}	Input pin open, *1.5 to 3.5V, (R1,R2,R3,R4)		V _{SS}	0.3V _{DD}	-0.3	V
"H"-Level Output Voltage	V _{OH1}	I _{OH} =20uA, *1.5V, (DPO, MUTE)		V _{DD} -0.5			V
		I _{OH} =125uA, *3.5V, (")		V _{DD} -1.0			V
	V _{OH2}	I _{OH} =20uA, *1.5V, (TONE)		V _{DD} -0.5			V
		I _{OH} =125uA, *3.5V, (")		V _{DD} -1.0			V
"L"-Level Output Voltage	V _{OL1}	I _{OL} =20uA, *1.5V, (DPO, MUTE)				0.4	V
		I _{OL} =125uA, *3.5V, (")				0.4	V
	V _{OL2}	I _{OL} =20uA, *1.5V, (TONE)				0.4	V
		I _{OL} =125uA, *3.5V, (")				0.4	V
Operating Current	I _{DD1}	DR=10pps, *1.5V, (V _{DD})				20	uA
		All output pins: open, *3.5V(V _{DD})				100	uA
Quiescent Current	I _{DD2}	OFF-HOOK=V _{DD} , All output pins: open, *1.5 to 3.5V, (V _{DD})			0.1	1.0	uA
Frequency Deviation	Δfo/fo	Ro=300kohms, Co=270pF, RI=820kohms					
		220 , 360 , 1.2Mohms					
		*1.5 to 2.5V, (RCI, RCO1, RCO2)		-3		+3	%
		*2.5 to 3.5V, (")		-3		+3	%
Data Retention Voltage	V _{DR}	(OFF-HOOK=V _{DD} , (V _{DD})			1.0		V
Data Retention Current	I _{DR}	All output pins: open, *1.0V, (V _{DD})				0.4	uA

(*) : OFF-HOOK, RCI, DR20/10, BMR1.5/2.0, IDP