

DESCRIPTION

These Signetics 2500 Series Dual 128 and 132 bit recirculating static shift registers consist of enhancement mode P-channel silicon gate MOS devices integrated on a single monolithic chip.

FEATURES

- PUSH-PULL OUTPUTS
- TTL/DTL COMPATIBLE CLOCK — PROVIDES EXTREMELY LOW CLOCK CAPACITANCE
- RECIRCULATION PATH ON CHIP
- TWO BIT LENGTHS AVAILABLE
- HIGH FREQUENCY OPERATION — 2MHz TYPICAL CLOCK RATE
- TTL, DTL COMPATIBLE SIGNALS
- STANDARD PACKAGE — 8 LEAD SILICONE DIP
- SIGNETICS P-MOS SILICON GATE PROCESS TECHNOLOGY

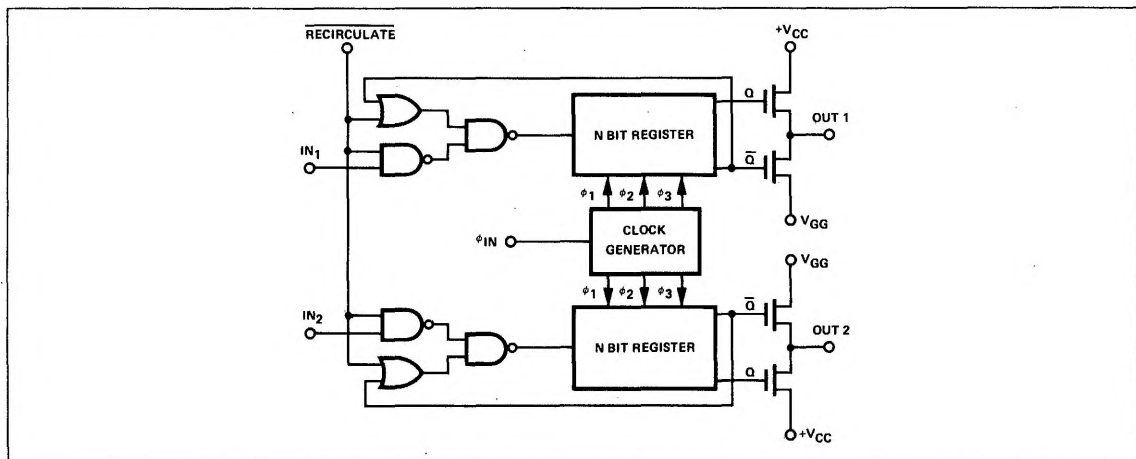
APPLICATIONS

LOW COST SEQUENTIAL ACCESS MEMORIES
 LOW COST STATIC BUFFER MEMORIES
 CRT REFRESH MEMORIES — LINE STORAGE
 LINE PRINTERS
 CASSETTE RECORDERS

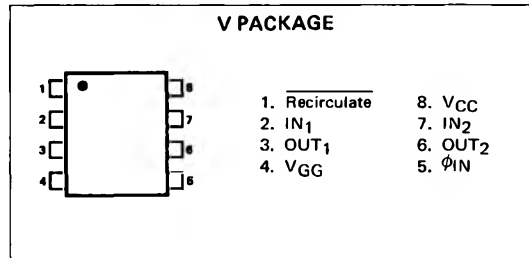
BIPOLAR COMPATIBILITY

The clock and signal inputs of these registers can be driven directly by standard bipolar integrated (TTL, DTL, etc.) or by MOS circuits.

BLOCK DIAGRAM



PIN CONFIGURATION (Top View)



TRUTH TABLE

RECIRCULATE	INPUT	FUNCTION
0	0	Recirculate
0	1	Recirculate
1	0	"0" is Written
1	1	"1" is Written

NOTE: "0" = 0V; "1" = +5V.

PART IDENTIFICATION TABLE

PART NUMBER	BIT LENGTH	PACKAGE
2521V	Dual 128	8 Pin DIP
2522V	Dual 132	8 Pin DIP

MAXIMUM GUARANTEED RATINGS (1)

Operating Ambient Temperature (2)	0°C to +70°C
Storage Temperature	-65°C to +150°C
Package Power Dissipation at $T_A = 70^\circ\text{C}$	535 mW
Data and Clock Input Voltages and Supply Voltages with respect to V_{CC}	+0.3V to -20V

NOTES:

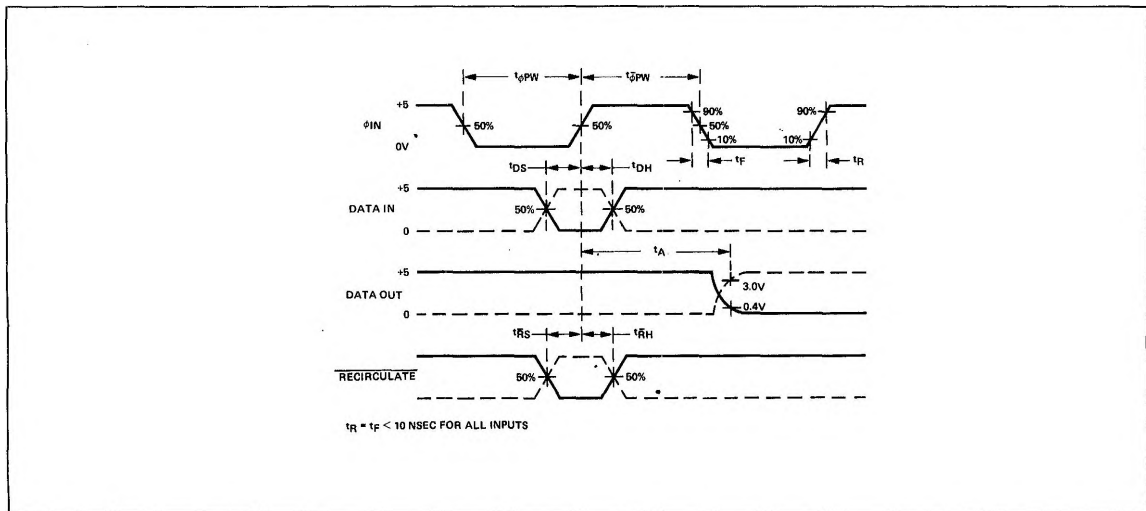
1. Stresses above those listed under "Maximum Guaranteed Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or at any other condition above those indicated in the operational sections of this specification is not implied.
2. For operating at elevated temperatures the device must be derated based on a +150°C maximum junction temperature and a thermal resistance of 150°C/W junction to ambient.
3. All inputs are protected against static charge.
4. Parameters are valid over operating temperature range unless specified.
5. All voltage measurements are referenced to ground.
6. Manufacturer reserving the right to make design and process changes and improvements.
7. Typical values are at +25°C and nomin. supply voltages.
8. V_{CC} tolerance is $\pm 5\%$. Any variation in actual V_{CC} will be tracked directly by V_{IL} , V_{IH} , and V_{OH} which are stated for a V_{CC} of exactly 5 volts.

DC CHARACTERISTICS $T_A = 0^\circ\text{C}$ to $+70^\circ\text{C}$; $V_{CC} = +5\text{V}(8)$; $V_{GG} = -12\text{V} \pm 5\%$ unless otherwise noted.

SYMBOL	TEST	MIN	TYP	MAX	UNIT	CONDITIONS
I_{LI}	INPUT LOAD CURRENT		10	500	nA	$V_{in} = 5.5\text{V}$, $T_A = 25^\circ\text{C}$ $V_{ILC} = \text{GND}$, $T_A = 25^\circ\text{C}$ CONTINUOUS OPERATION $F = 1.5\text{MHz}$, $T_A = 25^\circ\text{C}$
I_{LC}	CLOCK LEAKAGE CURRENT		10	500	nA	
I_{GG}	POWER SUPPLY CURRENT		28	32	mA	
V_{IL}	INPUT "LOW" VOLTAGE			1.05	V	
V_{IH}	INPUT "HIGH" VOLTAGE	3.2		5.3	V	
V_{ILC}	CLOCK INPUT "LOW" VOLTAGE			1.05	V	
V_{IHC}	CLOCK INPUT "HIGH" VOLTAGE	3.2		5.3	V	

CONDITIONS OF TEST Input rise and fall times: 10 nsec. Output load is 1 TTL gate

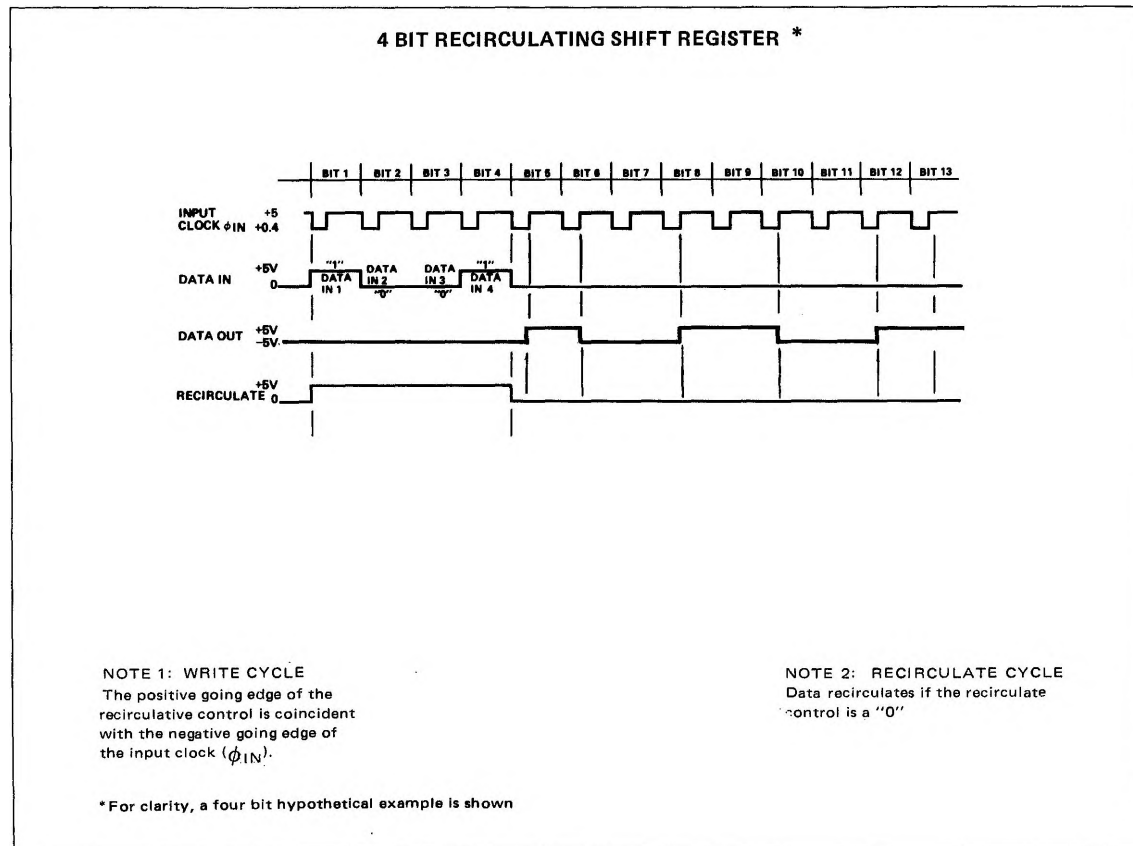
TIMING DIAGRAM



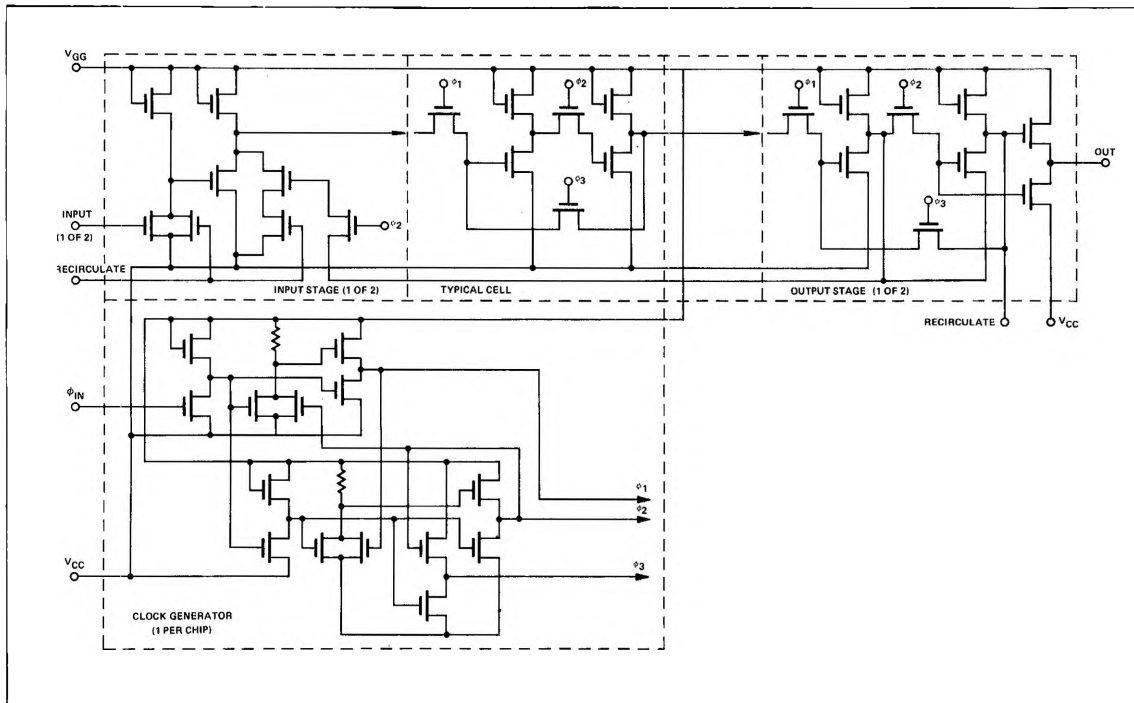
AC CHARACTERISTICS $V_{CC} = +5V$ (8); $V_{GG} = -12V \pm 5\%$, $V_{IC} = 0.4$ to 4.0 ; $T_A = 0^\circ$ to $+70^\circ C$

SYMBOL	TEST	MIN	TYP	MAX	UNIT	CONDITIONS
FREQUENCY	CLOCK REP RATE	DC		1.5	MHz	See Maximum Frequency Curve
$t_{\phi PW}$	CLOCK PULSE WIDTH	.350	.100	100	μ sec	
$t_{\phi PW}$	CLOCK PULSE WIDTH	.200		DC	μ sec	
t_R, t_F	CLOCK PULSE TRANSITION			1	usec	
t_{DS}	DATA WRITE (SET-UP) TIME	75			nsec	
t_{DH}	DATA TO CLOCK HOLD TIME	50			nsec	
t_A	CLOCK TO DATA OUT DELAY		250	350	nsec	
t_{RS}	RECIRCULATE SET-UP TIME	50			ns	
t_{RH}	RECIRCULATE HOLD TIME	50			ns	
C_{IN}	INPUT CAPACITANCE			5	pF	@ 1MHz; $V_{in} = V_{CC}$; $V_{AC} = 25mV$ p-p
C_{ϕ}	CLOCK CAPACITANCE			5	pF	@ 1MHz; $V_{\phi} = V_{CC}$; $V_{AC} = 25mV$ p-p
V_{OL}	OUTPUT "LOW" VOLTAGE	-4.0		0.4	V	1 TTL load ($I_L = 1.6mA$)
V_{OHI}	OUTPUT "HIGH" VOLTAGE				V	1 TTL load ($I_L = 100\mu A$)
V_{OH2}	DRIVING 1 TTL LOAD OUTPUT "HIGH" VOLTAGE DRIVING MOS	3.0 3.5	3.5 4.0		V	

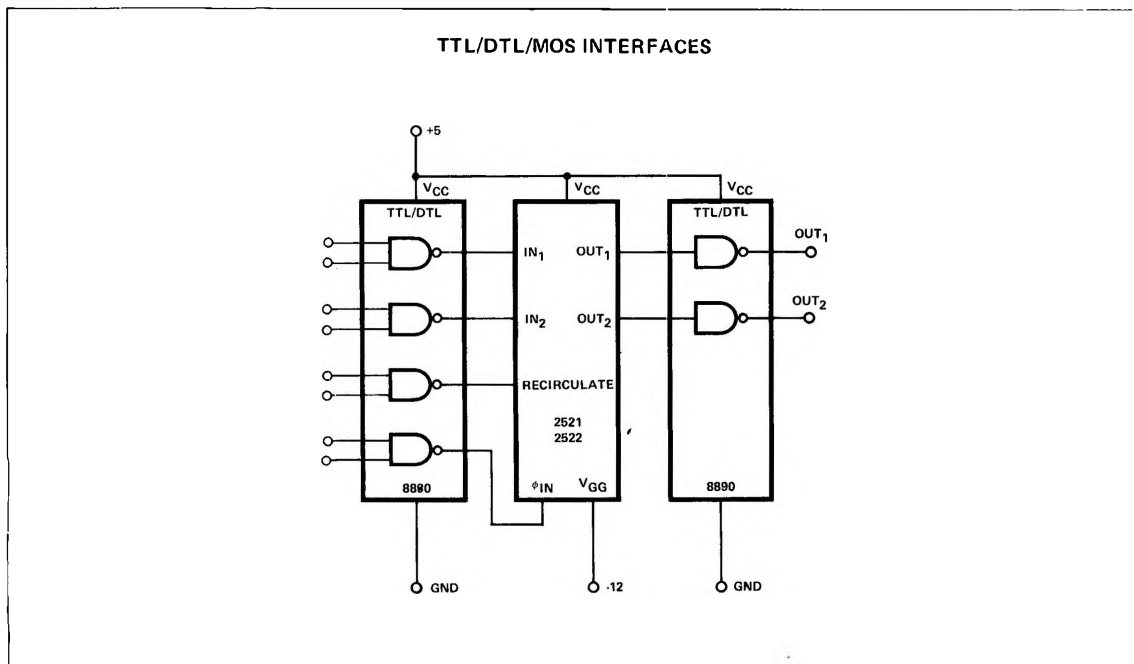
TIMING DIAGRAM



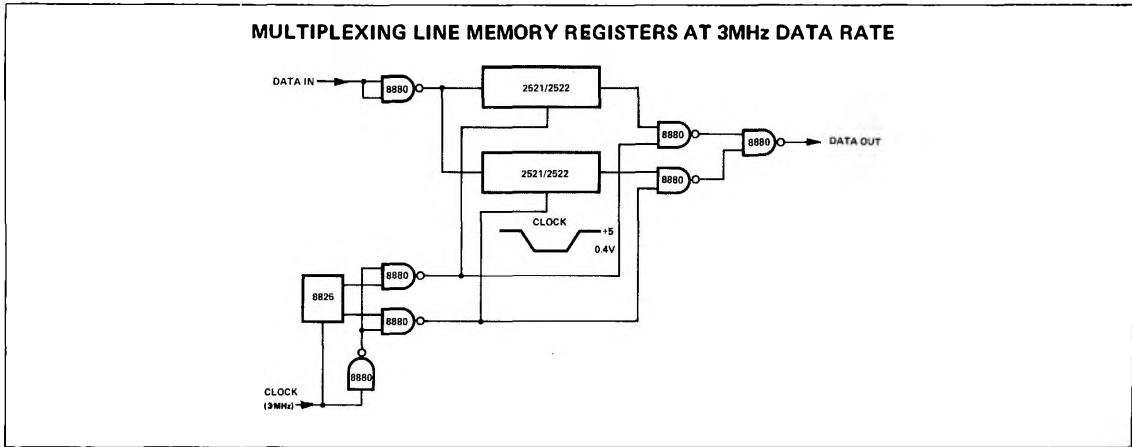
SCHEMATIC DIAGRAM



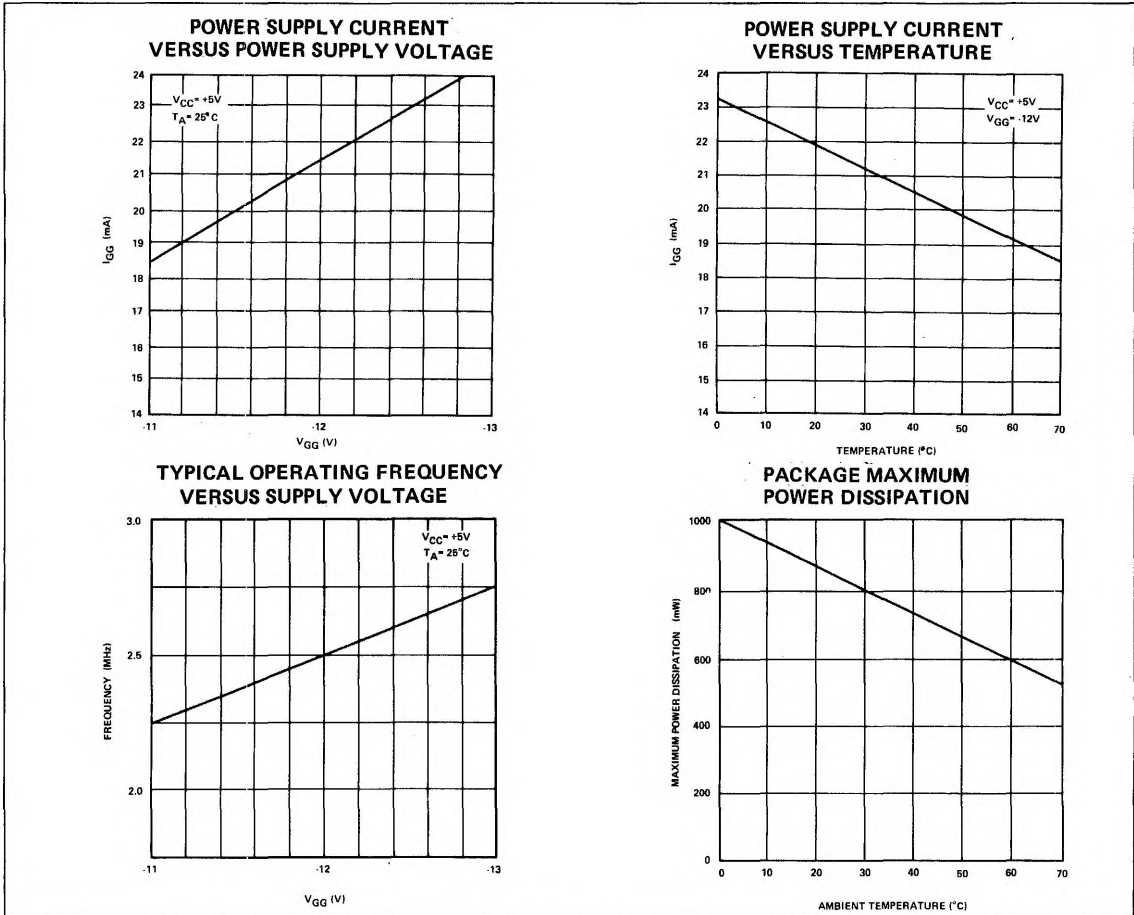
APPLICATIONS DATA



APPLICATIONS INFORMATION



CHARACTERISTIC CURVES



132 COLUMN LINE PRINTER

