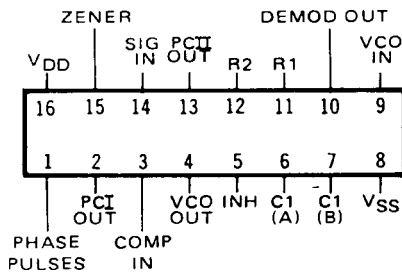


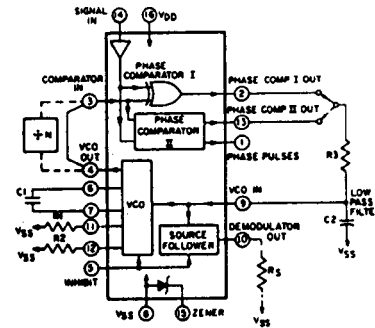
# SCL4046B & SCL4446B

PHASED - LOCKED LOOPS

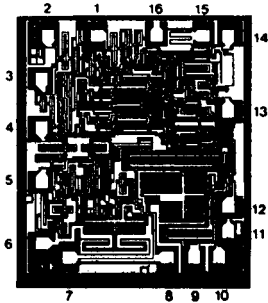
CONNECTION DIAGRAM



BLOCK DIAGRAM



DIE DRAWING  
75 mils x 86 mils



**STATIC CHARACTERISTICS:** ( $V_{SS} = 0V$ )

PARAMETER	CONDITIONS	$V_{DD}$ (Vdc)	$T_{LOW}^*$		+25°C			$T_{HIGH}^{**}$		UNIT
			MIN	MAX	MIN	TYP	MAX	MIN	MAX	
QUIESCENT DEVICE CURRENT $I_{DD}$	Inhibit = $V_{DD}$ Signal Input = $V_{DD}$	5		5		0.05	5		150	$\mu A_{dc}$
		10		10		0.1	10		300	
		15		20		0.2	20		600	
POWER DISSIPATION TOTAL $P_T$	Inh = $V_{SS}$ $C_L = 15pF$ $VCO_{IN} = V_{DD} + 2$ $R_1 = 1M\Omega$ $R_2 = R_S = \infty$ $f_o = 10k Hz$	5				0.07				mW
		10				0.6				
		15				2.4				

Note: \* $T_{LOW}$  = -55°C for C / H devices, -40°C for E / S devices, \*\* $T_{HIGH}$  = +125°C for C / H devices, +85°C for E / S devices.

**DYNAMIC CHARACTERISTICS:** ( $C_L = 50pF, T_A = 25^\circ C$ )

PARAMETER	CONDITION	$V_{DD}$ (Vdc)	MINIMUM	TYPICAL	MAXIMUM	UNIT
MAXIMUM OPERATING FREQUENCY SCL4046B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = 10k$ $C_1 = 50pF$ $R_2 = \infty$	5	0.5	0.8		MHz
		10	1.0	1.5		
		15	1.3	1.9		
MAXIMUM OPERATING FREQUENCY SCL4046B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = 5k$ $C_1 = 50pF$ $R_2 = \infty$	5	0.6	1.0		MHz
		10	1.4	2.1		
		15	1.8	2.7		
MAXIMUM OPERATING FREQUENCY SCL4046B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = 2k$ $C_1 = 50pF$ $R_2 = \infty$	5		1.3		MHz
		10		2.9		
		15		3.8		
MAXIMUM OPERATING FREQUENCY SCL4446B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = 10k$ $C_1 = 50pF$ $R_2 = \infty$	5	0.7	1.0		MHz
		10	1.3	2.0		
		15	1.9	2.8		
MAXIMUM OPERATING FREQUENCY SCL4446B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = .5k$ $C_1 = 50pF$ $R_2 = \infty$	5	0.9	1.3		MHz
		10	1.9	2.9		
		15	2.6	3.9		
MAXIMUM OPERATING FREQUENCY SCL4446B $f_{max}$ $VCO_{IN} = V_{DD}$	$R_1 = 2k$ $C_1 = 50pF$ $R_2 = \infty$	5		1.8		MHz
		10		3.9		
		15		5.4		

EXTENSIVE APPLICATION NOTES ARE AVAILABLE FOR R&E'S PHASE LOCKED LOOPS. CALL R&E AT 1 (800) 253-7007 AND REQUEST A COPY OF APPLICATION NOTE AN-112.

**SCL4046B & SCL4446B**

PHASED - LOCKED LOOPS

DYNAMIC CHARACTERISTICS: (  $C_L = 50\text{pF}$ ,  $T_A = 25^\circ\text{C}$  )

PARAMETER	CONDITION	$V_{DD}$ (Vdc)	MINIMUM	TYPICAL	MAXIMUM	UNIT
LINEARITY $V_{COIN} = 2.5 \pm 0.3\text{V}$ $V_{COIN} = 5.0 \pm 2.5\text{V}$ $R_2 = \infty$ $V_{COIN} = 7.5 \pm 5.0\text{V}$	$R_1 \geq 10\text{k}\Omega$	5		1		%
	$R_1 \geq 400\text{k}\Omega$	10		1		
	$R_1 \geq 1\text{M}\Omega$	15		1		
INPUT CAPACITANCE $C_{IN}$	PIN 9 & 14				15	pF
	ALL OTHER				7.5	
TEMPERATURE - FREQUENCY STABILITY (NO OFFSET)	$R_2 = \infty$	5		0.12-0.24		%/°C
		10		0.04-0.08		
		15		0.015-0.03		
TEMPERATURE - FREQUENCY STABILITY (WITH OFFSET)	$R_2 \leq 10 \times R_1$	5		0.06-0.12		%/°C
		10		0.05-0.1		
		15		0.03-0.06		
INPUT RESISTANCE $V_{COIN}$	$R_{IN}$	5,10,15		$10^6$		MΩ
OUTPUT DUTY CYCLE	ALL VALID INPUTS			50		%
OUTPUT TRANSITION TIME $t_{TLH}, t_{THL}$	$C_L = 50\text{pF}$	5		100	200	ns
		10		50	100	
		15		40	80	
INPUT RESISTANCE $R_{IN}$ (SIGNAL INPUT)		5	1	3		MΩ
		10	0.2	0.7		
		15	0.1	0.3		
INPUT RESISTANCE $R_{IN}$ (COMPARATOR INPUT)		5,10,15		$10^6$		MΩ
AC - COUPLED INPUT SENSITIVITY (SIGNAL INPUT) $V_{IN}$		5		200	400	mV
		10		400	800	
		15		700	1400	
OUTPUT TRANSITION TIME (PCI, PCII OUTPUTS) $t_{TLH}, t_{THL}$	$C_L = 50\text{pF}$	5		100	200	ns
		10		50	100	
		15		40	80	
OUTPUT TRANSITION TIME (PHASE PULSE OUTPUTS) $t_{TLH}, t_{THL}$	$C_L = 50\text{pF}$	5		130	260	ns
		10		65	130	
		15		50	100	
OFFSET VOLTAGE (DEMODULATOR OUTPUT $V_{DEM}$ ) $V_{COIN}$	$R_S \geq 50\text{k}\Omega$	5		1.4	2.2	Vdc
		10		1.6	2.2	
		15		1.8	2.2	
LINEARITY (DEMODULATOR OUTPUT) $R_S \geq 50\text{k}\Omega$	$V_{COIN} = 2.5 \pm 0.3\text{V}$	5		0.1		%
	$V_{COIN} = 5.0 \pm 2.5\text{V}$	10		0.6		
	$V_{COIN} = 7.5 \pm 5.0\text{V}$	15		0.8		
ZENER VOLTAGE $V_Z$	$I_Z = 50\mu\text{A}$		6.3	7	7.7	V
DYNAMIC RESISTANCE $R_Z$	$I_Z = 1\text{mA}$			100		Ω

Note: Refer to "SCL4000B SERIES FAMILY SPECIFICATIONS" for remaining Dynamic & Static Characteristics, and, for recommended and maximum operating conditions.