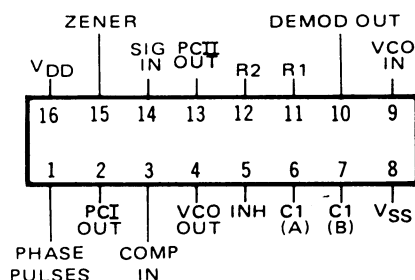


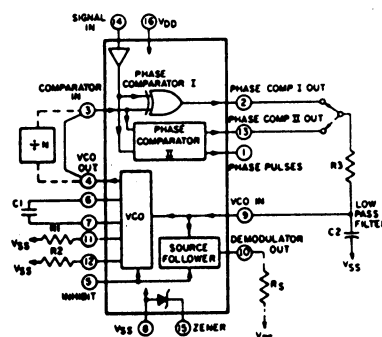
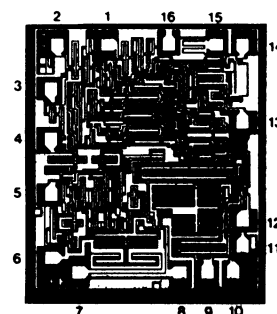
SCL4046B & SCL4446B

PHASED - LOCKED LOOPS

CONNECTION DIAGRAM



BLOCK DIAGRAM

DIE DRAWING
75 mils x 86 mils**STATIC CHARACTERISTICS: ($V_{SS} = 0\text{ V}$)**

PARAMETER	CONDITIONS	V_{DD} (Vdc)	T_{LOW}^* MIN	T_{MAX} MAX	+25°C TYP	MAX	T_{HIGH}^{**} MIN	MAX	UNIT
QUIESCENT DEVICE CURRENT I_{DD}	Inhibit = V_{DD} Signal Input = V_{DD}	5		5	0.05	5		150	μAdc
		10		10	0.1	10		300	
		15		20	0.2	20		600	
POWER DISSIPATION TOTAL P_T	Inh = V_{SS} $C_L = 15\text{pF}$ $VCO_{IN} = V_{DD} + 2$ $f_o = 10\text{kHz}$ $R1 = 1\text{M}\Omega$ $R2 = R_S = \infty$	5			0.07				mW
		10			0.6				
		15			2.4				

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

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

PARAMETER	CONDITION	V_{DD} (Vdc)	MINIMUM	TYPICAL	MAXIMUM	UNIT
MAXIMUM OPERATING FREQUENCY SCL4046B f_{max} $VCO_{IN} = V_{DD}$	$R1 = 10\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	5	0.5	0.8		MHz
		10	1.0	1.5		
		15	1.3	1.9		
MAXIMUM OPERATING FREQUENCY SCL4046B f_{max} $VCO_{IN} = V_{DD}$	$R1 = 5\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	5	0.6	1.0		MHz
		10	1.4	2.1		
		15	1.8	2.7		
MAXIMUM OPERATING FREQUENCY SCL4046B f_{max} $VCO_{IN} = V_{DD}$	$R1 = 2\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	5		1.3		MHz
		10		2.9		
		15		3.8		
MAXIMUM OPERATING FREQUENCY SCL4446B f_{max} $VCO_{IN} = V_{DD}$	$R1 = 10\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	5	0.7	1.0		MHz
		10	1.3	2.0		
		15	1.9	2.8		
MAXIMUM OPERATING FREQUENCY SCL4446B f_{max} $VCO_{IN} = V_{DD}$	$R1 = .5\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	5	0.9	1.3		MHz
		10	1.9	2.9		
		15	2.6	3.9		
MAXIMUM OPERATING FREQUENCY SCL4446B f_{max} $VCO_{IN} = V_{DD}$	$R1 = 2\text{k}$ $C1 = 50\text{pF}$ $R2 = \infty$	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 $V_{COIN} = 2.5 \pm 0.3\text{V}$ $V_{COIN} = 5.0 \pm 2.5\text{V}$ $R2 = \infty$ $V_{COIN} = 7.5 \pm 5.0\text{V}$	$R1 \geq 10\text{k}\Omega$	5		1		%
	$R1 \geq 400\text{k}\Omega$	10		1		
	$R1 \geq 1\text{M}\Omega$	15		1		
INPUT CAPACITANCE C_{IN}	PIN 9 & 14				15	pF
	ALL OTHER				7.5	
TEMPERATURE - FREQUENCY STABILITY (NO OFFSET)	$R2 = \infty$	5		0.12-0.24		%/ $^\circ\text{C}$
		10		0.04-0.08		
		15		0.015-0.03		
TEMPERATURE - FREQUENCY STABILITY (WITH OFFSET)	$R2 \leq 10 \times R1$	5		0.06-0.12		%/ $^\circ\text{C}$
		10		0.05-0.1		
		15		0.03-0.06		
INPUT RESISTANCE V_{COIN}	R_{IN}	5,10,15		10^6		$\text{M}\Omega$
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		$\text{M}\Omega$
		10	0.2	0.7		
		15	0.1	0.3		
INPUT RESISTANCE R_{IN} (COMPARATOR INPUT)		5,10,15		10^6		$\text{M}\Omega$
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 V_{COIN} (DEMOMULTIPLIER OUTPUT V_{DEM})	$RS \geq 50\text{k}\Omega$	5		1.4	2.2	Vdc
		10		1.6	2.2	
		15		1.8	2.2	
LINEARITY (DEMOMULTIPLIER OUTPUT) $RS \geq 50\text{k}\Omega$	$V_{COIN} = 2.5 \pm 0.3\text{V}$	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.