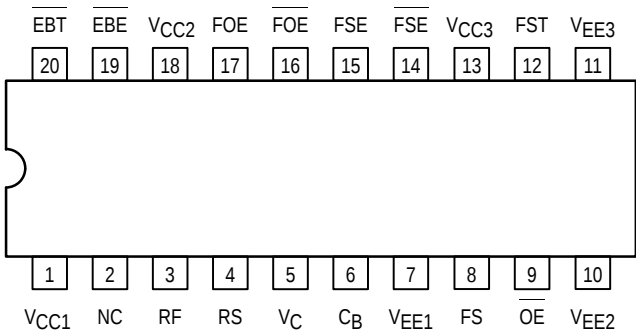


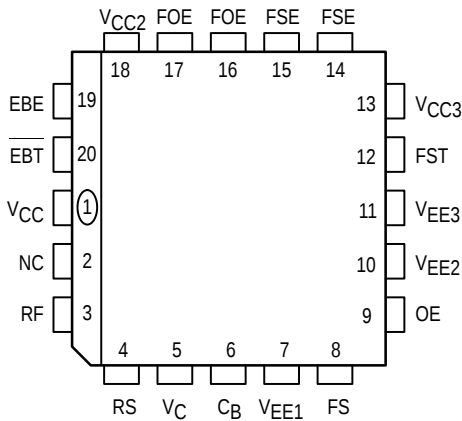
200MHz Voltage Controlled Multivibrator

- High Frequency VCM Ideal for PLL Applications
- Single External Resistor Determines Center Frequency; Additional Resistor Determines f/V Sensitivity
- Internal Ripple Counter (1/2, 1/4, 1/8) For Low Frequency Applications – TTL/ECL Outputs
- VCO Output Enable Pins (TTL/ECL Level)
- +5.0V Single Supply Voltage
- Packages: DIP, PLCC

Pinout: 20-Lead Plastic Package (Top View)

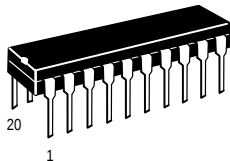


Pinout: 20-Lead PLCC Package (Top View)

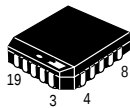


MC12100

200MHz VOLTAGE CONTROLLED MULTIVIBRATOR



P SUFFIX
PLASTIC DIP PACKAGE
CASE 738-03



FN SUFFIX
PLCC PACKAGE
CASE 775-02

PIN NAMES

Pin	Function
RF, RS	Center Frequency Inputs
VC	Frequency Control Input
CB	Bias Filter Input
ES	Frequency Select Input
OE	TTL Output Enable
FST	TTL +2, +4, +8 Output
FSE, FSE	Diff ECL +2, +4, +8 Outputs
FOE, FOE	Diff ECL +1 Outputs
EBE	VCO Disable, ECL Level Input
EBT	VCO Disable, TTL Level Input



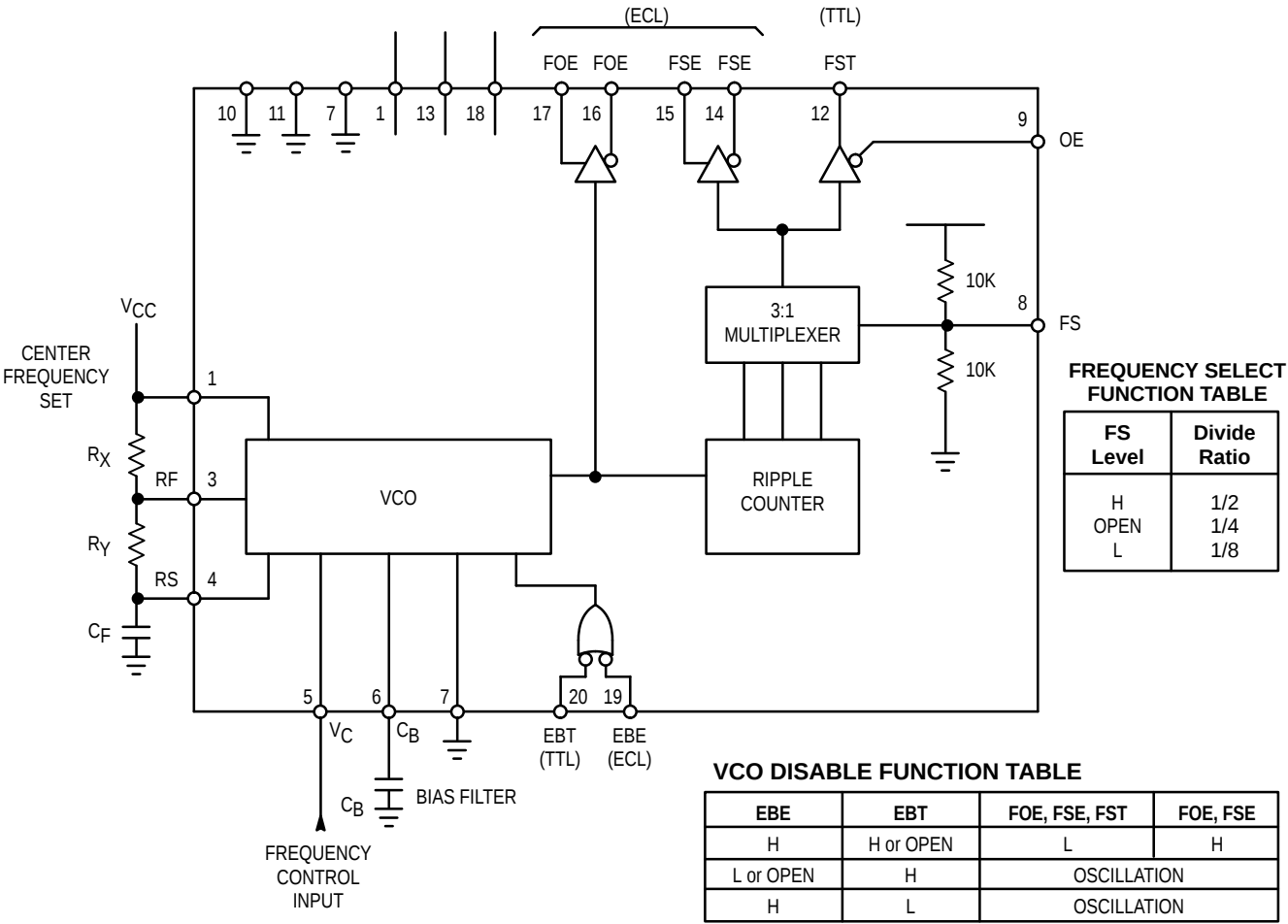


Figure 1. Block Diagram

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC1} V _{CC2} V _{CC3}	Power Supply Voltage	−0.5 to +8.0	V
V _{IN} (TTL)	Input Voltage	−0.5 to V _{CC}	V
V _{IN} (ECL)	Input Voltage	−0.5 to V _{CC}	V
I _{OUT} (ECL)	Output Source Current – Surge	100	mA
	Output Source Current – Continuous	50	mA
T _J	Junction Operating Temperature	+140	°C
T _{STG}	Storage Temperature	−55 to +150	°C

OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
T _A	Ambient Temperature	0 to +75	°C
V _{CC}	Supply Voltage	+4.75 to +5.25	V
I _{OH} (TTL)	TTL High Output Current	−1.0	mA
I _{OL} (TTL)	TTL Low Output Current	20	mA

DC CHARACTERISTICS ($V_{CC} = 5.0V \pm 5\%$; $R_X = 2.4k\Omega$; $R_Y = 1.5k\Omega$; $C_B = 0.001\mu F$)

Symbol	Characteristic	0°C		25°C			75°C		Unit	Condition
		Min	Max	Min	Typ	Max	Min	Max		
I _{CC}	Supply Current	75	120	65	90	110	80	135	mA	EBT = EBE = V_{CC} (ECL, TTL)
V _{OLT}	Output Low Voltage, TTL					0.5			V	$F_S = GND$
V _{OHT}	Output High Voltage, TTL			2.4					V	$F_S = GND$
V _{OLE}	Output Low Voltage, ECL			3.0		3.4			V	$V_{CC} = 5.0V$, $R_L = 50\Omega$, $V_T = 3.0V$
V _{OHE}	Output High Voltage, ECL			3.9		4.19			V	$V_{CC} = 5.0V$, $R_L = 50\Omega$, $V_T = 3.0V$
I _{ILT}	EBT Input Low Current					400			μA	$V_{IN} = 0.4V$
I _{IHT}	EBT Input High Current					20			μA	$V_{IN} = 2.7V$
						100			μA	$V_{IN} = 7.0V$
I _{INHE}	EBE Input High Current					250			μA	$V_{IN} = 4.19V$
I _{INLE}	EBE Input Low Current			1.0					μA	$V_{IN} = 3.05V$
V _{ILS}	FS Input, Max "L" Level					1.2			V	$V_{CC} = 5.0V$
V _{IMS}	FS Input, "Medium" Level			2.0		3.0			V	$V_{CC} = 5.0V$
V _{IHS}	FS Input, Min "H" Level			3.8					V	$V_{CC} = 5.0V$
V _{ILT}	EBT Input Low Voltage		0.8			0.8		0.8	V	
V _{IHT}	EBT Input High Voltage	2.0		2.0			2.0		V	
V _{IHE}	EBE Input High Voltage			3.87		4.19			V	$V_{CC} = 5.0V$
V _{ILE}	EBE Input Low Voltage			3.05		3.52			V	$V_{CC} = 5.0V$
V _{LM}	V_C Input Voltage, $V_C = V_{CC} \div 2$			± 1.1	± 1.3	± 1.5			V	$V_{CC} = 5.0V$
V _{CB}	C_B Output Voltage			2.35	2.50	2.65			V	$V_{CC} = 5.0V$

AC CHARACTERISTICS ($V_{CC} = 5.0V$; $R_X = 2.4k\Omega$; $R_Y = 1.5k\Omega$; $C_B = 0.001\mu F$; $V_T = 3.0V$)

Symbol	Characteristic	0°C		25°C			75°C		Unit	Condition
		Min	Max	Min	Typ	Max	Min	Max		
FO	Center Frequency ($V_{VC} - V_{CB} = 0V$)			180	200	220			MHz	$V_{CC} = +2.0V$ $V_{EE} = -3.0V$
F _{MAX} – F _{MIN}	Frequency Range ($V_C = 1/2 V_{CC} \pm 1.5V$, $V_{CC} = 5.0V$)			85	100	115			MHz	
t _{rE}	FOE/FOE/FSE/FSE Rise Time			0.5		2.4			ns	
t _{fE}	FOE/FOE/FSE/FSE Fall Time			0.5		2.4			ns	
TTT	Reset Time					35			ns	EBT ~ FST
TTO	Reset Time					25			ns	EBT ~ FOE/FOE
TTS	Reset Time					30			ns	EBT ~ FSE/FSE
TET	Reset Time					37			ns	EBE ~ FST
TEO	Reset Time					12			ns	EBE ~ FOE/FOE
TES	Reset Time					25			ns	EBE ~ FSE/FSE

Loading: ECL = 50 Ω to V_T ; TTL = 500 Ω , 50pF

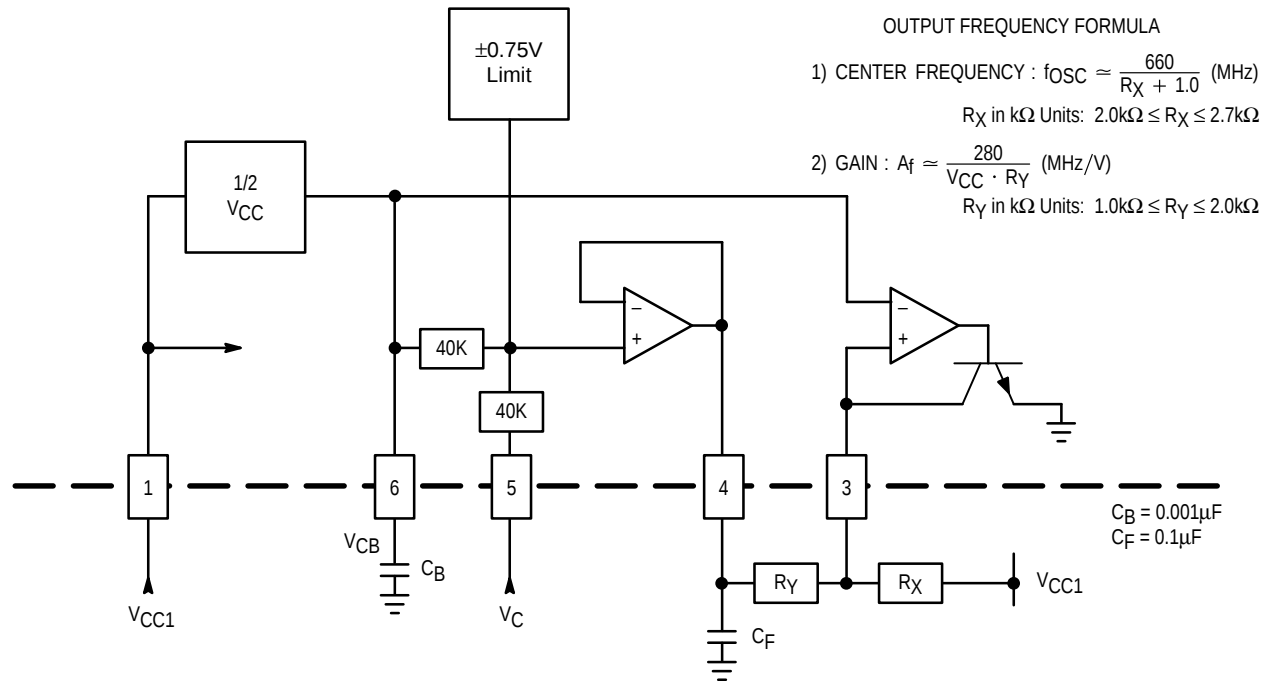


Figure 2. VCO Detail

Notes:

- For optimum VCO linearity (MHz/V), the following resistor ranges are recommended:
 $2.0k\Omega \leq R_X \leq 2.7k\Omega$ ($R_Y = 1.5k\Omega$)
 $1.0k\Omega \leq R_Y \leq 2.0k\Omega$ ($R_X = 2.4k\Omega$)
- TTL output maximum frequency = 50MHz
- Simultaneous use of both ECL and TTL outputs are not recommended due to excessive power consumption for the EIAJ Type II SO package

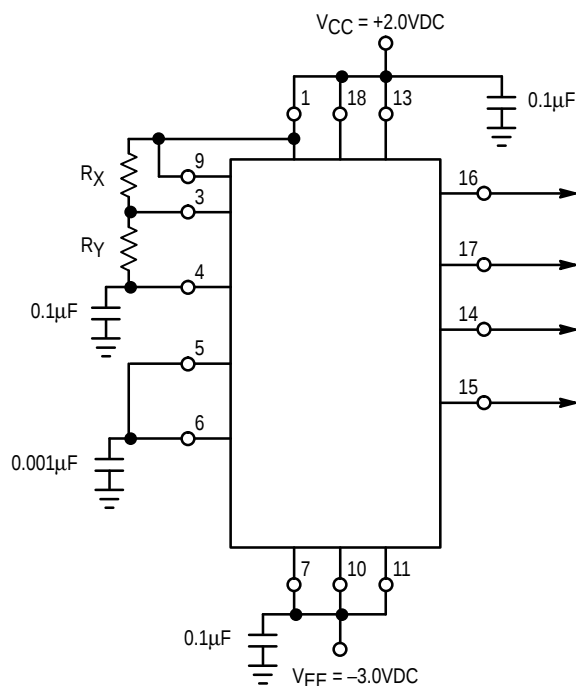
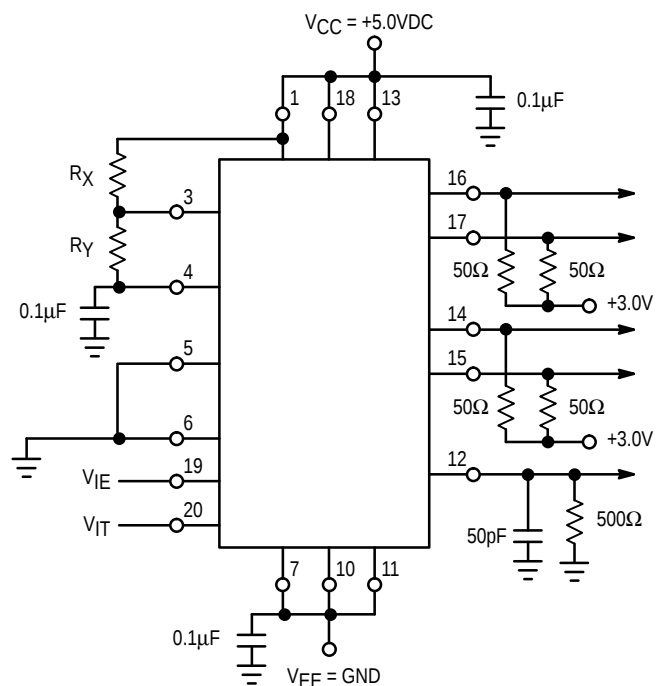
Figure 3. AC Test Circuit ($f_O/t_{rE}/t_{fE}$ Measurement)

Figure 4. AC Test Circuit (Other Measurements)

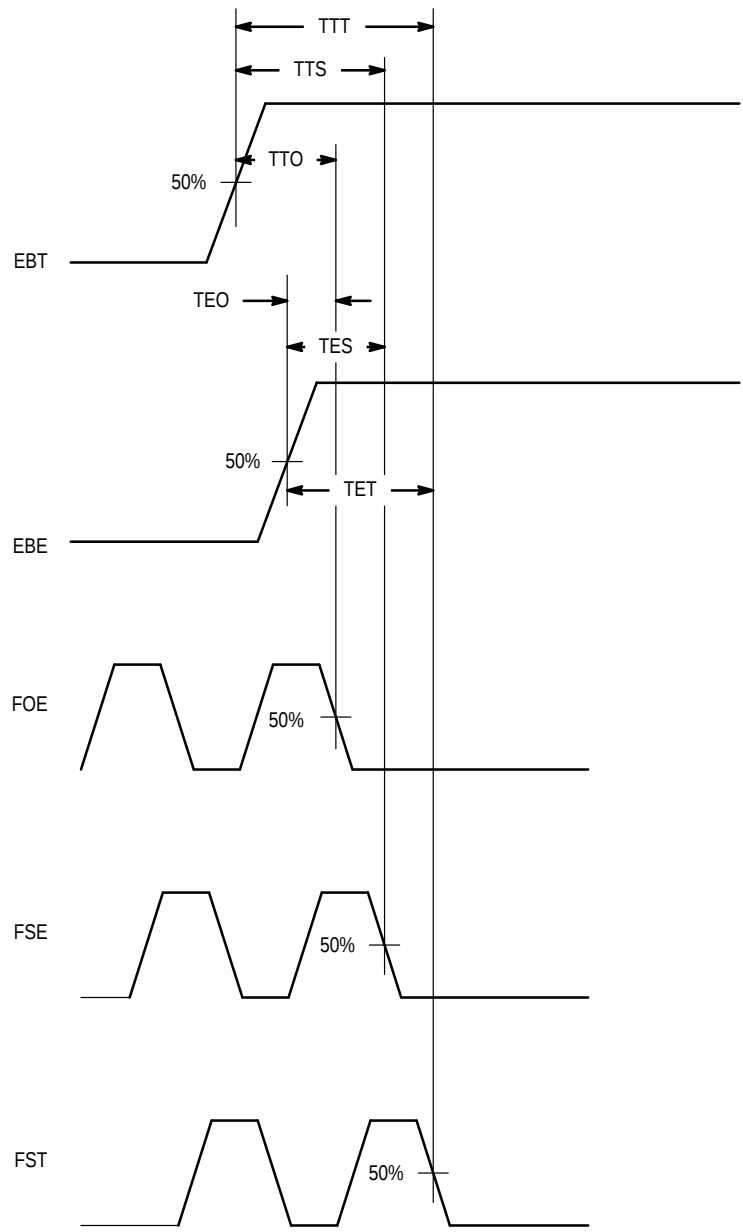


Figure 5. Switching Waveforms

VCO DISABLE FUNCTION TABLE

EBE	EBT	FOE, FSE, FST	FOE, FSE
H	H or OPEN	L	H
L or OPEN	H	OSCILLATION	
H	L	OSCILLATION	

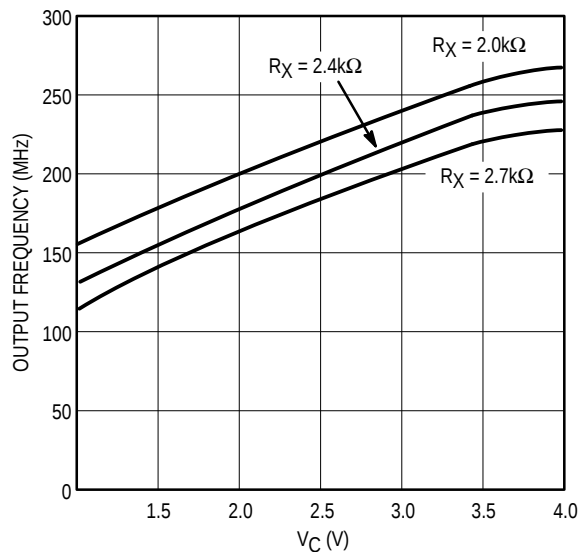


Figure 6. V_C versus Output Frequency
Varying R_X @ $V_{CC} = 5.0V$; $T_A = 25^\circ C$; $R_Y = 1.5k\Omega$

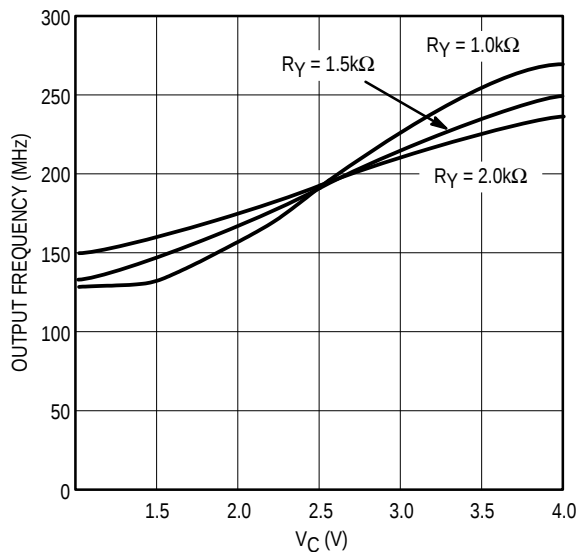


Figure 7. V_C versus Output Frequency
Varying R_Y @ $V_{CC} = 5.0V$; $T_A = 25^\circ C$; $R_X = 2.4k\Omega$

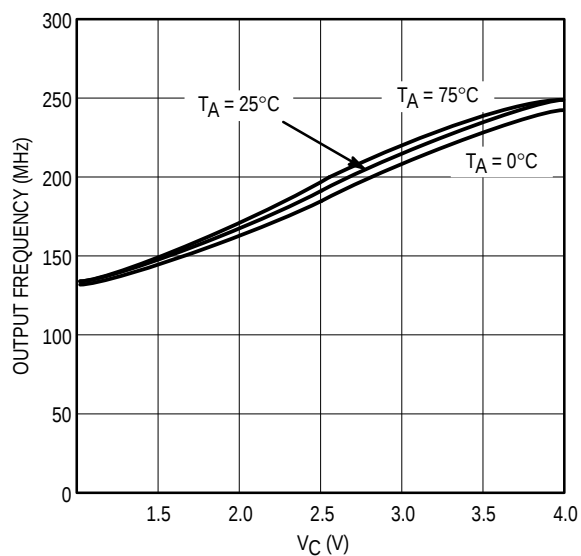


Figure 8. V_C versus Output Frequency
Varying T_A @ $V_{CC} = 5.0V$; $R_X = 2.4k\Omega$; $R_Y = 1.5k\Omega$

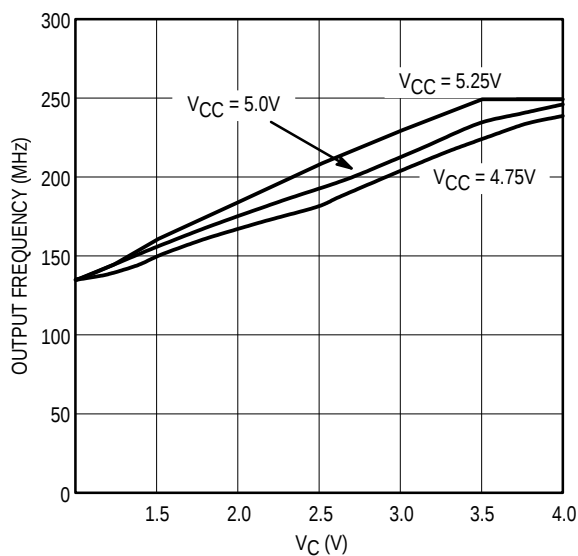
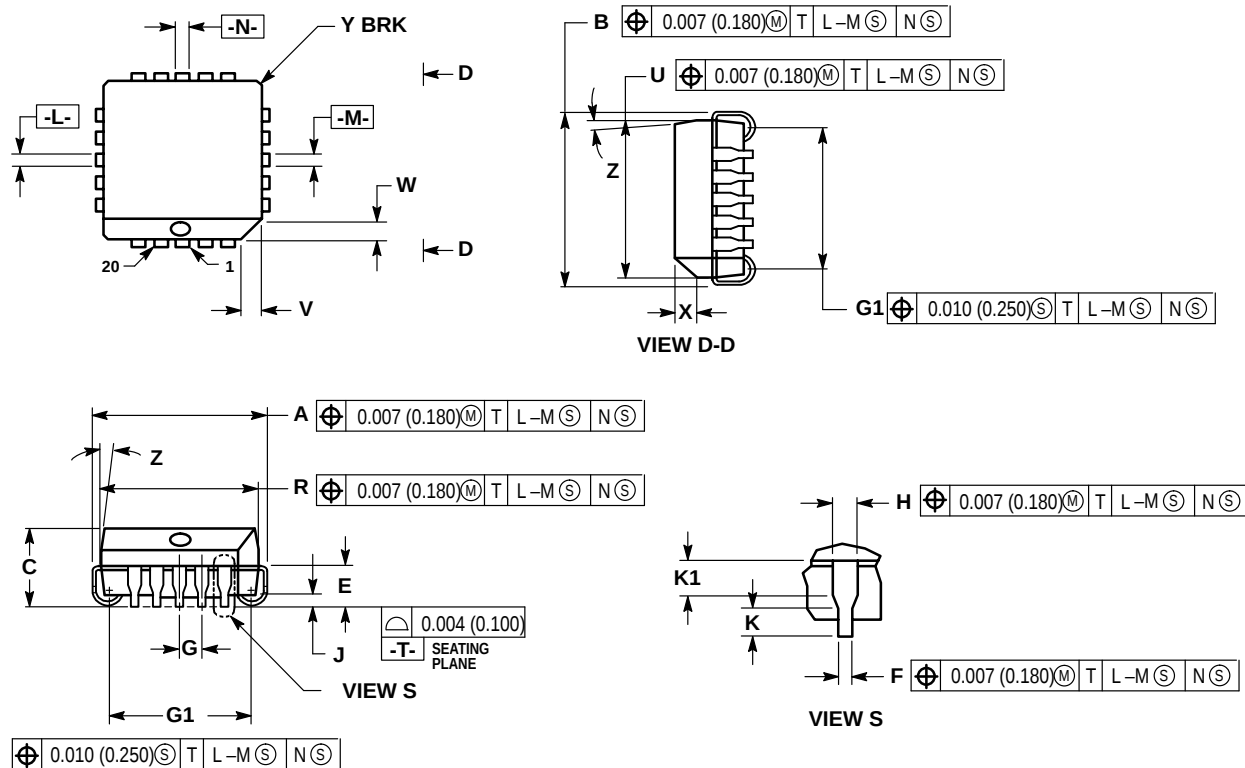


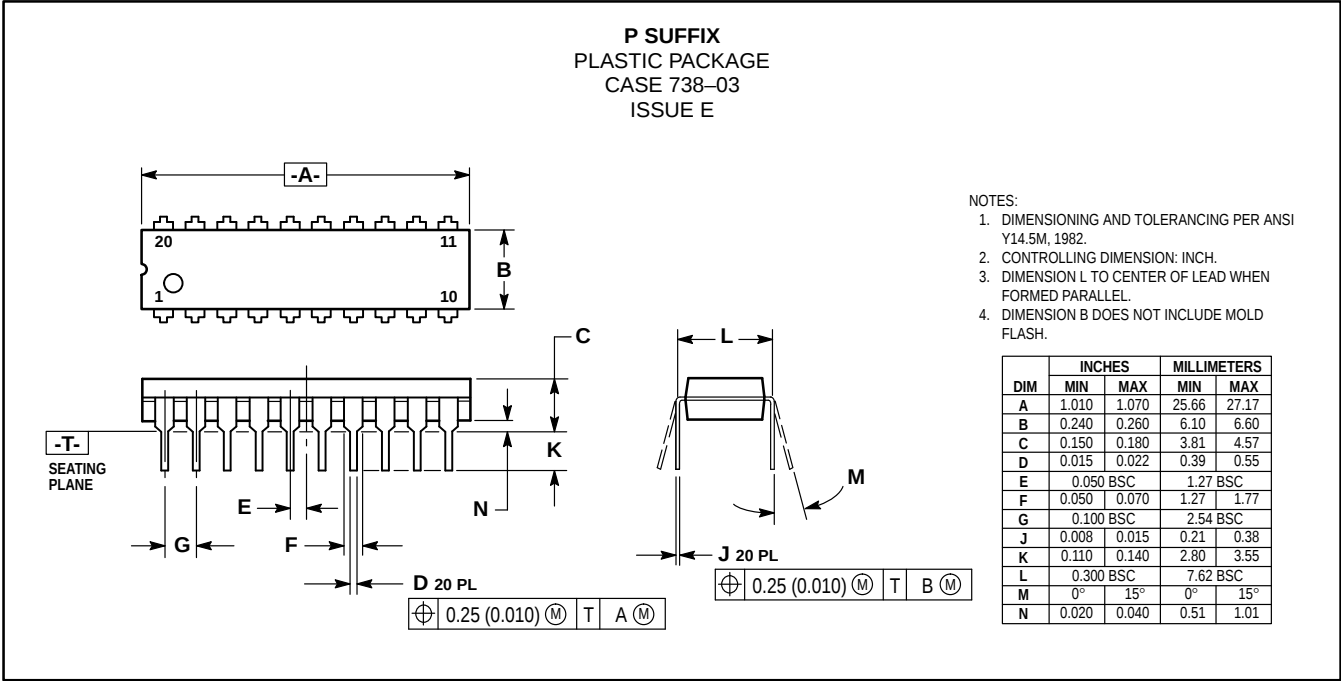
Figure 9. V_C versus Output Frequency
Varying V_{CC} @ $R_X = 2.4k\Omega$; $R_Y = 1.5k\Omega$; $T_A = 25^\circ C$

OUTLINE DIMENSIONS

FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775-02
ISSUE C



OUTLINE DIMENSIONS



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