



T-50-15

Voltage Controlled Oscillator

ELECTRICALLY TESTED PER: MPG 1648M

The 1648M requires an external parallel tank circuit consisting of the inductor (L) capacitor (C).

A varactor diode may be incorporated into the tank circuit to provide a voltage variable input for the oscillator (VCO). This device may be used in many applications requiring a fixed or variable frequency clock source of the high spectral purity. (See Test Circuit).

The 1648M may be operated from a + 5.0 Vdc supply or a - 5.2 Vdc supply, depending upon system requirements.

ABSOLUTE MAXIMUM RATINGS:	Symbol	Min	Max	Unit
Power Supply Voltage ($V_{CC} = 0$)	V_{CC}	- 8.0	0	Vdc
Input Voltage @ ($V_{EE} = - 5.2$ Vdc)	V_{IN5} V_{IN12}	- 5.2 0	- 3.4 V_{EE}	Vdc Vdc
Output Source Current	I_O		< 40	mAdc
Storage Temperature Range	T_{stg}	- 55	+ 125	°C
Operating Temperature Range	T_A	- 55	+ 125	°C

PIN ASSIGNMENTS

FUNCTION	DIL Case 692	FLATS Case 717	LCC Case 756A	BURN-IN (CONDITION C)
V_{CC}	1	1	2	GND
N.C.	2	2	3	OPEN
Output	3	3	4	51 Ω to V_{TT}
N.C.	4	4	6	OPEN
AGC	5	5	8	OPEN
N.C.	6	6	9	OPEN
V_{EE}	7	7	10	V_{EE}
V_{EE}	8	8	12	V_{EE}
N.C.	9	9	13	OPEN
Bias Point	10	10	14	OPEN
N.C.	11	11	16	OPEN
Tank	12	12	18	51 Ω to V_{TT}
N.C.	13	13	19	OPEN
V_{CC}	14	14	20	GND

BURN - IN CONDITIONS:

$V_{TT} = - 2.0$ V MAX/ - 2.2 V MIN

$V_{EE} = - 5.7$ V MAX/ - 5.2 V MIN

Military 1648M

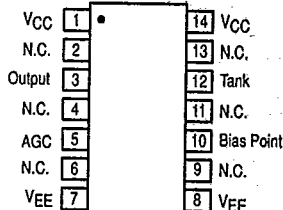


AVAILABLE AS

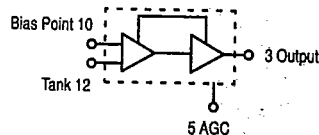
- 1) JAN: N/A
 - 2) SMD: N/A
 - 3) 883: 1648M/BXAJC
- X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERP: C
CERFLAT: D
LCC: 2

The letter "M" appears before
the slash on LCC.



LOGIC DIAGRAM



Input Capacitance = 6.0 pF typ
Maximum Series Resistance for L (External Inductance) = 50 Ω typ
Power Dissipation = 215 mW typ/pkg (+ 5.0 Vdc supply)
Maximum Output Frequency = 225 MHz typ

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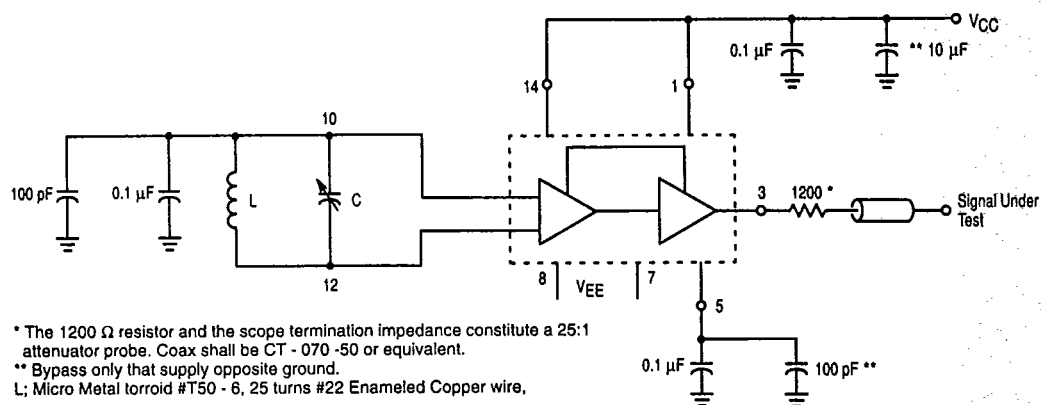


Figure 1. Test Circuit

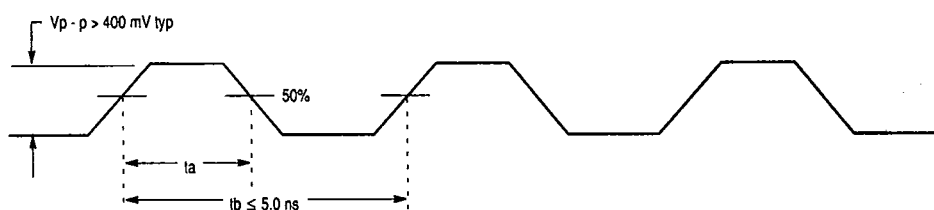


Figure 2. Test Circuit Waveforms

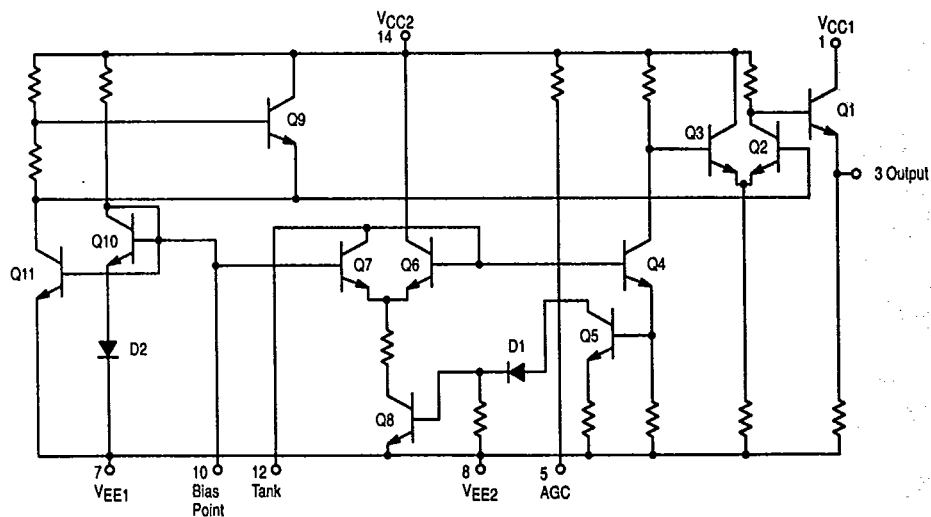


Figure 3. Circuit Schematic

1648M QUIESCENT LIMIT TABLE

Test Temperature	Test Voltage Values (Volts)						Test Current Values (mA)
	V _{IHA}	V _{ILA}	V _{IHB}	V _{ILB}	V _{VEE}	V _{OC}	I _L
T _A = 25 °C	-3.35	-3.85	+1.85	+1.35	-5.2	+5.0	-5.0
T _A = 125 °C	-3.60	-4.10	+1.60	+1.10	-5.2	+5.0	-5.0
T _A = -55 °C	-3.13	-3.63	+2.07	+1.57	-5.2	+5.0	-5.0

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW												
		+ 25 °C			+ 125 °C				- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments									
		Subgroup 1		Subgroup 2		Subgroup 3															
		Min	Max	Min	Max	Min	Max		V _{IHA}	V _{ILA}	V _{IHB}										
V _{THA}	High Internal Threshold Voltage	- 3.75	- 3.45	- 4.0	- 3.7	- 3.53	- 3.23	V		12				7, 8		1, 14	5, 10				
V _{OHA}	High Output Voltage	- 0.96	- 0.75	- 0.84	- 0.60	- 1.08	- 0.87	V		12				7, 8	3	1, 14	3				
V _{OLA}	Low Output Voltage	- 1.85	- 1.62	- 1.82	- 1.54	- 1.92	- 1.67	V	12					7, 8	3	1, 14	3				
V _{THB}	High Internal Threshold Voltage	1.45	1.75	1.2	1.5	1.67	1.97	V				12	1, 14			7, 8	5, 10				
V _{OHB}	High Output Voltage	4.04	4.25	4.16	4.4	3.92	4.13	V				12	1, 14		3	7, 8	3				
V _{OLB}	Low Output Voltage	3.2	3.43	3.23	3.51	3.13	3.38	V			12		1, 14		3	7, 8	3				
I _{CC}	Power Supply Current Off		40					mA								7, 8	1, 14				
I _{EE}	Power Supply Drain Current	- 41						mA						7, 8		1, 14	7, 8				

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW			
	Functional Parameters:	+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments Output Load = 50 Ω to GND			
				Subgroup 10		Subgroup 11						
		Min	Max	Min	Max	Min	Max					
* f _{Max}	Oscillation Frequency	200		200		190		MHz	VCC		GND	
									1, 14		7, 8	

* Frequency variations over temperature is a direct function of the $\Delta C/\Delta$ Temperature and $\Delta I/\Delta$ Temperature.