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DIGITAL INTEGRATED CIRCUITS
PRELIMINARY DATA

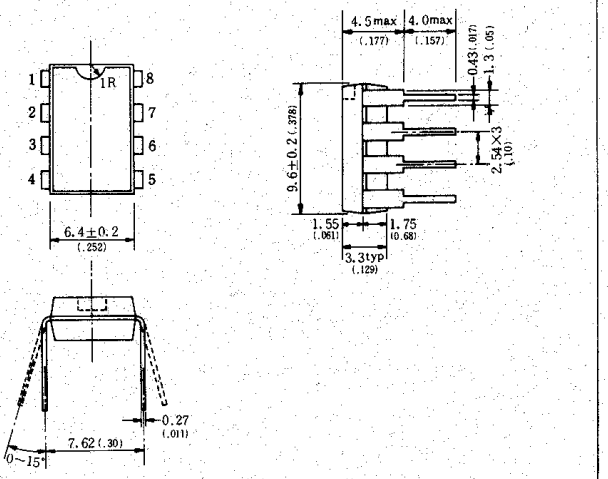
MN3101

Clock Generator / Driver for BBD's

The MN3101 is a CMOS integrated circuit designed to generate low impedance two clock phases required for driving BBD's. In addition, the MN3101 provides the optimum V_{GG} for BBD's* when the MN3101 is used with BBD's on a common V_{DD} supply.

The self-contained oscillator can be controlled by an external R,C circuit, but an external oscillator can also be used. The clock frequency is 1/2 of the oscillation frequency.

Unit: mm (inch)



8-Lead Dual-In-Line Plastic Package

* Matsushita Electronics Corporation's BBD product range: MN3001, MN3002, MN3003, MN3004, MN3005, MN3006, MN3007, MN3008, MN3009, MN3010, MN3011 (Developmental)
Note: The MN3003 is provided with an internal oscillator.

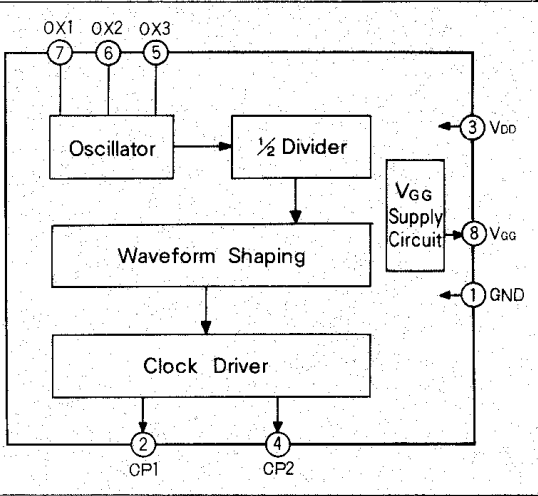
Features:

- **BBD direct driving capability—up to two MN3005 types (equivalent to 8192 stages).**
- **Either internal or external oscillator can be used**
- **Two phases (1/2 duty) output**
- **Provided with V_{GG} supply circuit**
- **Operates on a single power supply: −8~−16V**
- **8-lead dual-in-line plastic package**

Application

- **BBD clock generator / driver**

Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	−18~+0.3 *	V
Input Terminal Voltage	V_I	V_{DD}−0.3~+0.3 *	V
Output Terminal Voltage	V_O	V_{DD}−0.3~+0.3 *	V
Power Dissipation	P_D	200	mW
Operating Temperature	Topr	−10~+70	°C
Storage Temperature	Tstg	−30~+125	°C

* With respect to GND=OV.

Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V_{DD}	GND=OV	−8	−15	−16	V

Electrical Characteristics (Ta=25°C, V_{DD}=−15V, GND=OV)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Current	I_{DD}	Without load		3		mA
Power Consumption	Ptot	Clock output 40kHz		45		mW
OX1 Input Terminal						
Input Voltage "H" Level	V_{IH}		0		−1	V
Input Voltage "L" Level	V_{IL}		V_{DD}+1		V_{DD}	V
Input Leakage Current	I_{LK}	V_I=0~−15V			30	μA
OX2 Output Terminal						
Output Current "H" Level	I_{OH1}	V_O=−1.0V	0.6			mA
Output Current "L" Level	I_{OL1}	V_O=−14V	0.5			mA
Output Leakage Current	I_{LOL1}	V_O=V_{DD}			30	μA
Output Leakage Current	I_{LOH1}	V_O=GND			30	μA
OX3 Output Terminal						
Output Current "H" Level	I_{OH2}	V_O=−1.0V	1.5			mA
Output Current "L" Level	I_{OL2}	V_O=−14V	2.0			mA
Output Leakage Current	I_{LOL2}	V_O=V_{DD}			30	μA
Output Leakage Current	I_{LOH2}	V_O=GND			30	μA
CP1, CP2 Output Termial						
Output Current "H" Level	I_{OH3}	V_O=−1.0V	10			mA
Output Current "L" Level	I_{OL3}	V_O=−14V	10			mA
Output Leakage Current	I_{LOL3}	V_O=V_{DD}			30	μA
Output Leakage Current	I_{LOH3}	V_O=GND			30	μA
V_{GG} Output Terminal*						
Output Voltage	$V_{GG\ OUT}$			−14.0		V

* This terminal outputs V_{GG} voltage particularly suitable for the BBD's manufactured by Matsushita Electronics Corporation. The voltage is not necessarily suitable for other manufacturers' products.
The $V_{GG\ OUT}$ changes depending on V_{DD}. The relationship between $V_{GG\ OUT}$ and V_{DD} is as follows;

$$V_{GG\ OUT} \fallingdotseq \frac{14}{15} V_{DD}$$