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ZN705E

CRYSTAL CONTROLLED OSCILLATOR CIRCUIT

The ZN705E is a square wave oscillator designed to be used with AT cut crystals which have a low effective series resistance.

A master oscillator feeds a two stage divider giving $f/2$ and $f/4$ outputs. Complementary outputs are also provided.

FEATURES

- Operate upto 10MHz
- Low crystal drive required, suitable for AT cut types
- $f/2$, $f/4$ and antiphase outputs
- TTL compatible
- Single 5V supply
- 14 pin moulded plastic
- Replaces SP705/B/DG

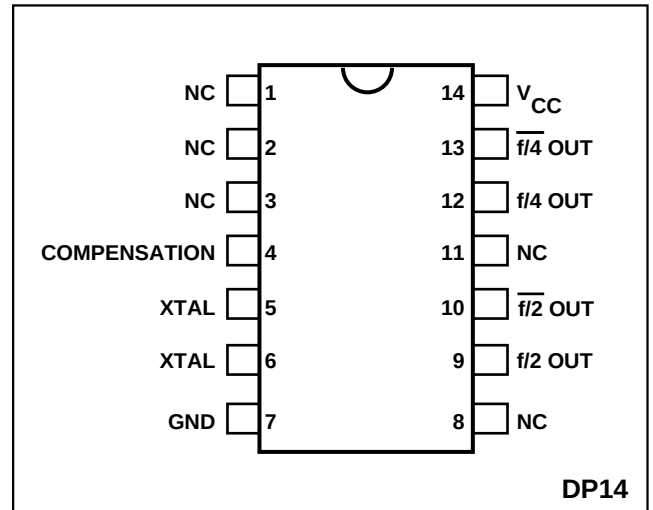


Fig.1 Pinout

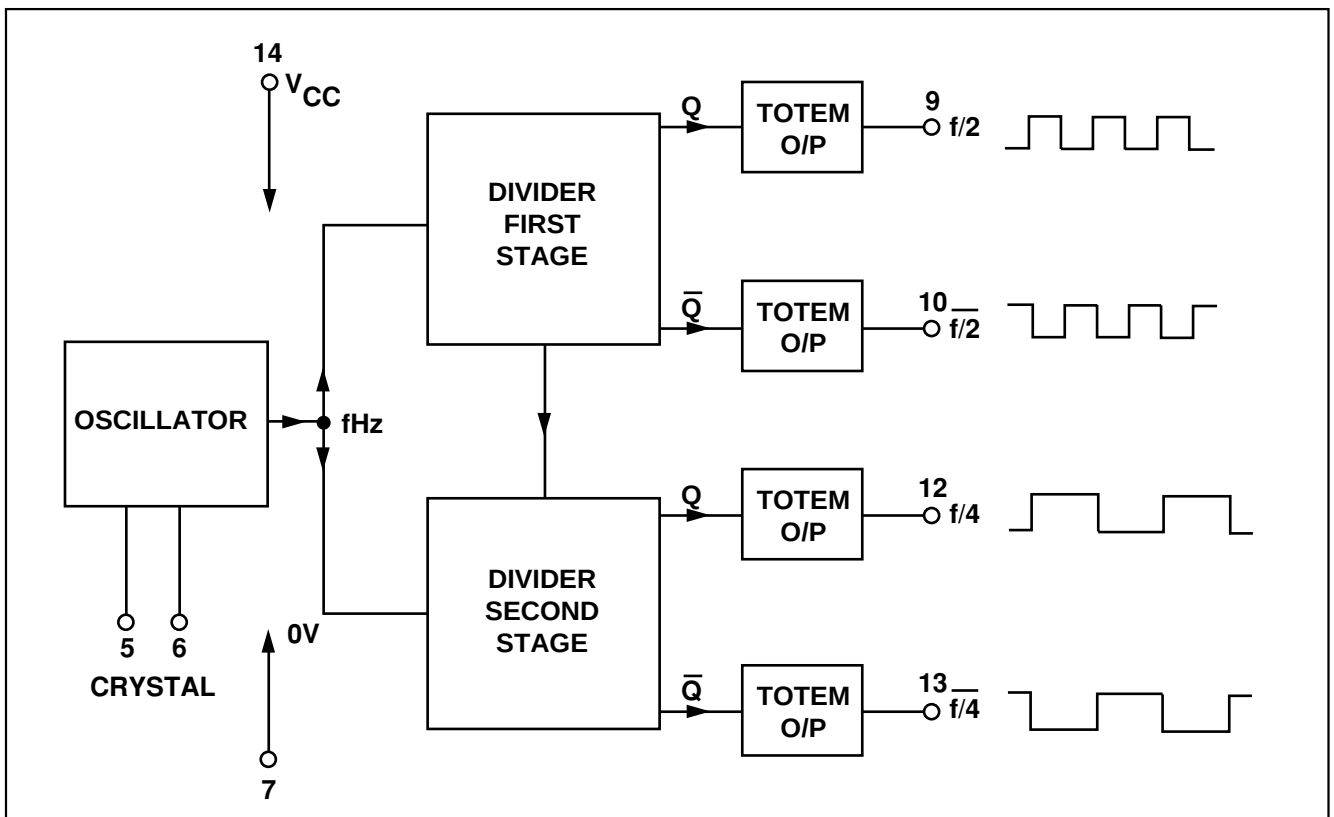


Fig.2 System diagram

ZN705E

ABSOLUTE MAXIMUM RATINGS (see note 1)

Supply voltage, V_{CC}	7.0V
Operating supply range	$5.0 \pm 0.25V$
Input voltage, V_{IN} (see note 2)	-0.3 to 7.0V
Current sink	16mA
Operating temperature range	0°C to +70°C
Storage temperature range	-55°C to +150°C

DC CHARACTERISTICS

These characteristics are guaranteed over the following conditions unless otherwise stated.

Parameter	Symbol	Pins	Min.	Typ.	Max.	Units.	Conditions
Supply current	I_{CC}				35	mA	$V_{CC} = 5.0V$
Low level output voltage	V_{OL}	9, 10, 12, 13			0.4	V	$V_{CC} = 5.25V$, $I_{OL} = 8mA$ see Fig.3
High level output voltage	V_{OH}	9, 10, 12, 13	2.6			V	$V_{CC} = 4.75V$, $I_{OH} = 0.2mA$ see Fig.3

AC CHARACTERISTICS

These characteristics are guaranteed over the following conditions unless otherwise stated.

Parameter	Symbol	Pins	Min.	Typ.	Max.	Units.	Conditions
Crystal frequency	f_c	5, 6			10	MHz	
Output rise time	t_R	9, 10, 12, 13			20	ns	$V_{CC} = 5.0V$, see Fig.3
Output fall time	t_F	9, 10, 12, 13			20	ns	$V_{CC} = 5.0V$, see Fig.3

Note.1 The absolute maximum ratings are limiting values above which operating life may be shortened or specific parameters degraded.

Note.2 V_{IN} = voltage on any input relative to pin 7.

Functional description (by pin number)

1, 2, 3, 8, 11 Not connected

4 Compensation

External compensation point. A capacitor may be connected between this pin and V_{CC} to prevent unwanted high frequency oscillations. A 14pF capacitor is included on-chip for compensation and this may be sufficient for most applications.

5,6 Crystal

The crystal is connected, in series, with a 20pF capacitor, between these pins. Small frequency changes may be made by exchanging the capacitor for a mechanical trimmer.

7 Ground

9 f/2

f/2 output TTL compatible totem pole output, frequency equal to half that of the crystal.

10 $\bar{f}/2$

Inverse function of pin 9.

12 f/4

f/4 output TTL compatible totem pole output, frequency equal to one quarter that of the crystal.

13 $\bar{f}/4$

Inverse function of pin 12.

14 V_{CC}

Positive supply connection.

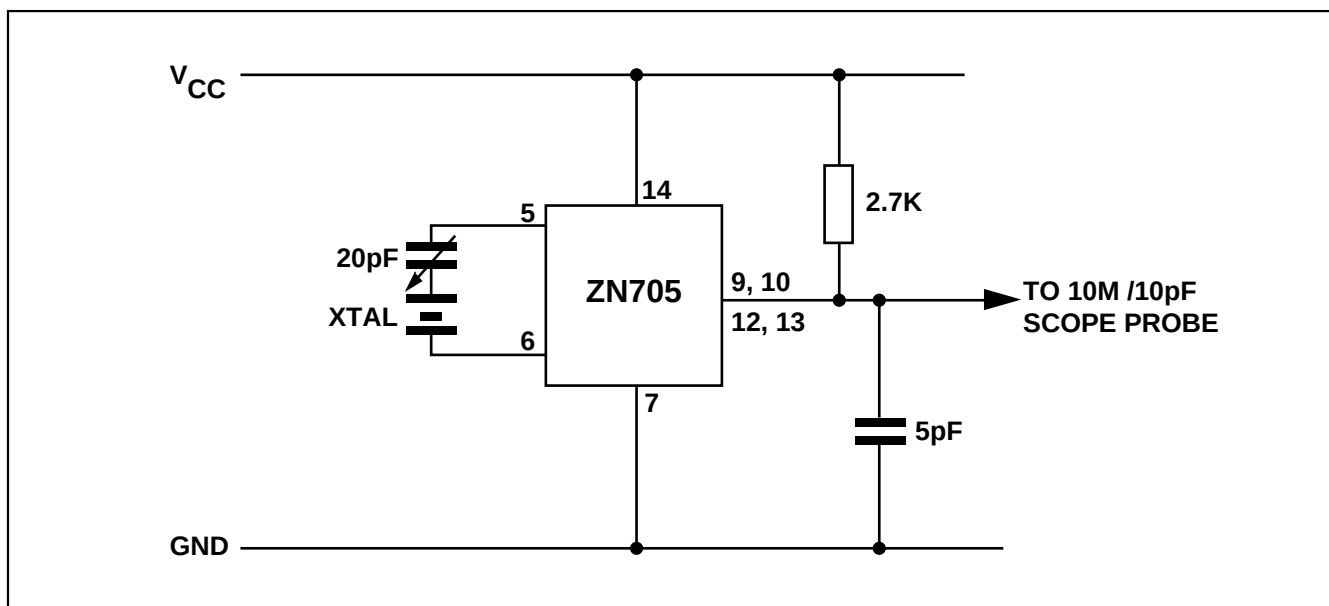


Fig.3 Test circuit (All outputs)

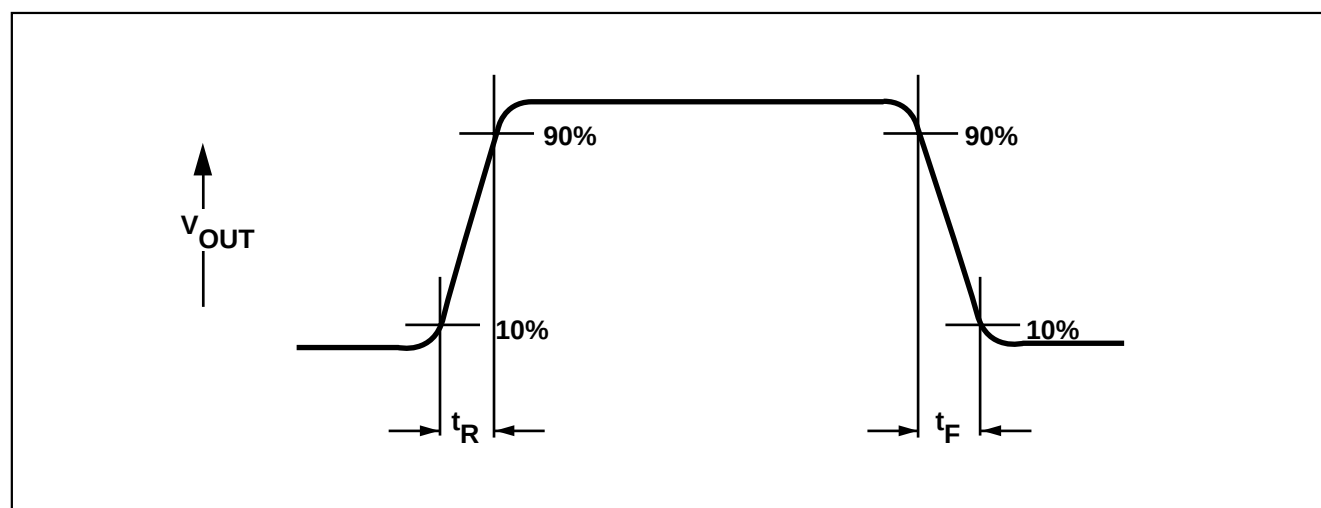
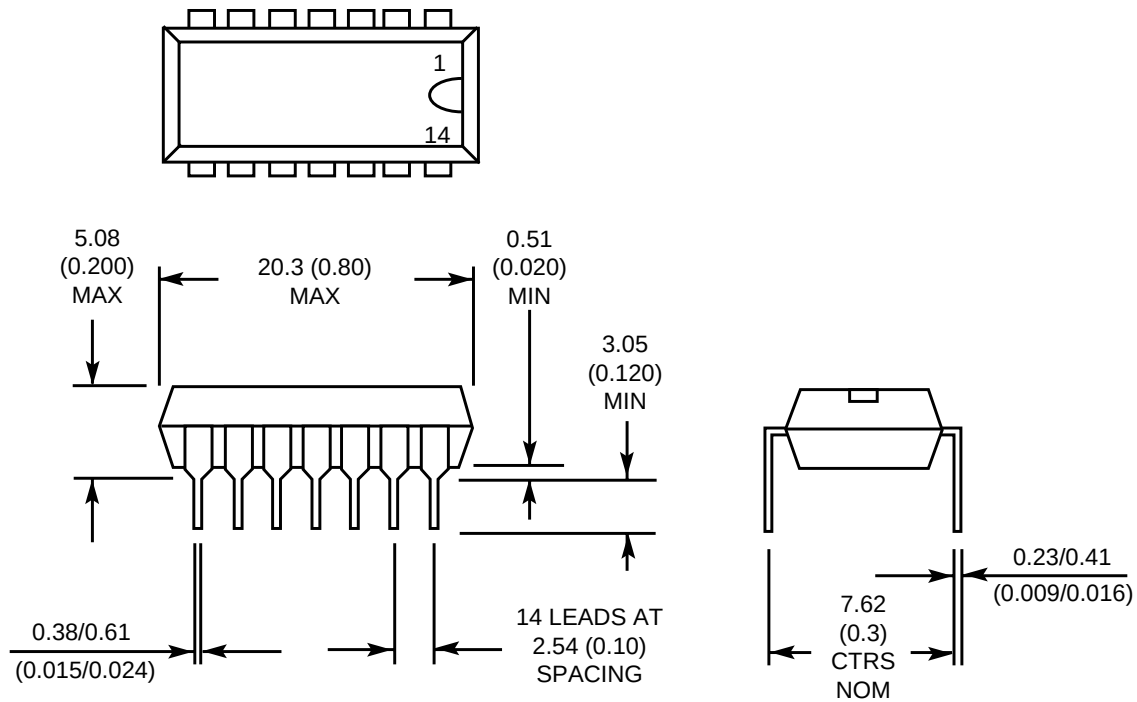


Fig.4

ZN705E

PACKAGE DETAILS

Dimensions are shown thus: mm (in).



14-LEAD PLASTIC DIP - DP14



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