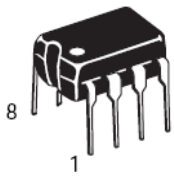
BH1456B/C
Quadrature Decoder

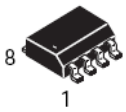
JPLABS
member of VISIONICS LTD

FEATURES:
- Up to 32 MHz output clock frequency in X1 or X4 mode
- Enable/Disable outputs selection
- On-chip filtering of inputs for optical or magnetic encoder applications
- Schmitt-Trigger Encoder Inputs
- CMOS & TTL compatible Inputs/Outputs
- From +2.2V to +5V operation (V_{DD}-V_{SS})



P DIP = PP
PLASTIC PACKAGE
CASE 626

SO 8 = -5P
PLASTIC PACKAGE
CASE 751
(SO–8)



ORDER CODE:

BH1456BPP … P DIP plastic package
BH1456B-5P … SO-8 plastic package
BH1456CPP … P DIP plastic package
BH1456C-5P … SO-8 plastic package

DESCRIPTION:
The BH1456B is an integrated circuit featuring a function of quadrature decoder in x1 mode, while the BH1456C is designed for x4 mode.
A quadrature clock signals derived from optical or magnetic encoders, when applied to the A and B inputs of the BH1456B/C, are converted to strings of Up Clocks and Down Clocks. In x1 mode (BH1456B), the output pulse is generated in one combined A/B input cycle. In x4 mode (BH1456C), output pulse is generated for every transition at either A or B input. These outputs can be enabled or disabled and interfaced directly with standard bi-directional counters or micro-controllers for direction and position sensing of the encoder.

PINOUT DESCRIPTION:

V_{DD} (Pin 1)
Positive Supply Voltage. From +2.2V to +4V (BH1456BL), +4.5V to +5.5V (BH1456B).

CH A (Pin 2)
Quadrature Clock Input A. This is a Schmitt-Trigger input.

CH A (Pin 3)
Quadrature Clock Input B. This is a Schmitt-Trigger input.

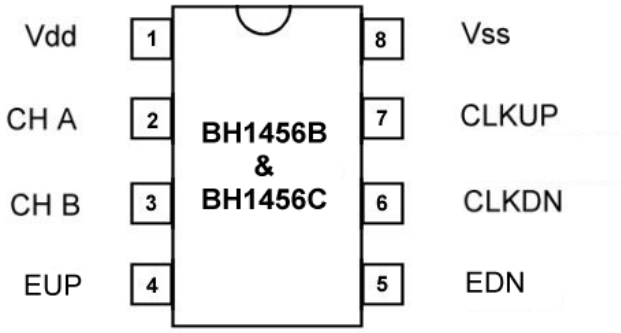
EUP (Pin 4)
A low-level on this input disable CLKUP output signal (pin 7).

EDN (Pin 5)
A low-level on this input disable CLKDN output signal (pin 6).

CLKDN (Pin 6)
This is the DOWN Clock Output. This DOWN Clock Output consists of low-going pulses generated when CH A input lags the CH B input.

CLKUP (Pin 7)
This is the UP Clock output. This UP CLOCK output consists of low-going pulses generated when CH A input leads the CH B input.

Vss (Pin 8)
Negative Supply Voltage.

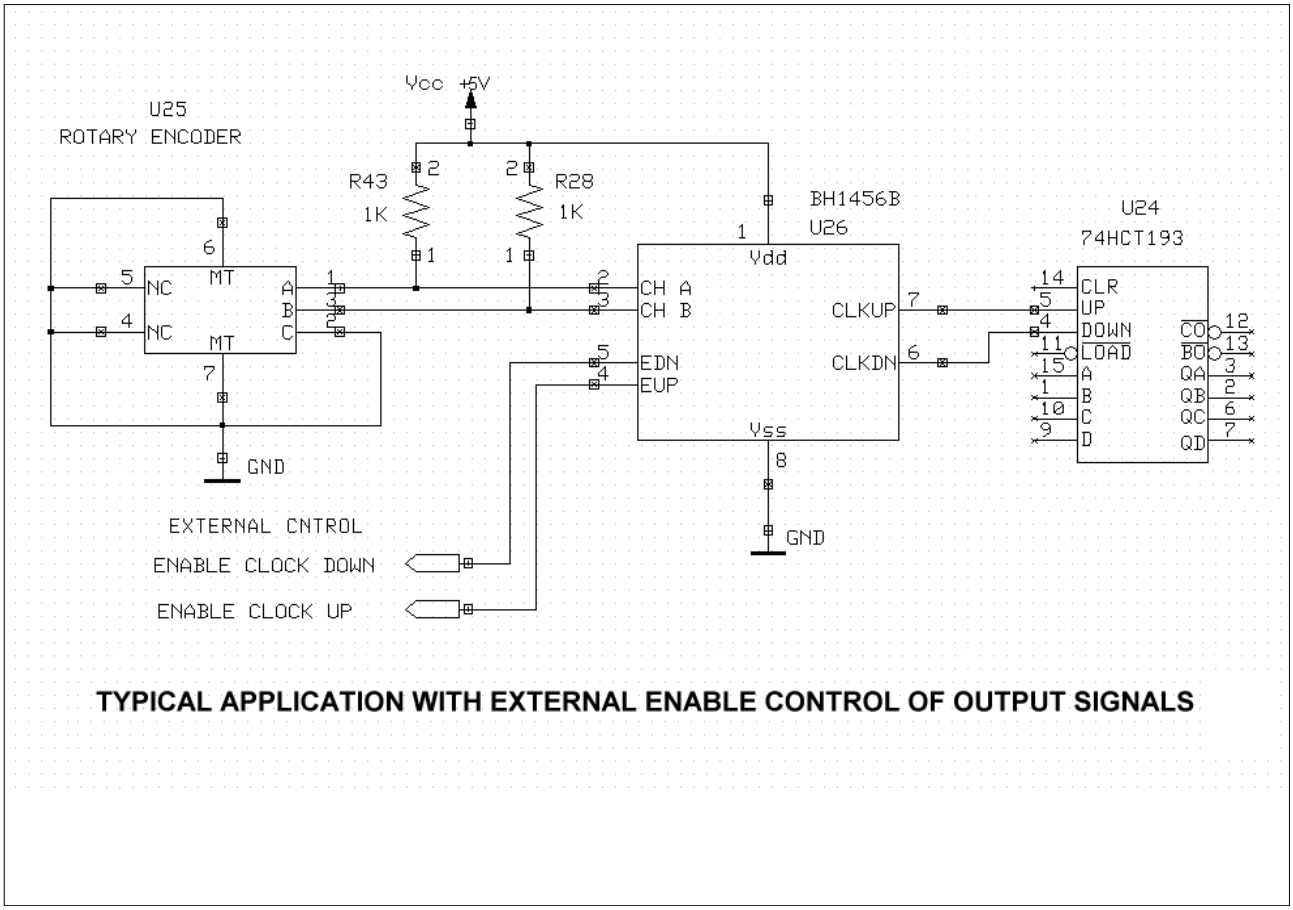


ABSOLUTE MAXIMUM RATINGS:

Ambient temperature ..... -40°C to +125°C
Storage temperature ..... -65°C to +150°C
Voltage on V_{DD} with respect to V_{SS}, BH1456B/C ..... -0.3V to +6.5V
Voltage on V_{DD} with respect to V_{SS}, BH1456B/CL ..... -0.3V to +4.0V
Voltage on inputs with respect to V_{SS} ..... -0.3V to (V_{DD} + 0.3V)
Total power dissipation .....800 mW
Maximum current out of V_{SS} pin, -40°C ≤ TA ≤ +85°C ..... 210 mA

DC ELECTRICAL CHARACTERISTICS:
(All voltages referenced to V_{SS}, T_A = 0°C to 70°C.)

PARAMETER	SYMBOL	MIN	MAX	UNITS	CONDITION
Supply voltage	VDD	2.2	5.5	V	
EUP Logic Low	V_{IL}	0.3V_{DD}	-	V	
EDN Logic Low	V_{IL}	0.3V_{DD}	-	V	
A,B Logic Low	V_{IL}	-	0.4	V	V_{DD} = 5V
EUP Logic High	V_{IH}	0.7V_{DD}	-	V	
EDN Logic High	V_{IH}	0.7V_{DD}	-	V	
A,B Logic High	V_{IH}	3	-	V	V_{DD} = 5V
ALL OUTPUTS:					
Sink Current V_{OL} = 0.25V	I_{OL}	15	-	mA	V_{DD} = 5V



TYPICAL APPLICATION WITH EXTERNAL ENABLE CONTROL OF OUTPUT SIGNALS