

FEATURES

- Input Quadrature Frequency of Up to 2.5 MHz
- Built In Common Mode Noise Rejection Circuit
- Selectable Output Mode as Pulse and Direction or Pulse and Pulse (Normal Mode)
- Selectable Output Pulses in Multiples of x1, x2, and x4, and Even Frequency Division from 1/2 to 1/56
- Up to 10 MHz Clock Frequency

APPLICATIONS

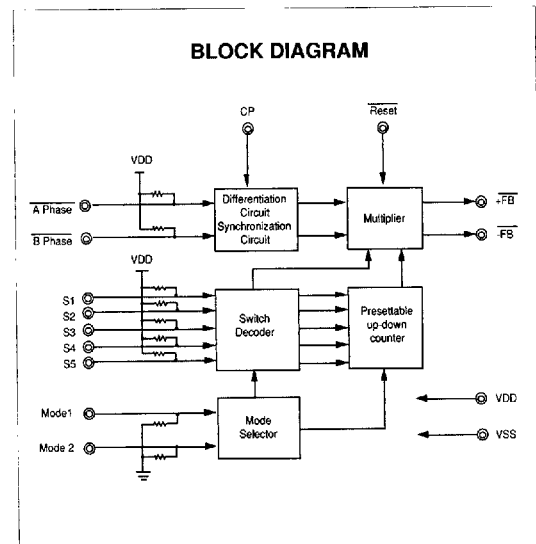
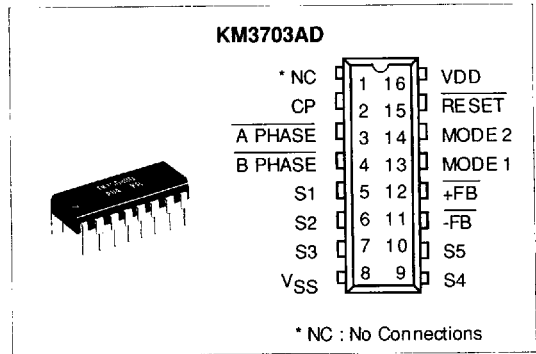
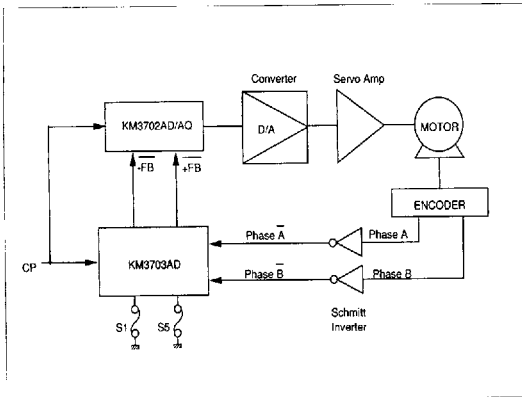
- Quadrature Encoders
- Feedback Pulse Decoder
- For Use with any Application that Requires the Discrimination of Rotation by using a Quadrature Encoder

*See KM3703AD Operation Manual for further detail.

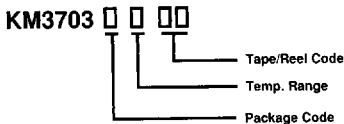
DESCRIPTION

KM3703AD is a quadrature encoder interface designed for closed-loop systems which discriminates direction. The output can be selected as pulse and direction signals or pulse and pulse signals. The output pulses are synchronized with the clock pulse and used as feedback pulses, +FB and -FB. S1 - S5 are used to determine the multiplication and division ratio settings.

APPLICATION



ORDERING INFORMATION



PACKAGE CODE	TEMP. RANGE	TAPE/REEL CODE
D: Plastic Dip	A: -20 to +75 °C	BX: Bulk/Bag MG: Magazine

ABSOLUTE MAXIMUM RATINGS

Input Voltage $V_{SS} - 0.3$ to $V_{DD} + 0.3$ V
 Input Voltage $V_{SS} - 0.3$ to $V_{DD} + 7.0$ V
 Power Dissipation 460 mW
 Junction Temperature 150 °C

Storage Temperature Range -65 to +150 °C
 Operating Temperature Range -20 to +75 °C
 Lead Soldering Temp. (10 sec.) 300 °C

ELECTRICAL CHARACTERISTICS

D. C. CHARACTERISTICS

Test conditions: $V_{SS} = 0$ V, $T_A = -20$ to +75 °C

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{DD}	Supply Voltage		4.75	5.0	5.25	V
I_{DD}	Supply Current	$V_{DD} = 5.0$ V			5.0	mA
Input Signal 1 (Note 1)						
V_{IL1}	Low Level Input Voltage		0.0		0.8	V
V_{IH1}	High Level Input Voltage		2.0		V_{DD}	V
I_{LEAK}	Input Leak Current				±10	µA
Input Signal 2 (Note 2)						
V_{IL2}	Low Level Input Voltage		0.0		0.8	V
V_{IH2}	High Level Input Voltage		2.0		V_{DD}	V
Input Signal 3 (Note 3)						
I_{IL1}	Low Level Input Signal	$V_{IN} + V_{SS}$	-200		-10	µA
I_{IH1}	High Level Input Signal	$V_{IN} = V_{DD}$			±10	µA
Input Signal 4 (Note 4)						
I_{IL2}	Low Level Output Current	$V_{IN} = V_{SS}$			±10	µA
I_{IH2}	High Level Output Current	$V_{IN} = V_{DD}$	10		200	µA
Output Signal 5 (Note 5)						
V_{OL}	Low Level Output Voltage	$I_{OL} = 1$ mA			.4	V
V_{OH}	High Level Output Voltage	$I_{OH} = -1$ mA	2.4			V

Note 2: CP

Note 2: A PHASE, B PHASE, S1, S2, S3, S4, S5, MODE 1, MODE 2, RESET

Note 3: A PHASE, B PHASE, S1, S2, S3, S4, S5, RESET

Note 4: MODE 1, MODE 2

Note 5: +FB, -FB

ELECTRICAL CHARACTERISTICS (CONT.)**A. C. CHARACTERISTICS**Test conditions: $V_{DD} = 5\text{ V} + 5\%$, $T_A = -20\text{ to }+75\text{ }^\circ\text{C}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
CLOCKED SIGNAL 1 (Note 1)						
T_{CYC}	Clock Pulse Period		0.1		10	μS
T_W	Clock Pulse Width		30		$T_{CYC} - 30$	ns
T_{CR}	Clock Pulse Rise Time				30	ns
T_{CF}	Clock Pulse Fall Time				30	ns
Input Signal 2 (Note 2)						
T/W	Input Pulse Width		$2 T_{CYC}$			ns
Reset Signal 3 (Note 3)						
T_{RW}	Reset Pulse Width		T_{CYC}			μs
Output Signal 4 (Note 4)						
T_{OD}	Output Delay Time	$C_L = 60\text{ pF}$			55	ns

Note 2: CP

Note 2: A PHASE, B PHASE, S1, S2, S3, S4, S5, MODE 1, MODE 2, RESET

Note 3: A PHASE, B PHASE, S1, S2, S3, S4, S5, RESET

Note 5: +FB, -FB

PIN FUNCTION

SIGNAL	PIN NO.	I/O	DESCRIPTION
VDD	16	--	Supply Voltage (+5 V \pm 5%)
VSS	8	--	Ground
CP	2	I	Clock Input (10 MHz Max.)
A Phase	3	I	A Phase and B Phase for position feedback signals from the encoder with 90° phase shift.
B Phase	4	I	
S1 ~ S5	5~10	I	Multiplication or frequency division ratio switch
-FB	11	O	- Direction feedback pulse output or direction signal output
+FB	12	O	+ Direction feedback pulse output or feedback pulse
Mode 1	13	I	Multiplication/Frequency Division selection switch
Mode 2	14	I	
Reset	15	I	Reset the internal status