

VER71.PLD

Name Stepper, DC Motor or direct output Driver ;  
 PartNo 00 ;  
 Date 04/12/2000 ;  
 Revision 07.01 ;  
 Designer Dan Kohn ;  
 Company USM;  
 Assembly None ;  
 Location ;  
 Device p22v10 ;

/\* \*\*\*\*\* INPUT PINS \*\*\*\*\* \*/

PIN 1 = STEPCLOCK ; /\* Stepper Motor Clock Signal @ 50 % duty cycle \*/  
 PIN 2 = PWMSIGNAL ; /\* PWM signal \*/  
 PIN 3 = DCMOTOR ; /\* 1 = DC Motor 0 = Stepper motor \*/  
 PIN 5 = DIRECTION ; /\* 1 = forward 0 = reverse \*/  
 PIN 6 = ON ; /\* 1 = On 0 = OFF \*/

PIN 7 = HIGHTORQUE ;	/*	SINGLE STEP	HIGH TORQUE	MODE	*/
PIN 8 = SINGLESTEP ;	/*	0	0	HALF STEP	*/
	/*	0	1	HALF STEP	*/
	/*	1	0	SINGLE STEP	*/
	/*	1	1	HIGH TORQUE	*/

pin 4 = INEQOUT ; /\* 1 = output equals input pins (pins 5-8) \*/  
 /\* 0 = motor control \*/

/\* \*\*\*\*\* OUTPUT PINS \*\*\*\*\* \*/

PIN [23..20] = [M3..M0] ; /\* pins to motor control circuitry \*/  
 PIN [17..14] = [Q3..Q0] ; /\* intermediate variables \*/

/\* \*\*\*\*\* STEPPER MOTOR SEQUENCING \*\*\*\*\* \*/

\$DEFINE S0 0  
 \$DEFINE S1 8  
 \$DEFINE S2 C  
 \$DEFINE S3 4  
 \$DEFINE S4 6  
 \$DEFINE S5 2  
 \$DEFINE S6 3  
 \$DEFINE S7 1  
 \$DEFINE S8 9  
 \$DEFINE S9 5  
 \$DEFINE S10 7  
 \$DEFINE S11 A  
 \$DEFINE S12 B  
 \$DEFINE S13 D  
 \$DEFINE S14 E  
 \$DEFINE S15 F

FIELD ORDER = [Q3, Q2, Q1, Q0];

SEQUENCE ORDER {  
 PRESENT S0 NEXT S1;

PRESENT S1 IF DIRECTION & !SINGLESTEP NEXT S2;  
 IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S3;  
 IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S2;  
 IF !DIRECTION & !SINGLESTEP NEXT S8;  
 IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S7;  
 IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S8;

PRESENT S2 IF DIRECTION & !SINGLESTEP NEXT S3;  
 IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S3;  
 IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S4;

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IF !DIRECTION & !SINGLESTEP NEXT S1;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S1;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S8;

PRESENT S3 IF DIRECTION & !SINGLESTEP NEXT S4;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S5;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S4;
IF !DIRECTION & !SINGLESTEP NEXT S2;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S1;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S2;

PRESENT S4 IF DIRECTION & !SINGLESTEP NEXT S5;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S5;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S6;
IF !DIRECTION & !SINGLESTEP NEXT S3;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S3;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S2;

PRESENT S5 IF DIRECTION & !SINGLESTEP NEXT S6;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S7;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S6;
IF !DIRECTION & !SINGLESTEP NEXT S4;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S3;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S4;

PRESENT S6 IF DIRECTION & !SINGLESTEP NEXT S7;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S7;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S8;
IF !DIRECTION & !SINGLESTEP NEXT S5;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S5;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S4;

PRESENT S7 IF DIRECTION & !SINGLESTEP NEXT S8;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S1;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S8;
IF !DIRECTION & !SINGLESTEP NEXT S6;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S5;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S6;

PRESENT S8 IF DIRECTION & !SINGLESTEP NEXT S1;
IF DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S1;
IF DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S2;
IF !DIRECTION & !SINGLESTEP NEXT S7;
IF !DIRECTION & SINGLESTEP & !HIGHTORQUE NEXT S7;
IF !DIRECTION & SINGLESTEP & HIGHTORQUE NEXT S6;

PRESENT S9 NEXT S0;
PRESENT S10 NEXT S0;
PRESENT S11 NEXT S0;
PRESENT S12 NEXT S0;
PRESENT S13 NEXT S0;
PRESENT S14 NEXT S0;
PRESENT S15 NEXT S0;
}

/* *****STEPPER MOTOR SEQUENCING *****/

M3 = (ON & ((Q3 & !DCMOTOR & !INEQOUT) # (DIRECTION & DCMOTOR & !INEQOUT &
PWMSIGNAL)) # (INEQOUT & DIRECTION));
M2 = !((ON & ((Q2 & !DCMOTOR & !INEQOUT) # (!DIRECTION & DCMOTOR & !INEQOUT))
# (INEQOUT & ON));
M1 = (ON & ((Q1 & !DCMOTOR & !INEQOUT) # (!DIRECTION & DCMOTOR & !INEQOUT &
PWMSIGNAL)) # (INEQOUT & HIGHTORQUE));
M0 = !((ON & ((Q0 & !DCMOTOR & !INEQOUT) # (DIRECTION & DCMOTOR & !INEQOUT)) #
(INEQOUT & SINGLESTEP));

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