



MITEL
Technical Data

Represented by
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MD6703
ISO-CMOST™ HIGH-SPEED STATIC
288-BIT SHIFT REGISTER.

*OBSOLETE
NO LONGER
MANUFACTURED
P.R. 7/3/81*

(ADVANCED INFORMATION)

7/78

DESCRIPTION:

The 6703 is a static 288 bit shift register designed in ISO-CMOST™ to offer low power and high speeds (up to 20 MHz), and to operate from voltages as low as 1.5 volts to voltages as high as 10 volts. With unique internally terminated inputs and a buffered output, the circuit is capable of handling input and output voltage levels over 20 volts while operating from a 1.5 volt supply. This feature makes it ideal for storing data where non-volatility is required. Designed to interface directly with microprocessors in a bit-oriented mode of operation, the 6703 is capable of storing 72 four-bit words, 36 eight-bit words or 18 sixteen-bit words.

- CMOS LOW POWER CONSUMPTION (1µW typ.)
- HIGH PERFORMANCE (over 10 MHz at 5 V)
- STATIC OPERATION
- LEVEL SHIFTING I/O CAPABILITIES.
- IDEAL FOR PERMANENT RECORDS OF COPIES, TIME, TEMPERATURES, VOLTAGES, METER READINGS, ETC.

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ORIG

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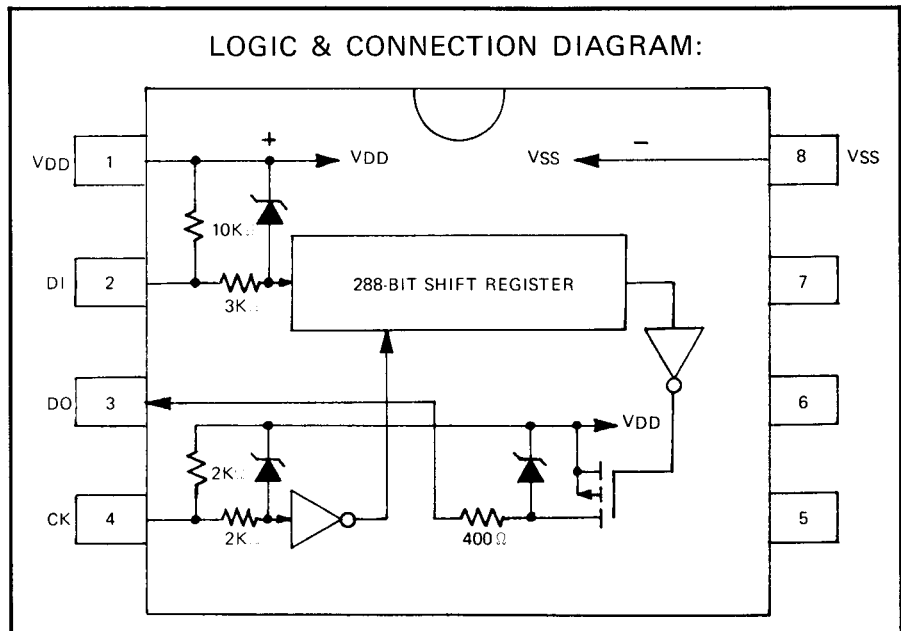
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PIN NAMES

- DI-Serial Data Input
- DO-Serial Data Output
- CK-Clock Input
- VDD-Positive Voltage Terminal
- VSS-Negative Voltage Terminal

LOGIC & CONNECTION DIAGRAM:



ORDERING INFORMATION

PART NUMBER	PACKAGE	TEMPERATURE RANGE
MD6703AE	8-Pin Plastic MINIDIP	-40°C to 85°C
MD6703AC	8-Pin Ceramic MINIDIP	-40°C to 85°C
MD6703AF	8-Pin Ceramic MINIDIP	-55°C to 125°C
MD6703AH	8-Pad Chip, 2010, C	-40°C to 85°C
MD6703AI	8-Pad Chip, 2010, B	-55°C to 125°C

MAXIMUM RATINGS

RATING	SYMBOL	VALUE	UNIT
VDD - VSS Supply Voltage	VDD	-0.3 to +12	Vdc
DC Supply Current	IDD	-10 to +10	mAdc
Input Voltages	VIN	VDD+0.3 to VDD-20	Vdc
Output Voltage	VOUT	VDD+0.3 to VDD-12	Vdc
Operating Temperature	TA	-55 to 125	°C
Storage Temperature	TS	-65 to 150	°C

ELECTRICAL CHARACTERISTIC

SYMBOL	CHARACTERISTIC	LIMITS			UNIT	TEST CONDITIONS VDD=5Vdc, TA=25°C Unless Otherwise Noted
		Min	Typ	Max		
VDD	Supply Voltage Operating Range	1.5	5	10	Vdc	
IDDS	Standby Supply Current		1.0	10	μAdc	All Other Pins Open
IDD	Operating Supply Current		1000 300 90 50		μAdc	f = 1MHz f = 1MHz, VDD = 2Vdc f = 170KHz, VDD = 2Vdc f = 140KHz, VDD = 1.5Vdc
R2	Input Resistance, DI	6		18	KΩ	
R4	Input Resistance, Clock	2		6	KΩ	
IHH	Input Leakage Current		0.1		nAdc	VIN = VDD
VIL	Input Logic Low-Level			1.5	Vdc	
VIH	Input Logic High-Level	3.5			Vdc	
VOL	Output Low-Level Voltage			0.1	Vdc	100KΩ to VSS
VOH	Output High-Level Voltage	4.9			Vdc	IOH = 20 μAdc
IOL	Output Leakage Current		0.1	1.0	μAdc	VOUT = -10 Vdc
IOH	Output Drive Current	-1.0			mAdc	VOUT = VSS
FCK	Maximum Clock Frequency CL = 15 pF RL = 1000Ω (See Fig. 1)		20 10 6 3 2		MHz	VDD = 10 Vdc VDD = 5 Vdc VDD = 3 Vdc VDD = 2 Vdc VDD = 1.5 Vdc
CKD	Maximum Clock Dwell Time (Low-State)			1.0	mSec	

WAVEFORMS

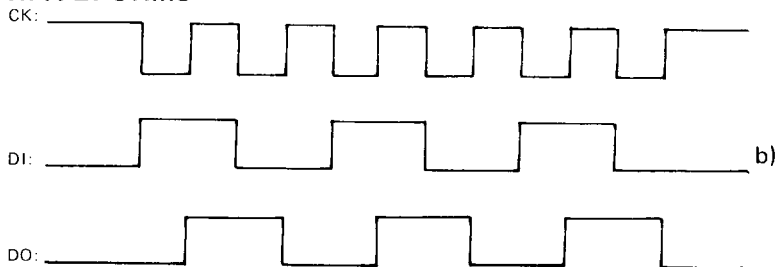
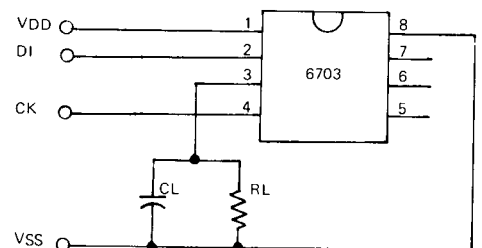


FIGURE 1



APPLICATIONS

Input/Output Schematics & Level-Shifting Techniques.

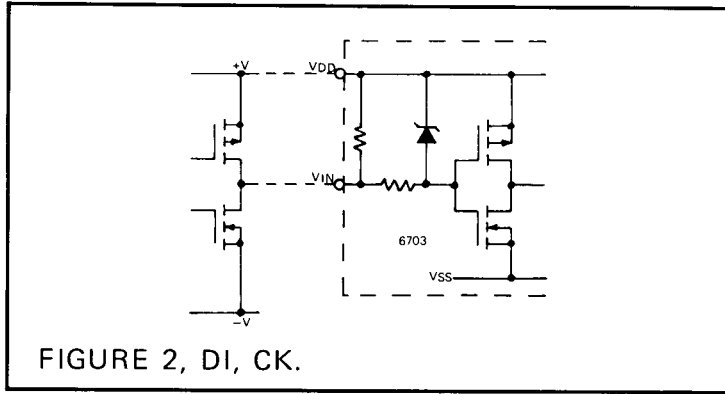


FIGURE 2, DI, CK.

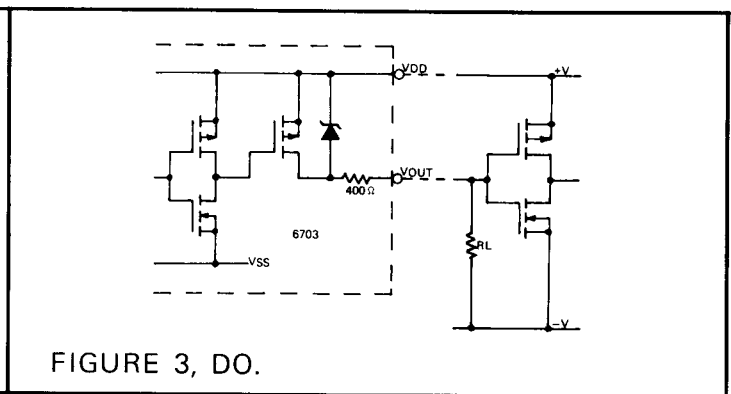
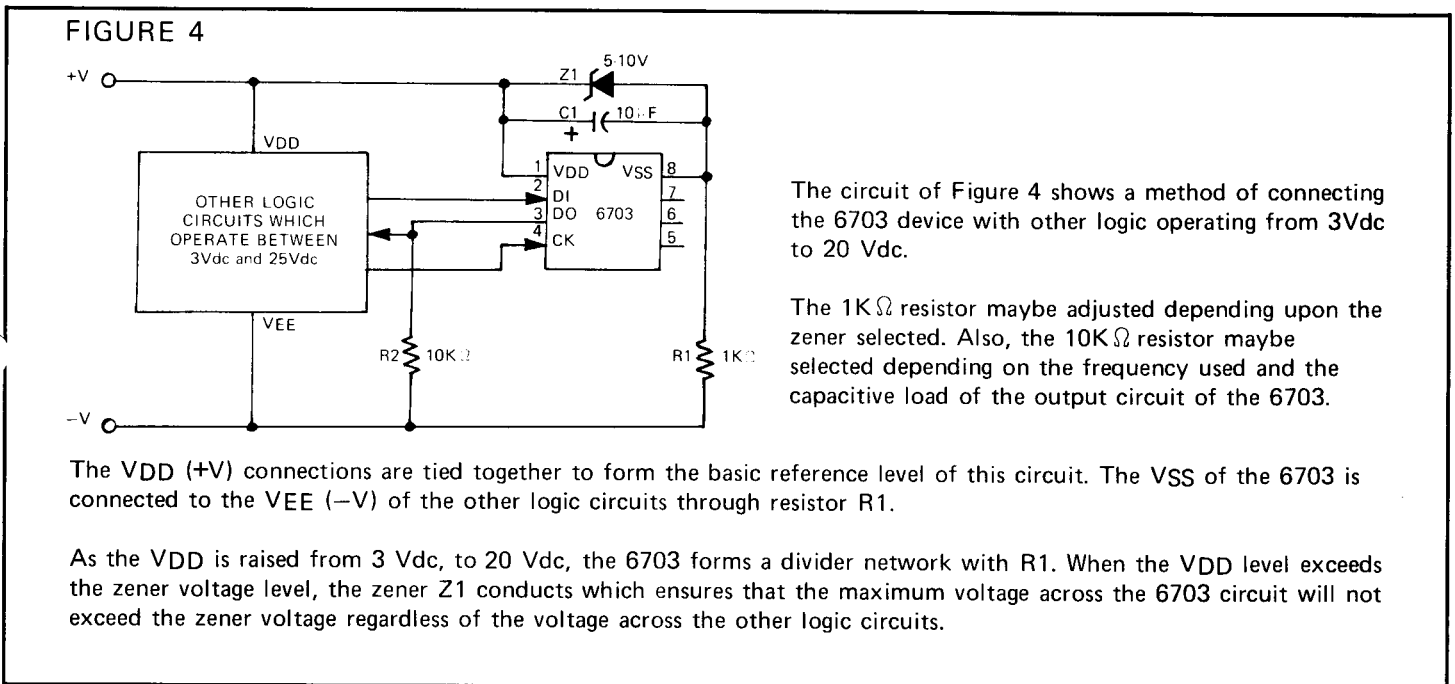


FIGURE 3, DO.

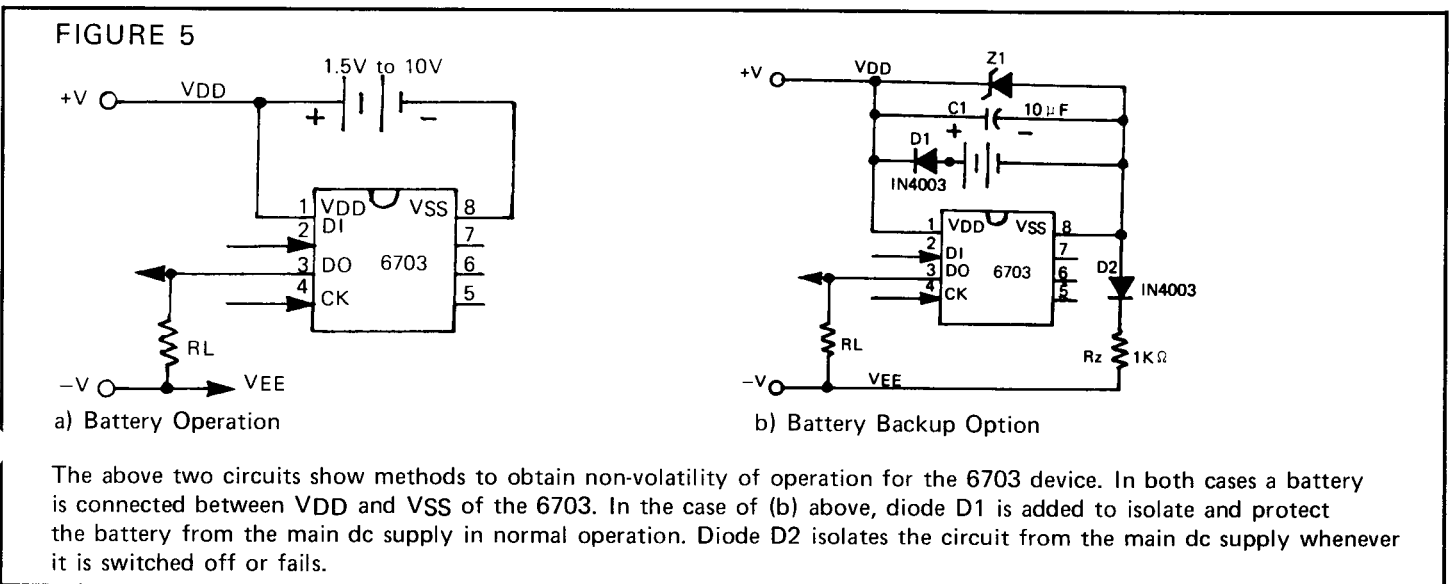


The circuit of Figure 4 shows a method of connecting the 6703 device with other logic operating from 3Vdc to 20 Vdc.

The 1KΩ resistor maybe adjusted depending upon the zener selected. Also, the 10KΩ resistor maybe selected depending on the frequency used and the capacitive load of the output circuit of the 6703.

The VDD (+V) connections are tied together to form the basic reference level of this circuit. The VSS of the 6703 is connected to the VEE (-V) of the other logic circuits through resistor R1.

As the VDD is raised from 3 Vdc, to 20 Vdc, the 6703 forms a divider network with R1. When the VDD level exceeds the zener voltage level, the zener Z1 conducts which ensures that the maximum voltage across the 6703 circuit will not exceed the zener voltage regardless of the voltage across the other logic circuits.



a) Battery Operation

b) Battery Backup Option

The above two circuits show methods to obtain non-volatility of operation for the 6703 device. In both cases a battery is connected between VDD and VSS of the 6703. In the case of (b) above, diode D1 is added to isolate and protect the battery from the main dc supply in normal operation. Diode D2 isolates the circuit from the main dc supply whenever it is switched off or fails.

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