High Performance 256x4 PROM TiW PROM Family

53/63S140
53/63S141
53/63S141A

3

Features/Benefits

- 30-ns maximum access time
- Reliable titanium-tungsten fuses (TiW) guarantee greater than 98% programming yields
- Low-voltage generic programming
- PNP inputs for low input current
- Open collector or three-state outputs

Applications

- Microprogram control store
- Microprocessor program store
- Look-up table
- Character generator
- Code converter
- Programmable Logic Element (PLE™) with 8 inputs, 4 outputs, and 256 product terms

Description

The 53/63S140 and 53/63S141/A are 256x4 bipolar PROMs featuring low input current PNP inputs, full Schottky clamping, and open collector or three-state outputs. The titanium-tungsten fuses store a logical low and are programmed to the high state. Special on-chip circuitry and extra fuses provide preprogramming testing which assures high programming yields and high reliability.

The 63 series is specified for operation over the commercial temperature and voltage range. The 53 series is specified for the military ranges.

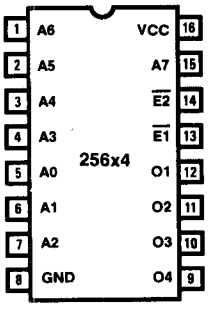
Programming

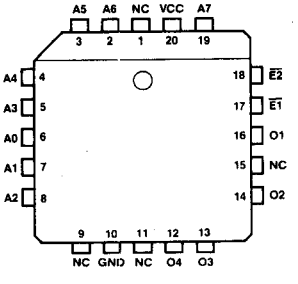
The 53/63S140 and 53/63S141/A PROMs are programmed with the same programming algorithm as all other Monolithic Memories' generic TiW PROMs. For details contact the factory.

Selection Guide

MEMORY			PACKAGE		PERFORMANCE	PART NUMBER	
SIZE	ORGANIZATION	OUTPUT	PINS	TYPE		0°C to +75°C	–55°C to +125°C
1 K	256x4	TS	16 (20)	N,J,W, (NL),(L)	Enhanced	63S141A	53S141A
		TS			Standard	63S141	53S141
		OC				63S140	53S140

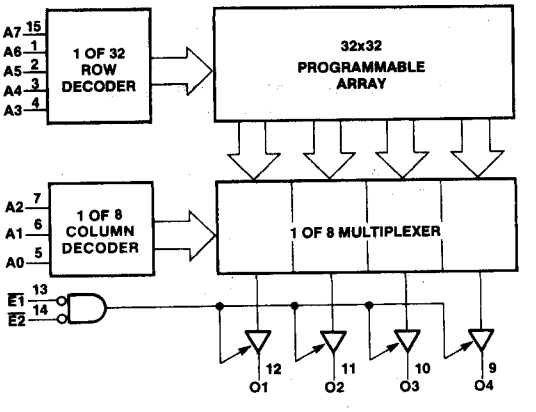
Pin Configurations





Plastic Chip Carrier

Block Diagram



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Monolithic Memories

Absolute Maximum Ratings

	Operating	Programming
Supply voltage V_{CC}	-0.5 V to 7 V	12 V
Input voltage	-1.5 V to 7 V	7 V
Input current	-30 mA to +5 mA	
Off-state output voltage	-0.5 V to 5.5 V	12 V
Storage temperature	-65° to +150°C	

Operating Conditions

SYMBOL	PARAMETER	MILITARY MIN	MILITARY NOM	MILITARY MAX	COMMERCIAL MIN	COMMERCIAL NOM	COMMERCIAL MAX	UNIT
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
T_A	Operating free-air temperature	-55		125	0		75	°C

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITION			MIN	TYP†	MAX	UNIT
V_{IL}	Low-level input voltage						0.8	V
V_{IH}	High-level input voltage				2			V
V_{IC}	Input clamp voltage	V_{CC} = MIN	I_I = -18 mA				-1.5	V
I_{IL}	Low-level input current	V_{CC} = MAX	V_I = 0.4 V				-0.25	mA
I_{IH}	High-level input current	V_{CC} = MAX	V_I = V_{CC} MAX				40	μA
V_{OL}	Low-level output voltage	V_{CC} = MIN	I_{OL} = 16 mA	Com			0.45	V
				Mil			0.5	
V_{OH}	High-level output voltage*	V_{CC} = MIN	Com I_{OH} = -3.2 mA		2.4			V
			Mil I_{OH} = -2 mA					
I_{OZL}	Off-state output current*	V_{CC} = MAX	V_O = 0.4 V				-40	μA
I_{OZH}			V_O = 2.4 V				40	
I_{CEX}	Open collector output current	V_{CC} = MAX	V_O = 2.4 V				40	μA
			V_O = 5.5 V				100	
I_{OS}	Output short-circuit current**	V_{CC} = 5 V	V_O = 0 V		-20		-90	mA
I_{CC}	Supply current	V_{CC} = MAX. All inputs grounded. All outputs open.				80	130	mA

Switching Characteristics Over Operating Conditions (See standard test load)

OPERATING CONDITIONS	DEVICE TYPE	t_{AA} (ns) ADDRESS ACCESS TIME TYP†	t_{AA} (ns) ADDRESS ACCESS TIME MAX	t_{EA} AND t_{ER} (ns) ENABLE ACCESS TIME RECOVERY TIME TYP†	t_{EA} AND t_{ER} (ns) ENABLE ACCESS TIME RECOVERY TIME MAX	UNIT
COMMERCIAL	63S141A	20	30	10	20	ns
	63S140, 63S141	20	45	10	25	
MILITARY	53S141A	20	40	10	30	
	53S140, 53S141	20	55	10	30	

* Three-state only.

** Not more than one output should be shorted at a time and duration of the short-circuit should not exceed one second.

† Typicals at 5.0 V V_{CC} and 25°C T_A.