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High Performance 256x4 PROM TiW PROM Family

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

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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.

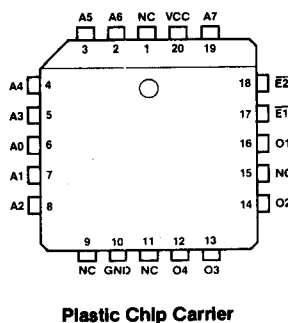
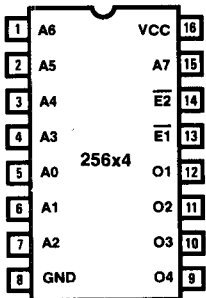
Programming

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.

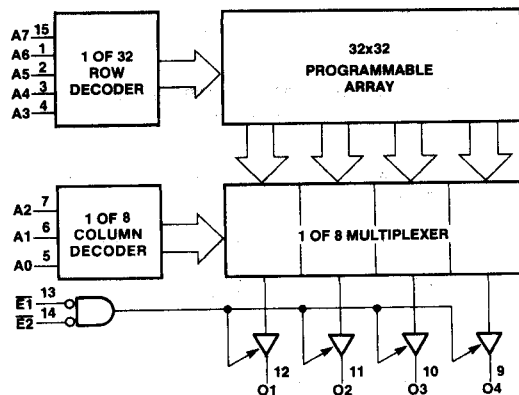
Selection Guide

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				63S141	53S141
		OC			63S140	53S140	

Pin Configurations



Block Diagram



PLE™ is a trademark of Monolithic Memories

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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			COMMERCIAL			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
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	$V_{CC} = \text{MIN}$	$I_I = -18 \text{ mA}$			-1.5	V
I_{IL}	Low-level input current	$V_{CC} = \text{MAX}$	$V_I = 0.4 \text{ V}$			-0.25	mA
I_{IH}	High-level input current	$V_{CC} = \text{MAX}$	$V_I = V_{CC} \text{ MAX}$			40	μA
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}$	$I_{OL} = 16 \text{ mA}$	Com		0.45	V
				Mil		0.5	
V_{OH}	High-level output voltage*	$V_{CC} = \text{MIN}$	Com $I_{OH} = -3.2 \text{ mA}$	2.4			V
			Mil $I_{OH} = -2 \text{ mA}$				
I_{OZL}	Off-state output current*	$V_{CC} = \text{MAX}$	$V_O = 0.4 \text{ V}$			-40	μA
I_{OZH}			$V_O = 2.4 \text{ V}$			40	
I_{CEX}	Open collector output current	$V_{CC} = \text{MAX}$	$V_O = 2.4 \text{ V}$			40	μA
			$V_O = 5.5 \text{ V}$			100	
I_{OS}	Output short-circuit current**	$V_{CC} = 5 \text{ V}$	$V_O = 0 \text{ V}$	-20		-90	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX}$. 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		t_{EA} AND t_{ER} (ns) ENABLE ACCESS TIME RECOVERY TIME		UNIT
		TYP†	MAX	TYP†	MAX	
		COMMERCIAL	63S141A	20	30	
	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.

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