

Generic NiCR PROM Family

53/63XX-1

Features/Benefits

- Standard Schottky processing
- Reliability proven nichrome fusible links (qualified for MIL-M-38510)
- PNP inputs for low input current
- Compatible pin configurations for upward expansion
- 4-bit-wide and 8-bit-wide for byte oriented applications

Application

- Microprogram store
- Microprocessor program store
- Look up table
- Character generator
- Random logic
- Code converter

Description

The 53/63XX-1-series generic PROM family offers the widest selection of sizes and organizations available in the industry. The 4-bit wide PROMs range from 256x4 to 2048x4 and feature upward/downward pin out compatibility in the space saving 16 and 18 pin packages. The 8-bit wide PROMs range from 32x8 to 1024x8 in a wide selection of package sizes including the space saving SKINNYDIP™ 24-pin .300 inch wide package. All PROMs have the same programming specifications allowing a single generic programmer.

The family features low input current PNP inputs, full Schottky clamping, three-state and open collector outputs. The nichrome fuses store a logical high and are programmed to the low state. Special on chip circuitry and extra fuses provide preprogramming tests which assure 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.

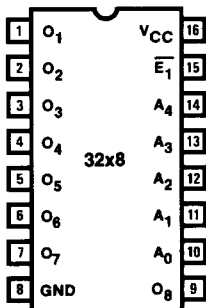
Generic PROM Selection Guide

MEMORY			PACKAGE	DEVICE TYPE		
SIZE	ORGANIZATION	COMMERCIAL		MILITARY		
1K	256x4	OC	J16, F16	6300-1	5300-1	4-bit-wide
		TS		6301-1	5301-1	
2K	512x4	OC	J16, F16	6305-1	5305-1	
		TS		6306-1	5306-1	
4K	1024x4	OC	J18, F18	6350-1	5350-1	
		TS		6351-1	5351-1	
		OC		6352-1	5352-1	
		TS		6353-1	5353-1	
8K	2048x4	OC	J18	6388-1	5388-1	
		TS		6389-1	5389-1	
1/4K	32x8	OC	J16, F16	6330-1	5330-1	8-bit-wide
2K	256x8	TS	J16, F16	6331-1	5331-1	
		OC	J20, F20	6308-1	5308-1	
		TS	J20, F20	6309-1	5309-1	
		OC	J24	6335-1		
4K	512x8	TS	J24	6336-1		
		OC	J24, F24	6340-1	5340-1	
		TS	J24, F24	6341-1	5341-1	
		OC	J20, F20	6348-1	5348-1	
8K	1024x8	TS	J20, F20	6349-1	5349-1	
		OC	J24, JS24*	6380-1	5380-1	
		TS	J24, JS24*	6381-1	5381-1	

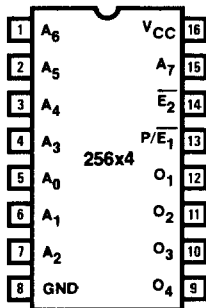
*JS is the .300 inch wide SKINNYDIP™ package.

Pin Configurations

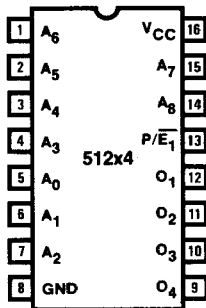
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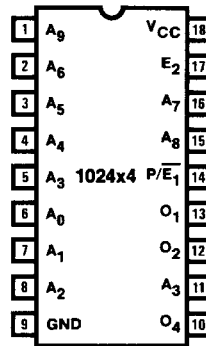
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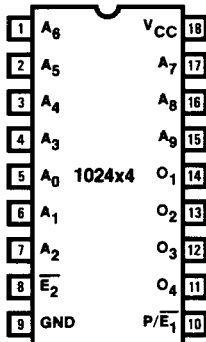
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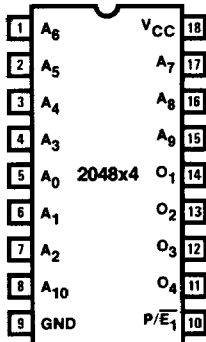
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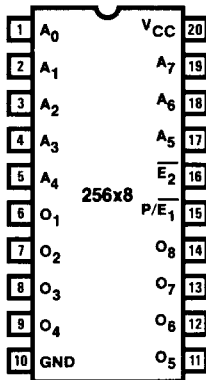
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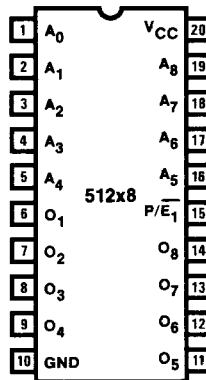
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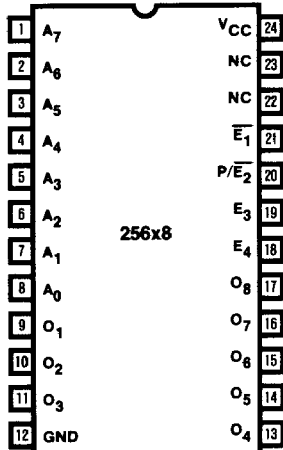
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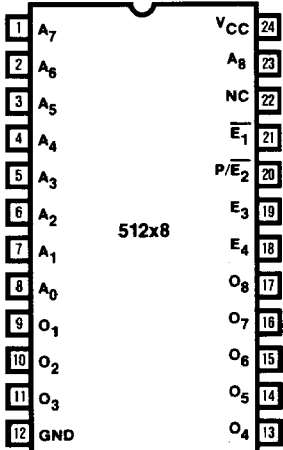
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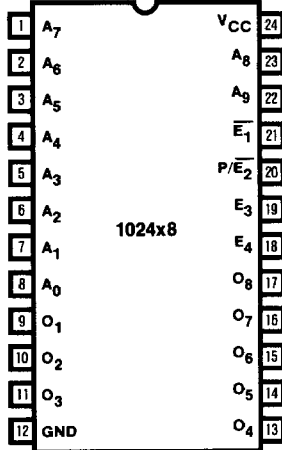
6335-1
6336-1



53/6340-1
53/6341-1



53/6380-1
53/6381-1



Absolute Maximum Ratings

Supply voltage, V_{CC}	7V
Input voltage	7V
Off-state output voltage	5.5V
Storage temperature	-65° to +150°C

Operating Conditions

SYMBOL	PARAMETER	MILITARY			COMMERCIAL			UNIT
		MIN	TYP	MAX	MIN	TYP	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 CONDITIONS			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	$V_{CC} = \text{MAX}$	$V_I = 0.45\text{V}$				-0.25	mA
I_{IH}	High-level input current	$V_{CC} = \text{MAX}$	$V_I = 4.5\text{V}$ (Program pin) $V_I = V_{CC} \text{ MAX}$ (Other inputs)				40	μA
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8\text{V}$ $V_{IH} = 2\text{V}$	MIL	$I_{OL} = 12\text{mA}$	All PROMs except '30,'31,'80,'81		0.5	V
			COM	$I_{OL} = 16\text{mA}$				
V_{OH}	High-level output voltage*	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8\text{V}$ $V_{IH} = 2\text{V}$	MIL	$I_{OH} = 8\text{mA}$	'30,'31,'80,'81	2.4		V
			COM	$I_{OH} = 12\text{mA}$				
I_{OZL} I_{OZH}	Off-state output current*	$V_{CC} = \text{MAX}$	$V_O = 0.5\text{V}$				-100	μA
			$V_O = 2.4\text{V}$				100	μA
I_{CEX}	Open collector output current	$V_{CC} = \text{MAX}$	$V_O = 2.4\text{V}$				100	μA
I_{OS}	Output short-circuit current**	$V_{CC} = 5\text{V}$	$V_O = 0\text{V}$				-20	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX}$ All inputs grounded. All outputs open.	'30, '31			78	125	mA
			'00, '01			88	130	
			'05, '06			98	130	
			'08, '09, '35, '36			100	155	
			'40, '41, '48, '49			100	155	
			'88, '89			110	170	
'50, '51, '52, '53, '80, '81			121	175				

*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 5.0V V_{CC} and 25°C T_A .

Switching Characteristics

Over Commercial Operating Conditions

DEVICE TYPE	t_{AA} (ns) ADDRESS ACCESS TIME		t_{EA} AND t_{ER} (ns) ENABLE ACCESS AND RECOVERY TIME		CONDITIONS (See standard test load)	
	TYP †	MAX	TYP †	MAX	R1(Ω)	R2(Ω)
6300-1, 6301-1	32	55	15	30	300	600
6305-1, 6306-1	44	60	17	30		
6308-1, 6309-1	39	70	14	30		
6335-1, 6336-1	52	70	17	30		
6340-1, 6341-1	52	70	17	30		
6348-1, 6349-1	52	70	17	30		
6350-1, 6351-1	43	60	15	30		
6352-1, 6353-1	43	60	15	30		
6388-1, 6389-1	49	70	19	30		
6330-1, 6331-1	37	50	21	30		
6380-1, 6381-1	54	90	18	40		

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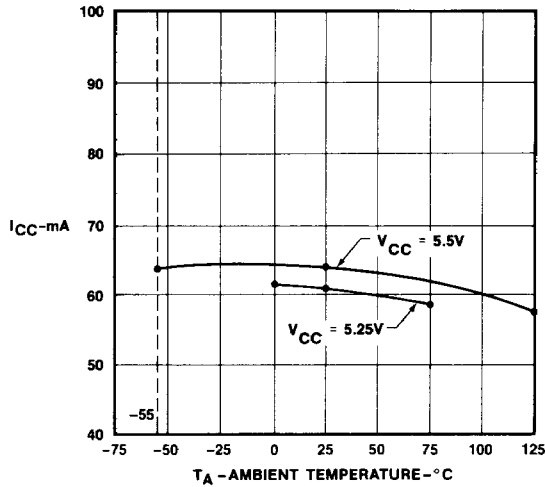
Over Military Operating Conditions

DEVICE TYPE	t_{AA} (ns) ADDRESS ACCESS TIME		t_{EA} AND t_{ER} (ns) ENABLE ACCESS AND RECOVERY TIME		CONDITIONS (See standard test load)	
	TYP †	MAX	TYP †	MAX	R1(Ω)	R2(Ω)
5300-1, 5301-1	32	75	15	40	300	600
5305-1, 5306-1	44	75	17	40		
5308-1, 5309-1	39	80	14	40		
5335-1, 5336-1	52	80	17	40		
5340-1, 5341-1	52	80	17	40		
5348-1, 5349-1	52	80	17	40		
5350-1, 5351-1	43	75	15	40		
5352-1, 5353-1	43	75	15	40		
5388-1, 5389-1	49	100	19	40		
5330-1, 5331-1	37	60	21	40		
5380-1, 5381-1	54	125	18	40		

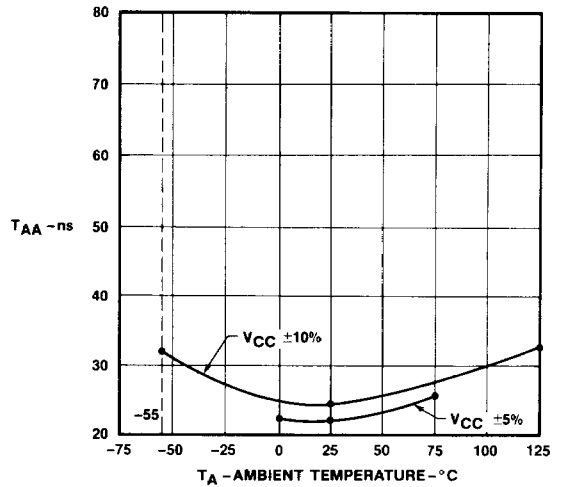
†Typicals at 5.0V V_{CC} and 25°C T_A

**6331
5331**

Typical I_{CC} vs Temperature

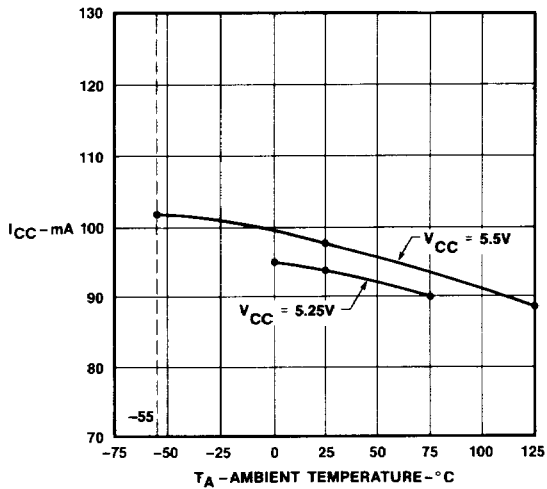


Typical T_{AA} vs Temperature

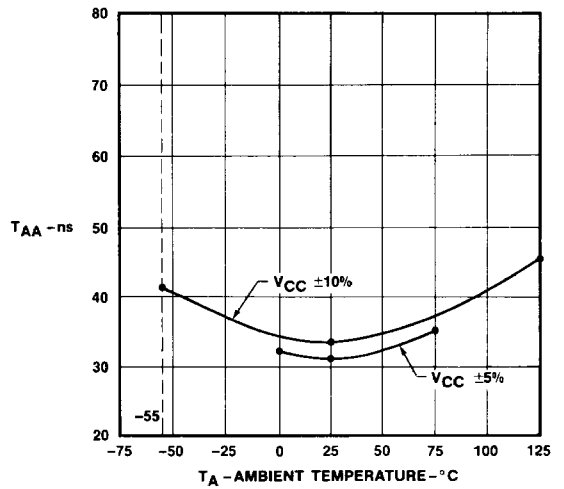


**6301
5301**

Typical I_{CC} vs Temperature

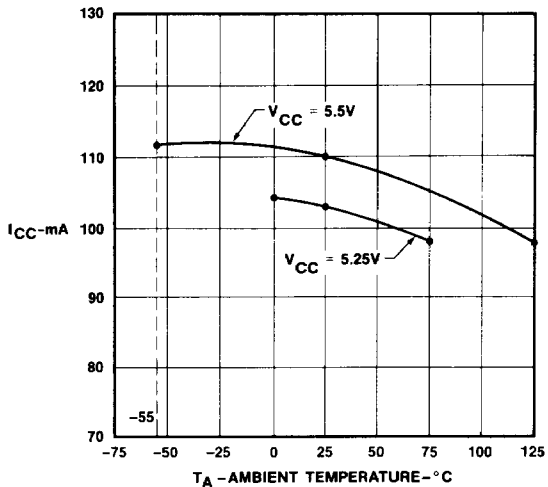


Typical T_{AA} vs Temperature

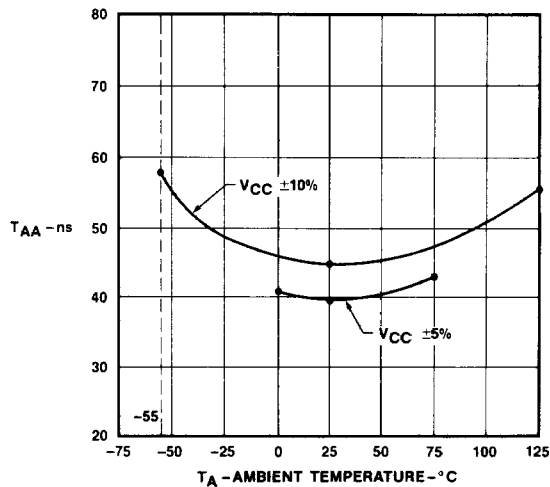


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Typical I_{CC} vs Temperature



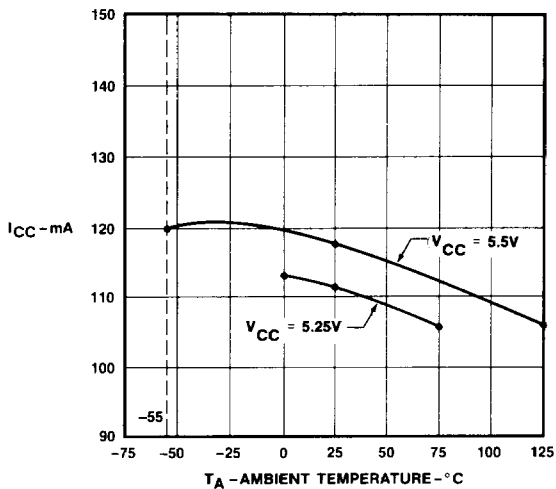
Typical T_{AA} vs Temperature



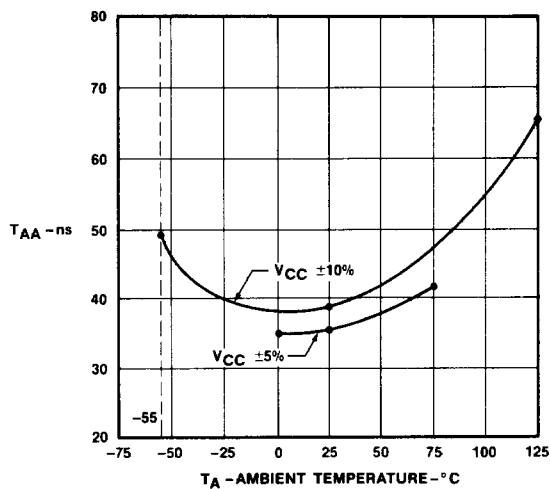
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Typical I_{CC} vs Temperature



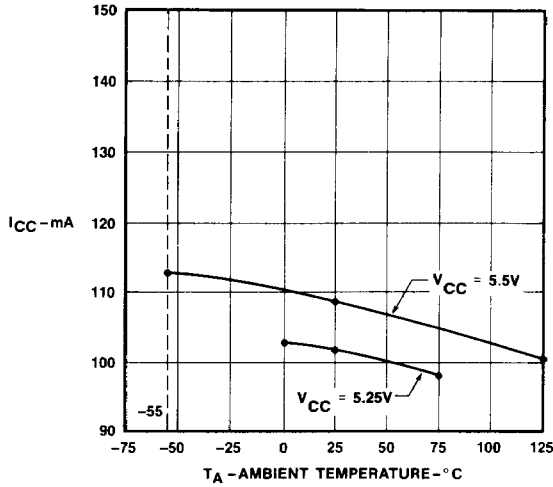
Typical T_{AA} vs Temperature



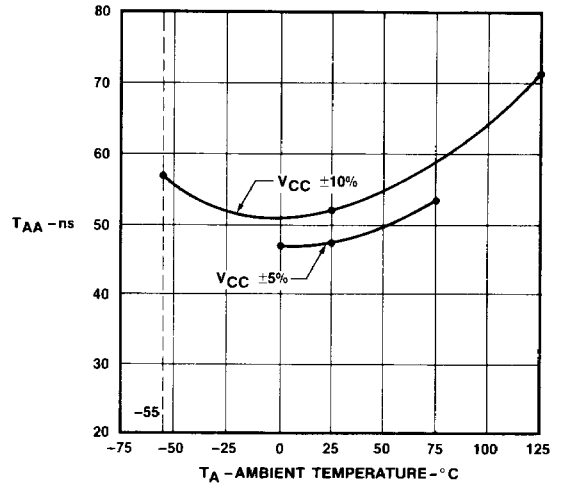
Typical Characteristics

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Typical I_{CC} vs Temperature

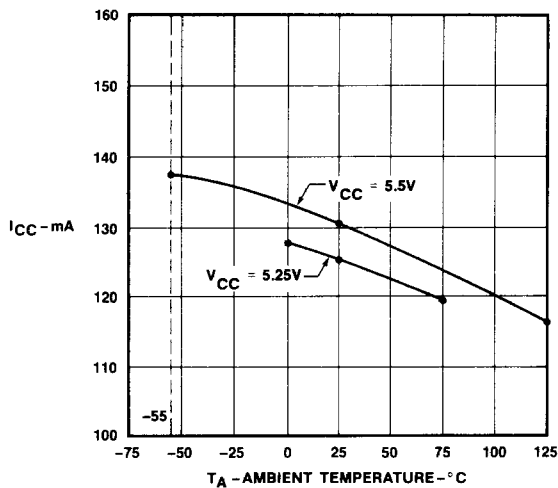


Typical T_{AA} vs Temperature

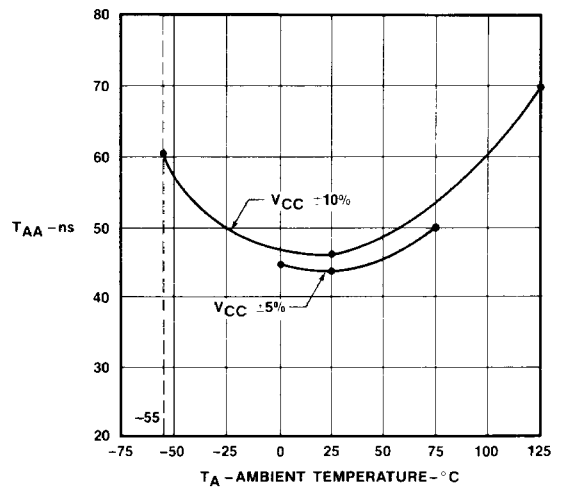


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Typical I_{CC} vs Temperature

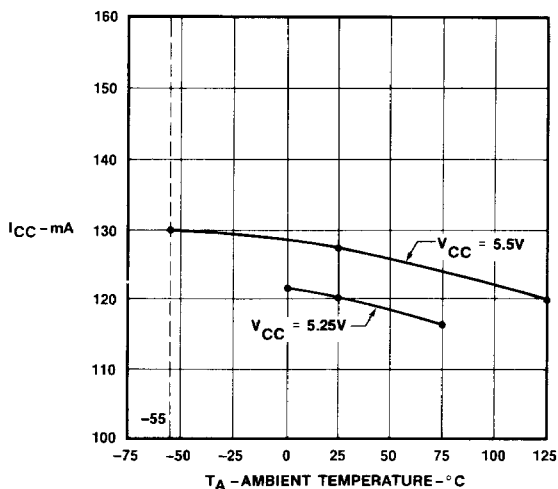


Typical T_{AA} vs Temperature

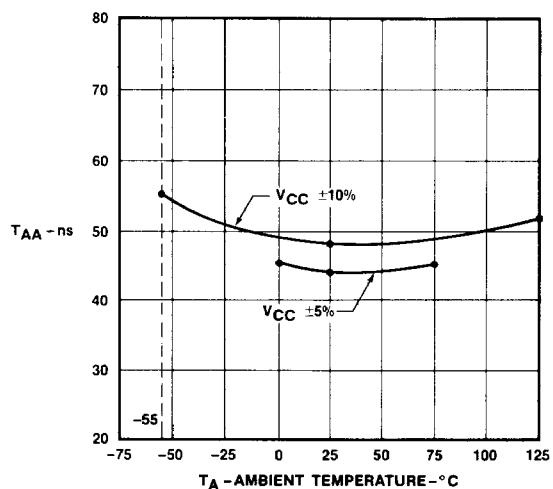


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Typical I_{CC} vs Temperature



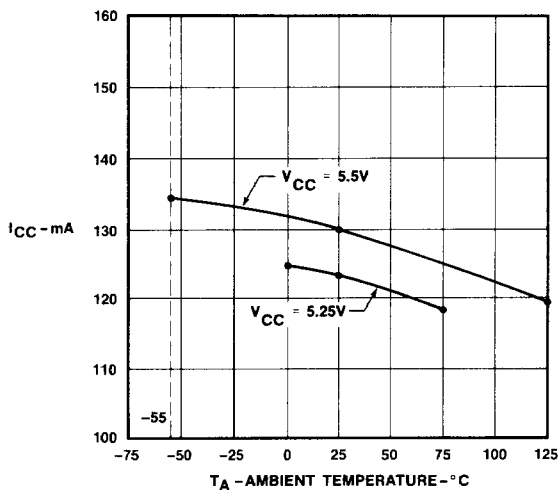
Typical T_{AA} vs Temperature



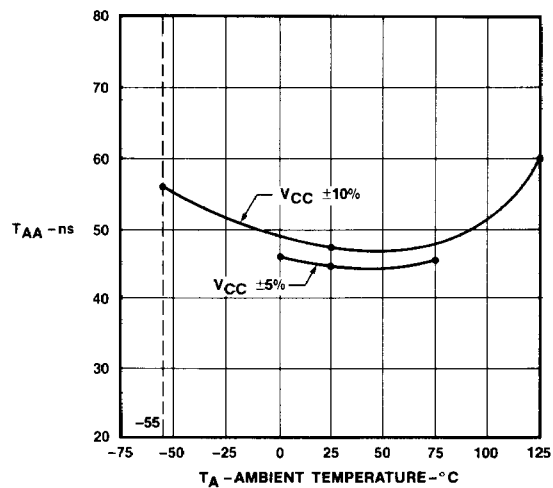
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Typical I_{CC} vs Temperature

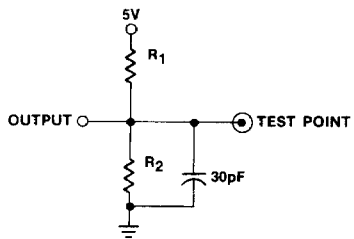


Typical T_{AA} vs Temperature



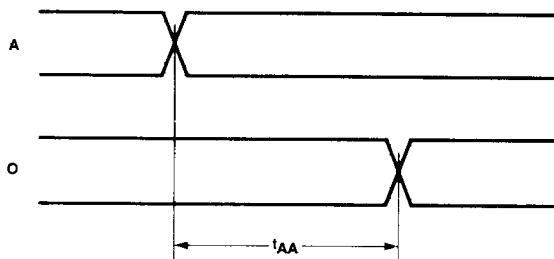
NOTE: Typical characteristic curves are for three-state devices. Equivalent open collector devices decrease in I_{CC} approximately 10 mA and increase in T_{AA} approximately 6 ns.

Standard Test Load

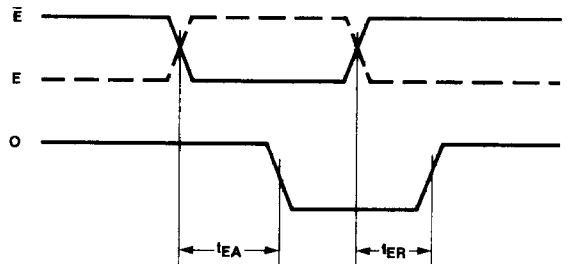


Input Pulse Amplitude 3.0V
 Input Rise and Fall Times 5ns from 1.0V to 2.0V
 Measurements made at 1.5V

Definition of Waveforms



Address Access Time



Enable Access Time and Recovery Time