Military 20-Pin PAL Devices

Features

- Register and combinatorial outputs
- Variety of speed/power options
- Registers with feedback
- Programmable three-state outputs
- Security fuse prevents duplication of logic
- Through-hole or surface mount device packaging
- Neutron fluence (permanent damage): $1x10^{13}$ N/cm²
- Dose rate (transient upset) junction isolated Bipolar processes: $2x10^{10}$ RADs (Si) per sec recovered in 50 to 70 μs from a 1 μs pulse

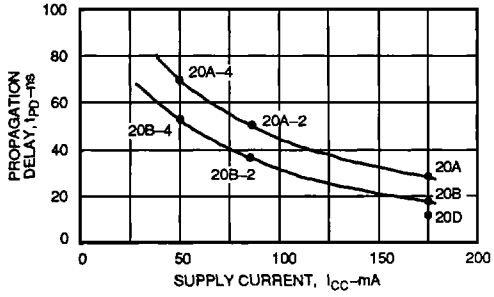
Benefits

- Instant prototyping/zero NRE charge
- Low-cost programmable replacement for TTL logic
- Reduces inventory by reducing chip count
- Programmable on standard PROM/PAL device programmers
- Several software programs available to assist in creating bit pattern design

Applications

- High speed graphic controllers
- High speed computers
- High frequency state machines
- High frequency counters
- Microprocessor clock generation and interface logic

20-Pin PAL Device Speed vs Power



503 102

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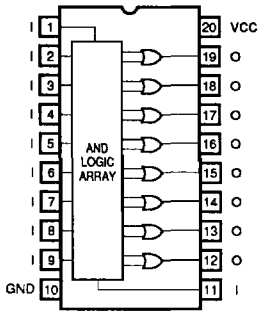
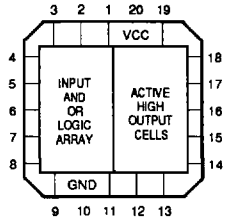
Military 20-Pin PAL Device Pinouts

10H8/-2



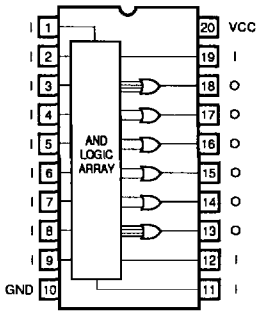
CERDIP CERPACK

10H8/-2



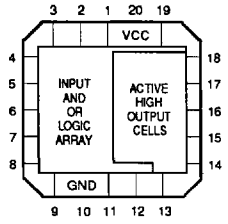
LEADLESS CHIP CARRIER

12H6/-2



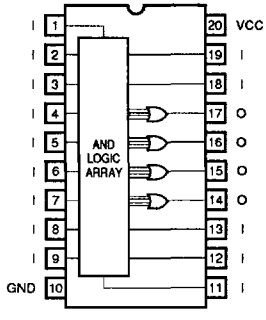
CERDIP CERPACK

12H6/-2



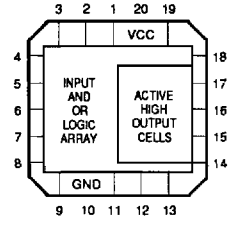
LEADLESS CHIP CARRIER

14H4/-2



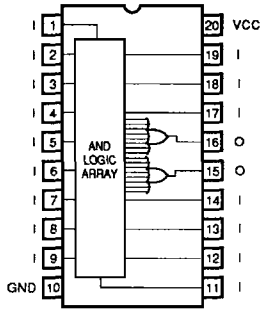
CERDIP CERPACK

14H4/-2



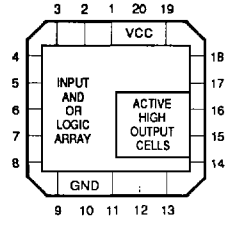
LEADLESS CHIP CARRIER

16H2/-2



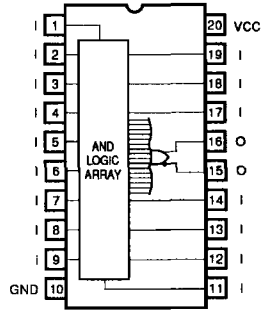
CERDIP CERPACK

16H2/-2



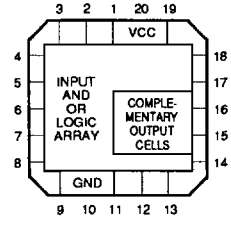
LEADLESS CHIP CARRIER

16C1/-2



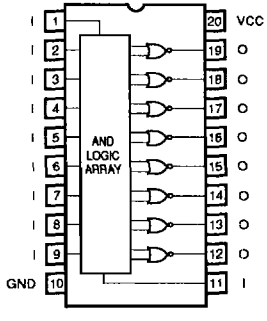
CERDIP CERPACK

16C1/-2



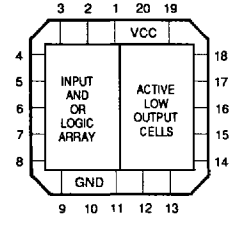
LEADLESS CHIP CARRIER

10L8/-2



CERDIP CERPACK

10L8/-2



LEADLESS CHIP CARRIER

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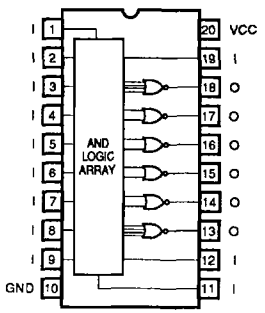
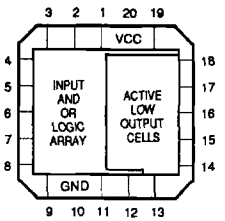
Military 20-Pin PAL Device Pinouts

12L6/-2



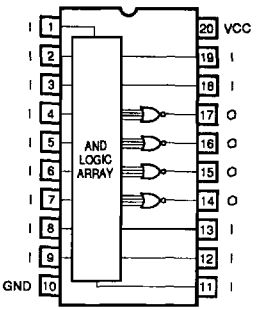
CERDIP CERPACK

12L6/-2



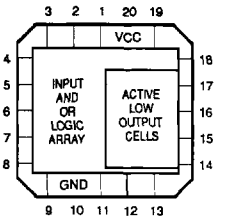
LEADLESS CHIP CARRIER

14L4/-2



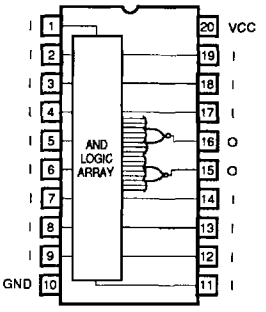
CERDIP CERPACK

14L4/-2



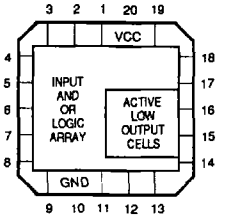
LEADLESS CHIP CARRIER

16L2/-2



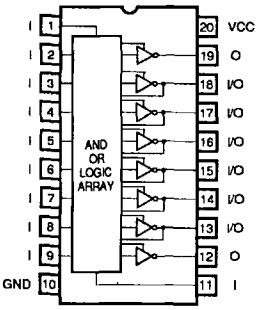
CERDIP CERPACK

16L2/-2



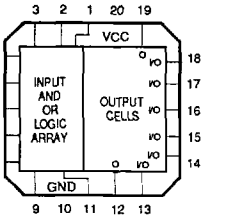
LEADLESS CHIP CARRIER

16L8D/B/B-2/B-4 A/A-2/A-4



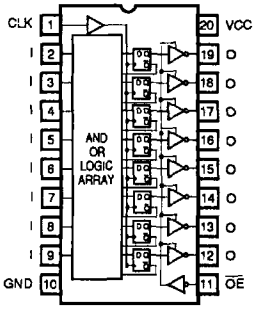
CERDIP CERPACK

16L8D/B/B-2/B-4 A/A-2/A-4



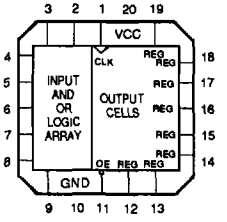
LEADLESS CHIP CARRIER

16R8D/B/B-2/B-4 A/A-2/A-4



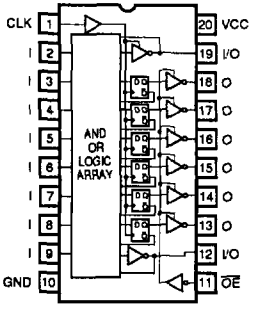
CERDIP CERPACK

16R8D/B/B-2/B-4 A/A-2/A-4



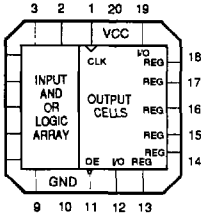
LEADLESS CHIP CARRIER

16R6D/B/B-2/B-4 A/A-2/A-4



CERDIP CERPACK

16/R6D/B/B-2/B-4 A/A-2/A-4



LEADLESS CHIP CARRIER

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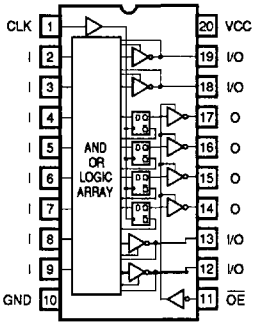
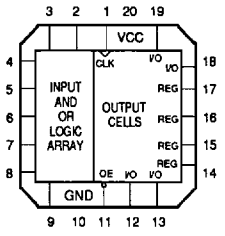
Military 20-Pin PAL Device Pinouts

16R4D/B/B-2/B-4
A/A-2/A-4



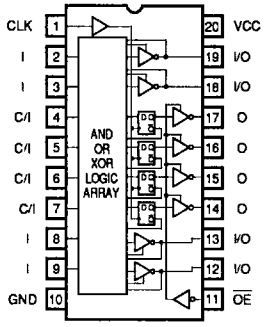
CERDIP CERPACK

16R4D/B/B-2/B-4
A/A-2/A-4



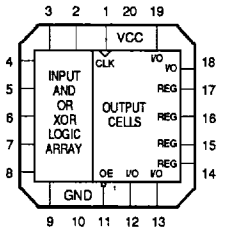
LEADLESS CHIP CARRIER

16X4



CERDIP CERPACK

16X4



LEADLESS CHIP CARRIER

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Military 20-Pin PAL Devices

Absolute Maximum Ratings

	Operating
Supply voltage, VCC	−0.5 V to 7 V
Input voltage range	−1.5 V to 5.5 V
Off-state output voltage	5.5 V
Storage temperature	−65°C to +150°C
Maximum junction temperature (T_j)	175°C
Lead temperature (soldering, 10 sec max)	300°C
Maximum current density $5x10^{-5}$ A/cm² per Mil-M-38510	< $5x10^{-5}$ A/cm²
Maximum θ_{jc} = 28°C/W for cerdips per Mil-M-38510	< 28°C/W
Maximum θ_{jc} = 22°C/W for flatpacks per Mil-M-38510	< 22°C/W
Maximum θ_{jc} = 20°C/W for leadless chip carrier per Mil-M-38510	< 20°C/W

5

Military Standard 20-Pin PAL Series

PAL10H8, 12H6, 14H4, 16H2, 16C1, 10L8, 12L6, 14L4, 16L2

Can be purchased to standard military drawings 81035, latest revision in effect.

Military 20-Pin Half-Power PAL Series

PAL10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2, 16L2-2

Operating Conditions

SYMBOL	PARAMETER	MIN	MAX	UNIT
V_{CC}	Supply voltage	4.5	5.5	V
T_A	Operating free-air temperature	–55		°C
T_C	Operating case temperature		125	°C
V_{IL}*	Low-level input voltage		≤0.8	V
V_{IH}*	High-level input voltage	≥2.0		V

Note: Virgin array verify of unprogrammed PAL device is performed at 25°C only.

* These are absolute voltages with respect to the ground pin on the device and include all overshoots due to system and/or tester noise.

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS		MIN	MAX	UNIT
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 = 2.4 V		25	µA
I_I	Maximum input current	V_{CC} = MAX	V_I = 5.5 V		1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN	10H8, 12H6, 14H4, 16H2,16C1, 10L8, 12L6, 14L4, 16L2		0.5	V
		I_{OL} = 4 mA I_{OH} = –2 mA	10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2, 16L2-2			
V_{OH}	High-level output voltage	V_{CC} = MIN	10H8, 12H6, 14H4, 16H2,16C1, 10L8, 12L6, 14L4, 16L2	2.4		V
		I_{OH} = –1 mA I_{OH} = –2 mA	10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2, 16L2-2			
I_{OS}*	Output short-circuit current	V_{CC} = 5V	V_O = 0.5 V	–30	–130	mA
I_{CC}	Supply current	V_{CC} = MAX	10H8, 12H6, 14H4, 16H2, 16C1, 10L8, 12L6, 14L4, 16L2		90	mA
			10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2, 16L2-2		45	

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

Military Standard 20-Pin PAL Series

PAL10H8, 12H6, 14H4, 16H2, 16C1, 10L8, 12L6, 14L4, 16L2

Military 20-Pin Half-Power PAL Series

PAL10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2, 16L2-2

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER		TEST CONDITIONS	MIN	MAX	UNIT
t_{PD}	Input or feedback to output	10H8, 12H6, 14H4, 16H2, 16C1, 10L8, 12L6, 14L4, 16L2	R_1 = 560 Ω R_2 = 1.1 KΩ		45	ns
		10H8-2, 12H6-2, 14H4-2, 16H2-2, 16C1-2, 10L8-2, 12L6-2, 14L4-2,16L2-2	R_1 = 1.12 KΩ R_2 = 2.2 KΩ		80	ns

Programmed devices conform to Mil-Std-883, Method 5005, Group A, Subgroups 1, 2, 3, 7, 8, 9, 10, and 11.

5

Military Ultra High Speed 20-Pin PAL Series

PAL16L8D, 16R8D, 16R6D, 16R4D

Can be purchased to standard military drawing 5962-85155, latest revision in effect.

Military Very High Speed 20-Pin PAL Series

PAL16L8B, 16R8B, 16R6B, 16R4B

Can be purchased to standard military drawing 5962-85155, latest revision in effect.

Military High Speed 20-Pin PAL Series

PAL16L8A, 16R8A, 16R6A, 16R4A

Can be purchased to standard military drawing 81036, latest revision in effect.

Operating Conditions

SYMBOL	PARAMETER		20 D		20 B		20 A		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
V_{CC}	Supply voltage		4.5	5.5	4.5	5.5	4.5	5.5	V
T_A	Operating free-air temperature		–55		–55		–55		°C
T_C	Operating case temperature			125		125		125	°C
t_w†	Width of clock (except 16L8)	Low	12		12		20		ns
		High	8		12		20		
t_{su}†	Set up time from input or feedback to clock (except 16L8)		15		20		30		ns
t_h†	Hold time		0		0		0		ns
V_{IL}*	Low-level input voltage			≤0.8		≤0.8		≤0.8	V
V_{IH}*	High-level input voltage		≥2.0		≥2.0		≥2.0		V

Note: Virgin array verify of unprogrammed PAL device is performed at 25°C only.
* These are absolute voltages with respect to the ground pin on the device and include all overshoots due to system and/or tester noise.
† These are device set-up conditions, which are measured during initial qualification, and are not directly tested.

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS		MIN	MAX	UNIT
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 = 2.4 V		25	µA
I_I	Maximum input current	V_{CC} = MAX	V_I = 5.5 V		1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN	I_{OL} = 12 mA		0.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN	I_{OH} = –2 mA	2.4		V
I_{OZL}*	Off-state output current	V_{CC} = MAX	V_O = 0.4 V		–100	µA
I_{OZH}*			V_O = 2.4 V		100	µA
I_{OS}**	Output short-circuit current	V_{CC} = 5 V	V_O = 0.5 V	–30	–130	mA
I_{CC}	Supply current	V_{CC} = MAX			180	mA

* I/O pin leakage is worst case of IIX or IOZX; i.e., IIL and IOZH.
** Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

Military Ultra High Speed 20-Pin PAL Series

PAL16L8D, 16R8D, 16R6D, 16R4D

Military Very High Speed 20-Pin PAL Series

PAL16L8B, 16R8B, 16R6B, 16R4B

Military High Speed 20-Pin PAL Series

PAL16L8A, 16R8A, 16R6A, 16R4A

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS	20 D		20 B		20 A		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
t_{PD}	Input or feedback to output (except 16R8)	R_1 = 390 Ω, R_2 = 750 Ω		15		20		30	ns
t_{CLK}	Clock to output or feedback (except 16L8)			12		15		20	ns
t_{PZX}	Pin 11 to output enable (except 16L8)			12		20		25	ns
t_{PXZ}	Pin 11 to output disable (except 16L8)			10		20		25	ns
t_{PZX}	Input to output enable (except 16R8)			17		25		30	ns
t_{PXZ}	Input to output disable (except 16R8)			13		20		30	ns
*f*MAX*	State machine maximum operating frequency (except 16L8)		37		28.5		20		MHz
	Data path register maximum operating frequency (except 16L8)		50		41.6		25		

*fMAX is calculated and measured on initial qualifications only.
fMAX (state machine) = $1/[t_{su} + t_{CLK}]$
fMAX (data path register) = $1/[t_{WL} + t_{WH}]$ or $1/t_{su}+t_h$, whichever is smaller.

Programmed devices conform to Mil-Std-883, Method 5005, Group A, Subgroups 1,2,3,7,8,9,10 and 11.

5

Military Half-Power 20B-Pin Series

PAL16L8B-2, 16R8B-2, 16R6B-2, 16R4B-2

Can be purchased to standard military drawing 5962-85155, latest revision in effect.

Military Half-Power 20A-Pin Series

PAL16L8A-2, 16R8A-2, 16R6A-2, 16R4A-2

Can be purchased to standard military drawing 81036, latest revision in effect.

Operating Conditions

SYMBOL	PARAMETER		20 B–2		20 A–2		UNIT
			MIN	MAX	MIN	MAX	
V_{CC}	Supply voltage		4.5	5.5	4.5	5.5	V
T_A	Operating free-air temperature		–55		–55	125	°C
T_C	Operating case temperature			125			°C
t_w†	Width of clock (except 16L8)	Low	20		25		ns
		High	20		25		
t_{su}†	Set up time from input or feedback to clock (except 16L8)		30		50		ns
t_h†	Hold time		0		0		ns
V_{IL}*	Low-level input voltage			≤0.8		≤0.8	V
V_{IH}*	High-level input voltage		≥2.0		≥2.0		V

Note: Virgin array verify of unprogrammed PAL device is performed at 25°C only.

* These are absolute voltages with respect to the ground pin on the device and include all overshoots due to system and/or tester noise.

† These are device set-up conditions, which are measured during initial qualification, and are not directly tested.

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS			MIN	MAX	UNIT
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 = 2.4 V		25	µA
I_I	Maximum input current	V_{CC} = MAX		V_I = 5.5 V		1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN		I_{OL} = 12 mA		0.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN		I_{OH} = –2 mA	2.4		V
I_{OZL}*	Off-state output current	V_{CC} = MAX		V_O = 0.4 V		–100	µA
I_{OZH}*				V_O = 2.4 V		100	µA
I_{OS}**	*Output short-circuit current*	V_{CC} = 5 V	16L8B-2, 16R8B-2, 16R6B-2, 16R4B-2			–250	mA
		V_O = 0.5 V	16L8A-2, 16R8A-2, 16R6A-2, 16R4A-2		–30	–130	
I_{CC}	Supply current	V_{CC} = MAX				90	mA

* I/O pin leakage is worst case of IIX or IOZX; i.e., IIL and IOZH.

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

Military Half-Power 20B-Pin Series

PAL16L8B-2, 16R8B-2, 16R6B-2, 16R4B-2

Can be purchased to standard military drawing 5962-85155, latest revision in effect.

Military Half-Power 20A-Pin Series

PAL16L8A-2, 16R8A-2, 16R6A-2, 16R4A-2

Can be purchased to standard military drawing 81036, latest revision in effect.

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS	20 B-2		20 A-2		UNIT
			MIN	MAX	MIN	MAX	
t_{PD}	Input or feedback to output (except 16L8)	R_1 = 390 Ω R_2 = 750 Ω		30		50	ns
t_{CLK}	Clock to output or feedback (except 16L8)			20		25	ns
t_{PZX}	Pin 11 to output enable (except 16L8)			25		25	ns
t_{PXZ}	Pin 11 to output disable (except 16L8)			25		25	ns
t_{PZX}	Input to output enable (except 16R8)			30		45	ns
t_{PXZ}	Input to output disable (except 16R8)			30		45	ns
*fMAX**	State machine maximum operating frequency (except 16L8)		20		13.3		MHz
	Data path register maximum operating frequency (except 16L8)		25		20		

*fMAX is calculated and measured on initial qualifications only.
fMAX (state machine) = $1/[t_{SU} + t_{CLK}]$
fMAX (data path register) = $1/[t_{WL} + t_{WH}]$ or $1/t_{SU}+t_h$, whichever is smaller.

Programmed devices conform to Mil-Std-883, Method 5005, Group A, Subgroups 1,2,3,7,8,9,10 and 11.

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Military Quarter-Power 20B-Pin Series

PAL16L8B-4, 16R8B-4, 16R6B-4, 16R4B-4

Can be purchased to standard military drawing 5962-88515 latest revision in effect.

Military Quarter-Power 20A-Pin Series

PAL16L8A-4, 16R8A-4, 16R6A-4, 16R4A-4

Can be purchased to standard military drawing 85065 latest revision in effect.

Operating Conditions

SYMBOL	PARAMETER		20 B-4		20 A-4		UNIT
			MIN	MAX	MIN	MAX	
V_{CC}	Supply voltage		4.5	5.5	4.5	5.5	V
T_A	Operating free-air temperature		–55		–55	125	°C
T_C	Operating case temperature			125			°C
t_w†	Width of clock (except 16L8)	Low	25		40		ns
		High	25		40		
t_{su}	Set up time from input or feedback to clock (except 16L8)		50		90		ns
t_h†	Hold time		0		0		ns
V_{IL}*	Low-level input voltage			≤0.8		≤0.8	V
V_{IH}*	High-level input voltage		≥2.0		≥2.0		V

Note: Virgin array verify of unprogrammed PAL device is performed at 25°C only.

* These are absolute voltages with respect to the ground pin on the device and include all overshoots due to system and/or tester noise.

† These are device set-up conditions, which are measured during initial qualification, and are not directly tested.

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS			MIN	MAX	UNIT
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 = 2.4 V		25	µA
I_I	Maximum input current	V_{CC} = MAX		V_I = 5.5 V		1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN		I_{OL} = 4 mA		0.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN		I_{OH} = –1 mA	2.4		V
I_{OZL}*	Off-state output current	V_{CC} = MAX		V_O = 0.4 V		–100	µA
I_{OZH}*				V_O = 2.4 V		100	µA
I_{OS}**	Output short-circuit current	V_{CC} = 5 V	16L8B-4, 16R8B-4, 16R6 B-4, 16R4B-4			–250	mA
		V_O = 0.5 V	16L8A-4, 16R8A-4, 16R6A-4, 16R4A-4		–30	–130	
I_{CC}	Supply current	V_{CC} = MAX	16L8A-4, 16R8A-4, 16R6A-4, 16R4A-4			50	mA
			16L8B-4, 16R8B-4, 16R6B-4, 16R4B-4			55	

* I/O pin leakage is worst case of IIX or IOZX; i.e., IIL and IOZH.

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

Military Quarter-Power 20B-Pin Series

PAL16L8B-4, 16R8B-4, 16R6B-4, 16R4B-4

Military Quarter-Power 20A-Pin Series

PAL16L8A-4, 16R8A-4, 16R6A-4, 16R4A-4

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS	20 B-4		20 A-4		UNIT
			MIN	MAX	MIN	MAX	
t_{PD}	Input or feedback to output (except 16R8)	R_1 = 800 Ω R_2 = 1.56 KΩ		50		75	ns
t_{CLK}	Clock to output or feedback (except 16L8)			25		45	ns
t_{PXZ}	Pin 11 to output enable(except 16L8)			25		40	ns
t_{PXZ}	Pin 11 to output disable (except 16L8)			25		40	ns
t_{PZX}	Input to output enable (except 16R8)			45		65	ns
t_{PXZ}	Input to output disable (except 16R8)			45		65	ns
*f*MAX*	State machine maximum operating frequency (except 16L8)		13.3		7.4		MHz
	Data path register maximum operating frequency (except 16L8)		20		12.5		

*fMAX is calculated and measured on initial qualifications only.
fMAX (state machine) = $1/[t_{su} + t_{CLK}]$
fMAX (data path register) = $1/[t_{WL} + t_{WH}]$ or $1/t_{su}+t_h$, whichever is smaller.

Programmed devices conform to Mil-Std-883, Method 5005, Group A, Subgroups 1,2,3,7,8,9,10 and 11.

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Military Arithmetic 20-Pin PAL Series

PAL16X4

Operating Conditions

SYMBOL	PARAMETER		MIN	MAX	UNIT
V_{CC}	Supply voltage		4.5	5.5	V
T_A	Operating free-air temperature		–55		°C
T_C	Operating case temperature			125	°C
t_w†	Width of clock	Low	25		ns
		High	25		
t_{su}†	Set up time from input or feedback to clock		55		ns
t_h†	Hold time		0		ns
V_{IL}*	Low-level input voltage			≤0.8	V
V_{IH}*	High-level input voltage		≥2.0		V

Note: Virgin array verify of unprogrammed PAL device is performed at 25°C only.

* These are absolute voltages with respect to the ground pin on the device and include all overshoots due to system and/or tester noise.

† These are device set-up conditions, which are measured during initial qualification, and are not directly tested.

Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS		MIN	MAX	UNIT
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 = 2.4 V		25	µA
I_I	Maximum input current	V_{CC} = MAX	V_I = 5.5 V		1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN	I_{OL} = 12 mA		0.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN	I_{OH} = –2 mA	2.4		V
I_{OZL}*	Off-state output current	V_{CC} = MAX	V_O = 0.4 V		–100	µA
I_{OZH}*			V_O = 2.4 V		100	µA
I_{OS}**	Output short-circuit current	V_{CC} = 5 V	V_O = 0.5 V	–30	–130	mA
I_{CC}	Supply current	V_{CC} = MAX	16X 4		225	mA

* I/O pin leakage is worst case of IIX or IOZX; i.e., IIL and IOZH.

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

Military Arithmetic 20-Pin PAL Devices

PAL16X4

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	MAX	UNIT
t_{PD}	Input or feedback to output			45	ns
t_{CLK}	Clock to output or feedback			25	ns
t_{PZX}	Pin 11 to output enable	R_1 = 200 Ω		25	ns
t_{PXZ}	Pin 11 to output disable	R_2 = 390 Ω		25	ns
t_{PZX}	Input to output enable			45	ns
t_{PXZ}	Input to output disable			45	ns
fMAX	Maximum frequency		12.5		MHz

Programmed devices conform to Mil-Std-883, Method 5005, Group A, Subgroups 1,2,3,7,8,9,10 and 11.

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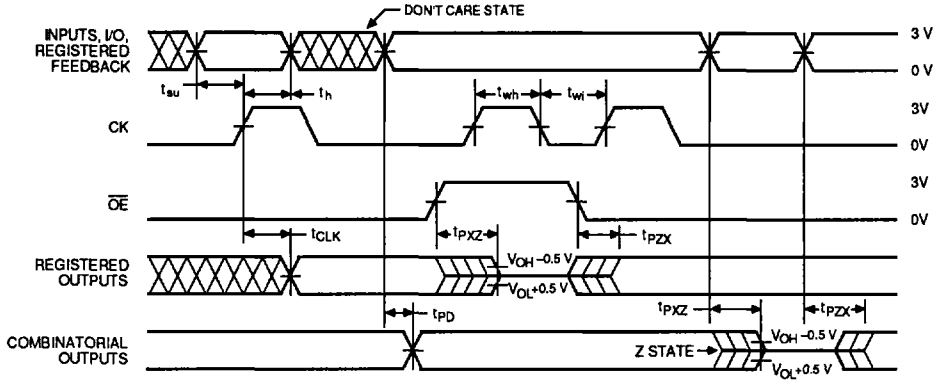
Military 20-Pin PAL Devices

Switching Waveforms



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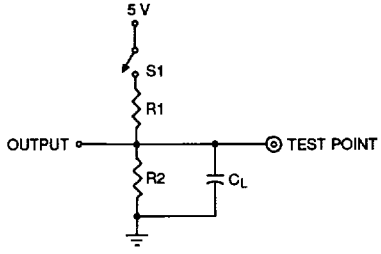
Notes:
1. t_{PD} is tested with switch S_1 closed. C_L = 50 pF and measured at 1.5 V output level.
2. t_{PZX} is measured at the 1.5 V level with C_L = 50 pF. S_1 is open for high impedance to "1" test, and closed for high impedance to "0" test.
3. t_{PXZ} is tested with C_L = 5 pF. S_1 is open for "1" to high impedance test, measured V_{OH} –0.5 V output level. S_1 is closed for "0" to high impedance test measured to V_{OL} +0.5 V output level.
4. Equivalent test loads may be used on automatic test equipment.

Test Load



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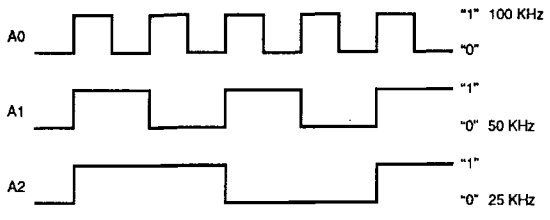
Military 20-Pin PAL Devices

Life Test/Burn-In Circuits

Complies with Mil-Std-883, Method 1005/1015, Condition D.

Circuit Configurations

Waveforms



A3 to Ax Follow in order

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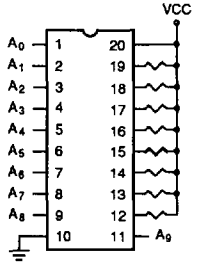
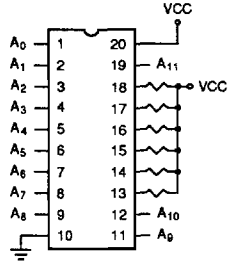
1. All Burn-In will be accomplished at 125° C +5/–0°C
2. V_{CC} = 5.25 Volts ± 0.25 V
3. All clocks (A0 to Ax) are square wave signals, 50±15% Duty Cycle, with:
   a. "0" = –0.5 V to +0.7 V
   b. "1" = +2.4 V to V_{CC}
   c. Rise Time (+0.7 V to +2.4 V) < 1 µsec
   d. Fall Time (+2.4 V to +0.7 V) < 1 µsec
4. Resistor Value
   330 Ω or 470 Ω ±5%
5. All Board Components to be compatible with 150°C Ambient (Min).

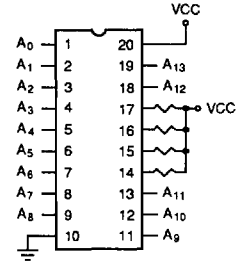
PAL10H8/H8-2
PAL10L8/L8-2



PAL12H6/H6-2
PAL12L6/L6-2



PAL14H4/H4-2
PAL14L4/L4-2



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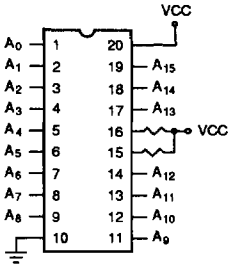
Military 20-Pin PAL Devices

Life Test/Burn-In Circuits

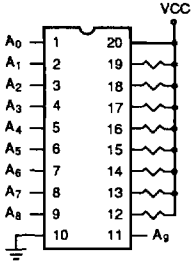
Complies with Mil-Std-883, Method 1005/1015, Condition D.

Circuit Configurations

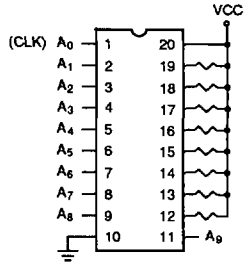
PAL16H2/H2-2
PAL16L2/L2-2
PAL16C1/C1-2



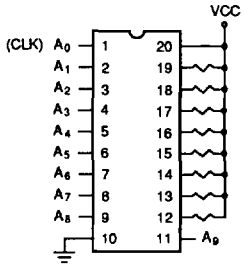
PAL16L8A/B/D
PAL16L8A-2/B-2
PAL16L8A-4/B-4



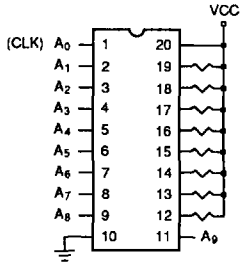
PAL16R8A/B/D
PAL16R8A-2/B-2
PAL16R8A-4/B-4



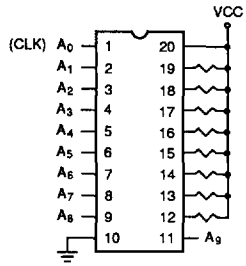
PAL16R6A/B/D
PAL16R6A-2/B-2
PAL16R6A-4/B-4



PAL16R4A/B/D
PAL16R4A-2/B-2
PAL16R4A-4/B-4



PAL16A4
PAL16X4



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