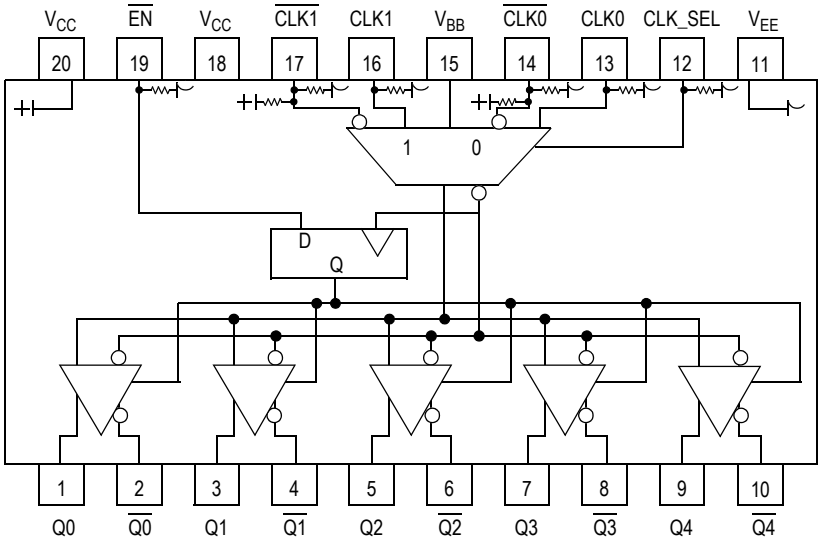


Warning: All V_{CC} and V_{EE} pins must be externally connected to Power Supply to guarantee proper operation.

Figure 1. 20-Lead Pinout (Top View) **and Logic Diagram**

Table 1. Pin Description

Pin	Function
CLK0*, $\overline{\text{CLK0}}$**	ECL/PECL/HSTL CLK Input
CLK1*, $\overline{\text{CLK1}}$**	ECL/PECL/HSTL CLK Input
Q0:4, $\overline{\text{Q0:4}}$	ECL/PECL Outputs
CLK_SEL*	ECL/PECL Active Clock Select Input
$\overline{\text{EN}}$*	ECL Sync Enable
V_{BB}	Reference Voltage Output
V_{CC}	Positive Supply
V_{EE}	Negative Supply

* Pins will default LOW when left open.
** Pins will default to $V_{CC}/2$ when left open.

Table 2. Function Table

CLK0	CLK1	CLK_SEL	$\overline{\text{EN}}$	Q
L	X	L	L	L
H	X	L	L	H
X	L	H	L	L
X	H	H	L	H
X	X	X	H	L*

* On next negative transition of CLK0 or CLK1

Table 3. General specifications

Characteristics		Value
Internal Input Pulldown Resistor		75 kΩ
Internal Input Pullup Resistor		75 kΩ
ESD Protection	Human Body Model Machine Model Charged Device Model	> 2000 V > 200 V > 1500 V
Thermal Resistance (Junction-to-Ambient)	0 LFPM, 20 TSSOP 500 LFPM, 20 TSSOP	140°C/W 100°C/W

Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test

Table 4. Absolute Maximum Ratings(1)

Symbol	Characteristic	Conditions	Rating	Units
V_{SUPPLY}	Power Supply Voltage	Difference between V_{CC} & V_{EE}	3.9	V
V_{IN}	Input Voltage	$V_{CC} - V_{EE} \leq 3.6$ V	V_{CC} + 0.3 V_{EE} – 0.3	V
I_{OUT}	Output Current	Continuous Surge	50 100	mA mA
I_{BB}	V_{BB} Sink/Source Current		±0.5	°C
T_A	Operating Temperature Range		–40 to +85	°C
T_{STG}	Storage Temperature Range		–65 to +150	°C

1. Absolute maximum continuous ratings are those maximum values beyond which damage to the device may occur. Exposure to these conditions or conditions beyond those indicated may adversely affect device reliability. Functional operation at absolute-maximum-rated conditions is not implied.

Table 5. DC Characteristics (V_{CC} = 0 V, V_{EE} = –2.5 V ± 5% or V_{CC} = 2.5 V ± 5%, V_{EE} = 0 V)

Symbol	Characteristics	–40°C			0°C to 85°C			Unit
		Min	Typ	Max	Min	Typ	Max	
I_{EE}	Power Supply Current		30	60		30	60	mA
V_{OH}	Output HIGH Voltage(1)	V_{CC}–1250	V_{CC}–990	V_{CC}–800	V_{CC}–1200	V_{CC}–960	V_{CC}–750	mV
V_{OL}	Output LOW Voltage(1)	V_{CC}–2000	V_{CC}–1550	V_{CC}–1150	V_{CC}–1925	V_{CC}–1630	V_{CC}–1200	mV
V_{outPP}	Output Peak-to-Peak Voltage	200			200			mV
V_{IH}	Input HIGH Voltage	V_{CC}–1165		V_{CC}–880	V_{CC}–1165		V_{CC}–880	mV
V_{IL}	Input LOW Voltage	V_{CC}–1810		V_{CC}–1475	V_{CC}–1810		V_{CC}–1475	mV
V_{BB}	Output Reference Voltage I_{BB} = 200 µA	V_{CC}–1400		V_{CC}–1200	V_{CC}–1400		V_{CC}–1200	mV
V_{PP}	Differential Input Voltage(2)	0.12		1.3	0.12		1.3	mV
V_{CMR}	Differential Cross Point Voltage(3)	V_{EE}+0.2		V_{CC}–1.0	V_{EE}+0.2		V_{CC}–1.0	mV
I_{IN}	Input Current			±150			±150	µA

1. Output termination voltage V_{TT} = 0 V for V_{CC} = 2.5 V operation is supported but the power consumption of the device will increase.
2. V_{PP} (DC) is the minimum differential input voltage swing required to maintain device functionality.
3. V_{CMR} (DC) is the crosspoint of the differential input signal. Functional operation is obtained when the crosspoint is within the V_{CMR} (DC) range and the input swing lies within the V_{PP} (DC) specification.

Table 6. DC Characteristics (V_{CC} = 0 V, V_{EE} = –3.8 V to –3.135 V or V_{CC} = 3.135 V to 3.8 V, V_{EE} = 0 V)

Symbol	Characteristics	–40°C			0°C to 85°C			Unit
		Min	Typ	Max	Min	Typ	Max	
I_{EE}	Power Supply Current		30	60		30	60	mA
V_{OH}	Output HIGH Voltage(1)	V_{CC}–1150	V_{CC}–1020	V_{CC}–800	V_{CC}–1200	V_{CC}–970	V_{CC}–750	mV
V_{OL}	Output LOW Voltage(1)	V_{CC}–1950	V_{CC}–1620	V_{CC}–1250	V_{CC}–2000	V_{CC}–1680	V_{CC}–1300	mV
V_{outPP}	Output Peak-to-Peak Voltage	200			200			mV
V_{IH}	Input HIGH Voltage	V_{CC}–1165		V_{CC}–880	V_{CC}–1165		V_{CC}–880	mV
V_{IL}	Input LOW Voltage	V_{CC}–1810		V_{CC}–1475	V_{CC}–1810		V_{CC}–1475	mV
V_{BB}	Output Reference Voltage I_{BB} = 200 µA	V_{CC}–1400		V_{CC}–1200	V_{CC}–1400		V_{CC}–1200	mV
V_{PP}	Differential Input Voltage(2)	0.12		1.3	0.12		1.3	V
V_{CMR}	Differential Cross Point Voltage(3)	V_{EE}+0.2		V_{CC}–1.1	V_{EE}+0.2		V_{CC}–1.1	V
I_{IN}	Input Current			±150			±150	µA

1. Output termination voltage V_{TT} = 0 V for V_{CC} = 2.5 V operation is supported but the power consumption of the device will increase.
2. V_{PP} (DC) is the minimum differential input voltage swing required to maintain device functionality.

3. V_{CMR} (DC) is the crosspoint of the differential input signal. Functional operation is obtained when the crosspoint is within the V_{CMR} (DC) range and the input swing lies within the V_{PP} (DC) specification.

Table 7. AC Characteristics (V_{CC} = 0 V, V_{EE} = –3.8 V to –2.375 V or V_{CC} = 2.375 V to 3.8 V, V_{EE} = 0 V)[1]

Symbol	Characteristics	–40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Output Frequency	2			2			2			GHz
t_{PLH} t_{PHL}	Propagation Delay (Differential) CLK to Q, $\overline{Q}$	300	355	425	300	375	475	300	400	525	ps
t_{SKEW}	Within Device Skew[2] Q, $\overline{Q}$ Device-to-Device Skew[2]		23	45 125		23	45 175		23	45 225	ps ps
t_{JITTER}	Cycle-to-Cycle Jitter RMS (1σ)			1			1			1	ps
V_{PP}	Input Peak-to-Peak Voltage Swing (Differential)	200		1200	200		1200	200		1200	mV
V_{CMR}	Differential Cross Point Voltage	V_{EE}+0.2		V_{CC}–1.2	V_{EE}+0.2		V_{CC}–1.2	V_{EE}+0.2		V_{CC}–1.2	V
t_r/t_f	Output Rise/Fall Time (20%–80%)	70		225	70		250	70		275	ps

1. Measured using a 750 mV source, 50% duty cycle clock source. All loading with 50 ohms to V_{CC}–2.0 V.
2. Skew is measured between outputs under identical transitions.

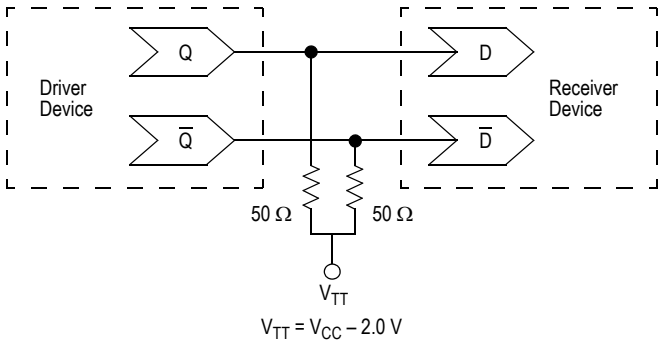
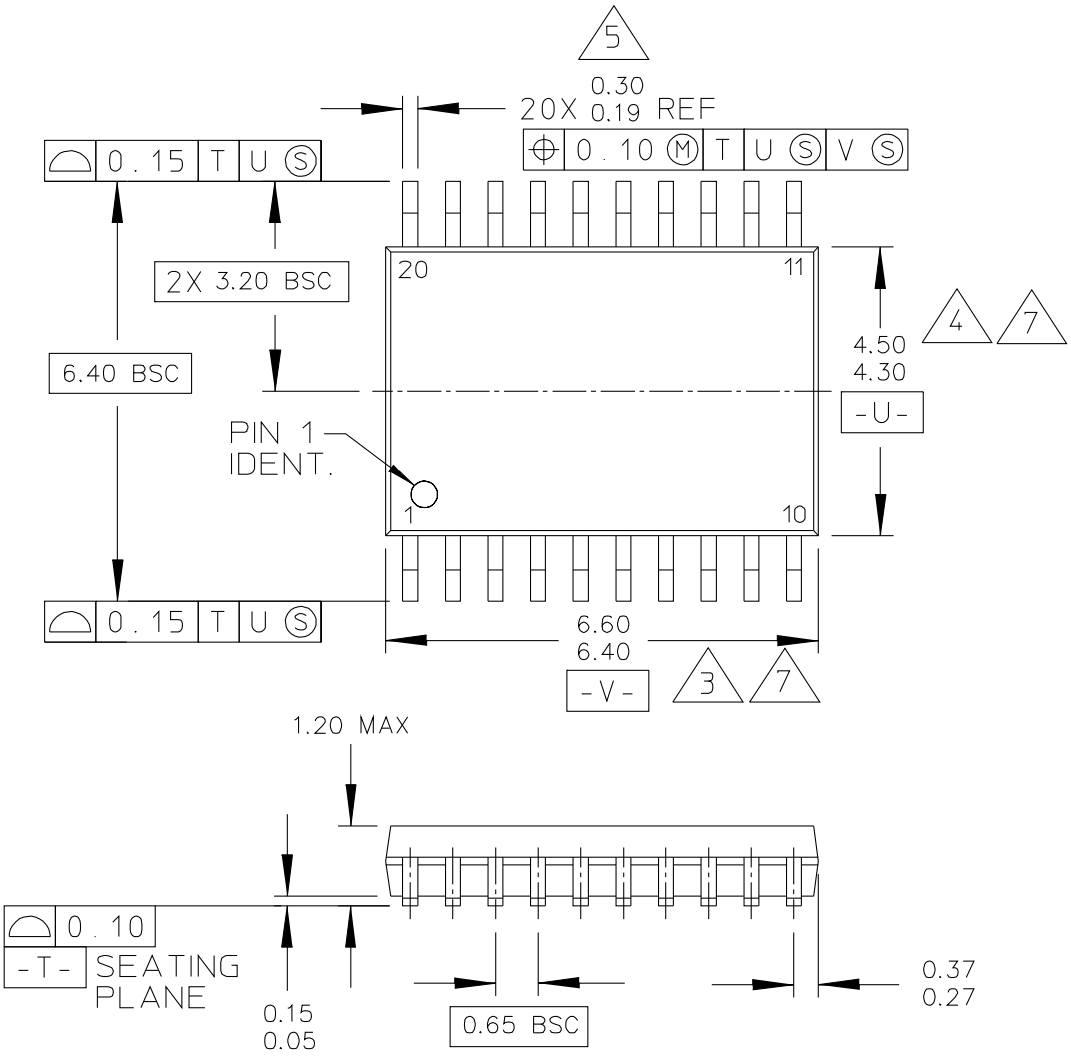


Figure 2. Typical Termination for Output Driver and Device Evaluation

PACKAGE DIMENSIONS



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	CASE NUMBER: 948E-03	09 MAR 2005
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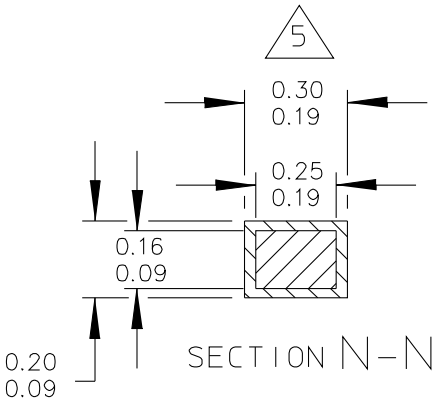
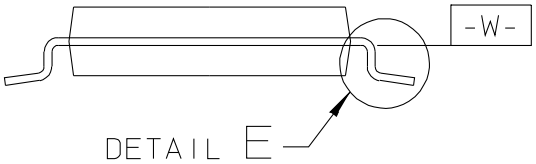
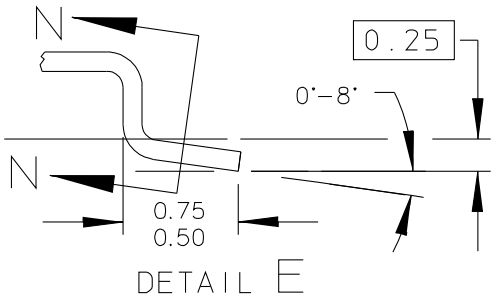
PACKAGE DIMENSIONS







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1. CONTROLLING DIMENSION: MILLIMETER
2. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1982.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE.
4. DIMENSION DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 PER SIDE.
5. DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF THE DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSIONS ARE TO BE DETERMINED AT DATUM PLANE -W-.

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