

Table 1. PIN DESCRIPTION

PIN	FUNCTION
Dn, <u>Dn</u> Qn, Qn ECL V _{BB} V _{CC} V _{EE} GND	ECL Inputs LVPECL Outputs ECL Reference Voltage Output Positive Supply Negative Supply Ground

* All V_{CC} pins are tied together on the die.

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

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

Table 2. MAXIMUM RATINGS

Symbol	Parameter	Condition 1	Condition 2	Rating	Unit
V _{CC}	PECL Power Supply	GND = 0 V		8 to 0	V
V _{EE}	NECL Power Supply	GND = 0 V		–8 to 0	V
VI	NECL Mode Input Voltage	GND = 0 V	$V_I \ge V_{EE}$	-6 to 0	V
l _{out}	Output Current	Continuous Surge		50 100	mA mA
I _{BB}	ECL V _{BB} Sink/Source			± 0.5	mA
T _A	Operating Temperature Range			-40 to +85	°C
T _{stg}	Storage Temperature Range			-65 to +150	°C
θ_{JA}	Thermal Resistance (Junction-to-Ambient)	0 lfpm 500 lfpm	20 SOIC 20 SOIC	90 60	°C/W °C/W
θ_{JC}	Thermal Resistance (Junction-to-Case)	Standard Board	20 SOIC	30 to 35	°C/W
T _{sol}	Wave Solder			265	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 3. NECL INPUT DC CHARACTERISTICS V_{CC}= 3.3 V; V_{EE}= -3.3 V; GND= 0 V (Note 1)

		-40°C		25°C			85°C				
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I _{EE}	V _{EE} Power Supply Current			8.0		6.0	8.0			8.0	mA
V _{IH}	Input HIGH Voltage (Single-Ended)	-1165		-880	-1165		-880	-1165		-880	mV
V _{IL}	Input LOW Voltage (Single-Ended)	-1810		-1475	-1810		-1475	-1810		-1475	mV
ECL V _{BB}	Output Voltage Reference	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	٧
V _{IHCMR}	Input HIGH Voltage Common Mode Range (Differential) (Note 2)										
	Vpp < 500 mV	V _{EE} +1.3		-0.4	V _{EE} +1.2		-0.4	V _{EE} +1.2		-0.4	V
	Vpp ≧ 500 mV	VEE+1.5		-0.4	VEE+1.4		-0.4	VEE+1.4		-0.4	V
I _{IH}	Input HIGH Current			150			150			150	μΑ
I _{IL}	Input LOW Current D D	0.5 -600			0.5 -600			0.5 -600			μΑ

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 1. Input parameters vary 1:1 with GND. V_{EE} can vary -3.0 V to -5.5 V.
- 2. V_{IHCMR} min varies 1:1 with V_{EE}. V_{IHCMR} max varies 1:1 with GND.

Table 4. LVPECL OUTPUT DC CHARACTERISTICS V_{CC} = 3.3 V; V_{EE} = -3.3 V; GND= 0 V (Note 3)

		-40°C		25°C			85°C				
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I _{CC}	V _{CC} Power Supply Current			24		20	24			26	mA
V _{OH}	Output HIGH Voltage (Note 4)	2215	2295	2420	2275	2345	2420	2275	2345	2420	mV
V _{OL}	Output LOW Voltage (Note 4)	1470	1605	1745	1490	1600	1680	1490	1595	1680	mV

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 3. Output parameters vary 1:1 with V_{CC} . V_{CC} can vary +0.5 V / -0.3 V. V_{EE} can vary -3.0 V to -5.5 V.
- 4. Outputs are terminated through a 50 Ω resistor to V_{CC} -2 volts.

Table 5. AC CHARACTERISTICS $V_{CC} = 3.0 \text{ V}$ to 3.8 V; $V_{EE} = -3.0 \text{ V}$ to -5.5 V; GND = 0 V

		−40°C		25°C			85°C				
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
fmax	Maximum Toggle Frequency		560			650			700		MHz
t _{PLH} t _{PHL}	Propagation Delay Diff D to Q S.E.	390 340		590 640	420 370		620 670	460 410		660 710	ps
t _{SKEW}	Skew Output-to-Output (Note 5) Part-to-Part (Diff) (Note 5) Duty Cycle (Diff) (Note 6)		20 25	100 200		20 25	100 200		20 25	100 200	ps
tJITTER	Random Clock Jitter		TBD			TBD			TBD		ps
V _{PP}	Input Voltage Swing (Differential Configuration) (Note 7)	150		1000	150		1000	150		1000	mV
t _r t _f	Output Rise/Fall Times Q (20% - 80%)	230		500	230		500	230		500	ps

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 5. Skews are valid across specified voltage range, part-to-part skew is for a given temperature.6. Duty cycle skew is the difference between a TPLH and TPHL propagation delay through a device.
- 7. Vpp(min) is swing measured single-ended on each input in differential configuration. The device has a DC gain of ≈40.

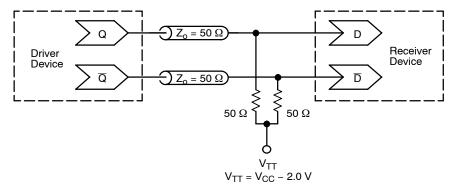


Figure 2. Typical Termination for Output Driver and Device Evaluation (See Application Note AND8020/D - Termination of ECL Logic Devices.)

ORDERING INFORMATION

Device	Package	Package [†]
MC100LVEL90DW	SOIC-20	38 Units / Rail
MC100LVEL90DWG	SOIC-20 (Pb-Free)	38 Units / Rail
MC100LVEL90DWR2	SOIC-20	1000 / Tape & Reel
MC100LVEL90DWR2G	SOIC-20 (Pb-Free)	1000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Resource Reference of Application Notes

AN1405/D - ECL Clock Distribution Techniques

AN1406/D – Designing with PECL (ECL at +5.0 V)

AN1503/D - ECLinPS I/O SPiCE Modeling Kit

AN1504/D - Metastability and the ECLinPS Family

AN1568/D - Interfacing Between LVDS and ECL

AN1672/D - The ECL Translator Guide

AND8001/D - Odd Number Counters Design

AND8002/D - Marking and Date Codes

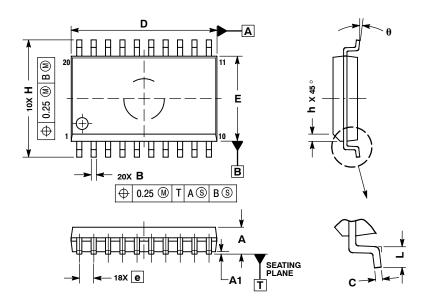
AND8020/D - Termination of ECL Logic Devices

AND8066/D - Interfacing with ECLinPS

AND8090/D - AC Characteristics of ECL Devices

PACKAGE DIMENSIONS

SO-20 WB DW SUFFIX CASE 751D-05 **ISSUE G**



NOTES

- 1. DIMENSIONS ARE IN MILLIMETERS.
 2. INTERPRET DIMENSIONS AND TOLERANCES
 PER ASME Y14.5M, 1994.
- DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15 PER SIDE. DIMENSION B DOES NOT INCLUDE DAMBAR
- PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF B DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS							
DIM	MIN	MAX						
Α	2.35	2.65						
A1	0.10	0.25						
В	0.35	0.49						
С	0.23	0.32						
D	12.65	12.95						
Е	7.40	7.60						
е	1.27	BSC						
Н	10.05	10.55						
h	0.25	0.75						
L	0.50	0.90						
θ	0 °	7 °						

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