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January 2002
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FIN1104
LVDS 4 Port High Speed Repeater

General Description

This 4 port repeater is designed for high speed interconnects utilizing Low Voltage Differential Signaling (LVDS) technology. The FIN1104 accepts and outputs LVDS levels with a typical differential output swing of 330 mV which provides low EMI at ultra low power dissipation even at high frequencies. The FIN1104 provides a V_{BB} reference for AC coupling on the inputs. In addition the FIN1104 can directly accept LVPECL, HSTL, and SSTL-2 for translation to LVDS.

Features

- Greater than 800 Mbps data rate
- 3.3V power supply operation
- 3.5 ps maximum random jitter and 135 ps maximum deterministic jitter
- Wide rail-to-rail common mode range
- LVDS receiver inputs accept LVPECL, HSTL, and SSTL-2 directly
- Ultra low power consumption
- 20 ps typical channel-to-16.1(ne) 16.1(ne)Ordering Code:

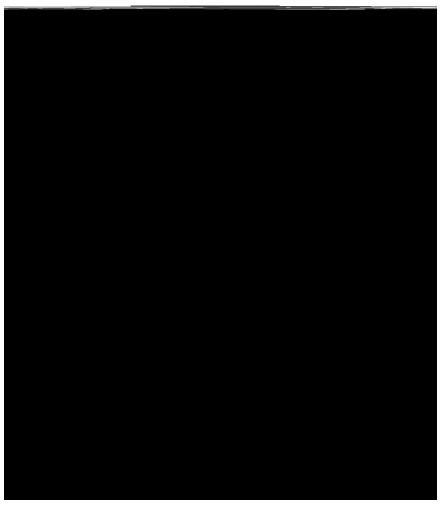
Order Number	Package Number	Package Description
FIN1104MTC	MTC24	24-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide

Devices also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

Pin Descriptions

Pin Name	Description
R_{IN1+}, R_{IN2+},	
—	Inverting Driver Enable Pin for all Outputs
V_{CC}	Power Supply
GND	Ground
V_{BB}	Reference Voltage Output

Connection Diagram



Function Table

Inputs				Outputs	
EN	**$\overline{EN}$**	**D_{IN+}**	**D_{IN-}**	**D_{OUT+}**	**D_{OUT-}**
H	L	H	L	H	L
H	L	L	H	L	H
H	L	Fail Safe Case		H	L
X	H	X	X	Z	Z
L	X	X	X	Z	Z

H = HIGH Logic Level
L = LOW Logic Level
X = Don't Care
Z = High Impedance

Functional Diagram

Absolute Maximum Ratings(Note 1)

Supply Voltage (V_{CC})	−0.5V to +4.6V
LVDS DC Input Voltage (V_{IN})	−0.5V to +4.6V
LVDS DC Output Voltage (V_{OUT})	−0.5V to +4.6V
Driver Short Circuit Current (I_{OSD})	Continuous 10 mA
Storage Temperature Range (T_{STG})	−65°C to +150°C
Max Junction Temperature (T_J)	150°C
Lead Temperature (T_L) (Soldering, 10 seconds)	260°C
ESD (Human Body Model)	7500V
ESD (Machine Model)	400V

Recommended Operating Conditions

Supply Voltage (V_{CC})	3.0V to 3.6V
Magnitude of Differential Voltage ($\|V_{ID}\|$)	100 mV to V_{CC}
Common Mode Voltage Range (V_{IC})	$(0V + \|V_{ID}\|/2)$ to $(V_{CC} - \|V_{ID}\|/2)$
Operating Temperature (T_A)	−40

Note 1: The "Absolute Maximum Ratings": are those values beyond which damage to the device may occur. The databook specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature and output/input loading variables. Fairchild does not recommend operation of circuits outside databook specification.

DC Electrical Characteristics

Note 2: All typical values are at $T_A = 25°C$ and with $V_{CC} = 3.3V$.

AC Electrical Characteristics

Over supply voltage and operating temperature ranges, unless otherwise specified

Note 3: All typical values are at $T_A = 25°C$ and with $V_{CC} = 3.3V$.

Note 4: $t_{SK(LH)}$, $t_{SK(HL)}$ is the skew between specified outputs of a single device when the outputs have identical loads and are switching in the same direction.

Note 5: $t_{SK(PP)}$ is the magnitude of the difference in propagation delay times between any specified terminals of two devices switching in the same direction (either Low-to-HIGH or HIGH-to-LOW) when both devices operate with the same supply voltage, same temperature, and have identical test circuits.

Note 6: Passing criteria for maximum frequency is the output $V_{OD} > 200$ mV and the duty cycle is 45% to 55% with all channels switching.

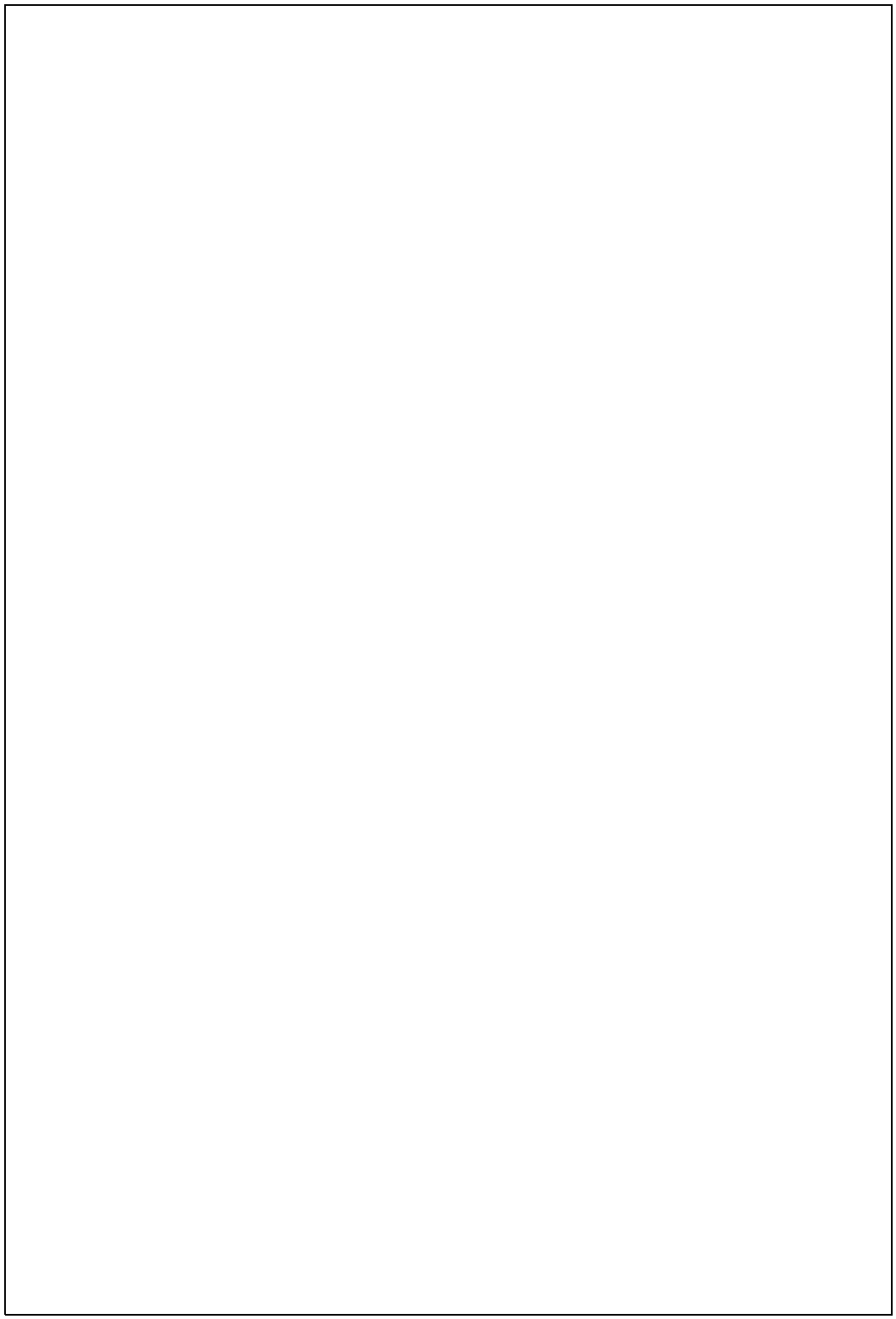
Note 7: Output loading is transmission line environment only; C_L is < 1 pF of stray test fixture capacitance.

FIGURE 1. Differential Receiver Voltage Definitions and Propagation and Transition Time Test Circuit

FIGURE 2. Differential Driver DC Test Circuit

FIGURE 4. AC Waveform

Note A: All LVTTL input pulses have frequency = 10MHz, t_R



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