FEATURES

- **1500ps max. clock to bus (data transmit)**
- **1000ps max. clock to Q (data receive)**
- **Extended 100E V_{EE} range of –4.2V to –5.5V**
- **25Ω cutoff bus outputs**
- **50Ω receiver outputs**
- **Scannable implementation of E336**
- **Synchronous and asynchronous bus enables**
- **Non-inverting data path**
- **Bus outputs feature internal edge slow-down capacitors**
- **Additional package ground pins**
- **Fully compatible with industry standard 10KH, 100K ECL levels**
- **Internal 75KΩ input pulldown resistors**
- **Fully compatible with Motorola MC10E/100E337**
- **Available in 28-pin PLCC package**

PIN NAMES

Pin	Function
A_0–A_2	Data Inputs A
B_0–B_2	Data Inputs B
S-IN	Serial (Scan) Data Input
TEN, REN	LOAD/$\overline{HOLD}$ Controls
SCAN	Scan Control
$\overline{ABUSDIS}$	Asynchronous Bus Disable
SBUSEN	Synchronous Bus Enable
$\overline{SYNCEN}$	Synchronous Enable Control
CLK	Clock
BUS_0–BUS_2	25Ω Cutoff BUS Outputs
Q_0–Q_2	Receive Data Outputs (Q_2 serves as SCAN_OUT in scan mode)
V_{CCO}	V_{CC} to Output

DESCRIPTION

The SY10/100E337 are 3-bit registered bus transceivers with scan designed for use in new, high-performance ECL systems. The bus outputs (BUS_0–BUS_2) are designed to drive a 25Ω bus; the receive outputs (Q_0–Q_2) are designed for 50Ω. The bus outputs feature a normal logic HIGH level (V_{OH}) and a cutoff LOW level of –2.0V and the output emitter-follower is "off", presenting a high impedance to the bus. The bus outputs also feature edge slow-down capacitors.

Both drive and receive sides feature the same logic, including a loopback path to hold data. The LOAD/$\overline{HOLD}$ function is controlled by Transmit Enable (TEN) and Receive Enable (REN) on the transmit and receive sides, respectively, with a HIGH selecting LOAD. The implementation of the E337 Receive Enable differs from that of the E336.

A synchronous bus enable (SBUSEN) is provided for normal, non-scan operation. The asynchronous bus disable ($\overline{ABUSDIS}$) disables the bus for scan mode.

The $\overline{SYNCEN}$ input allows either synchronous or asynchronous re-enabling after disabling with $\overline{ABUSDIS}$. An alternative use is asynchronous-only operation with $\overline{ABUSDIS}$, in which case $\overline{SYNCEN}$ is tied LOW. $\overline{SYNCEN}$ is implemented as an overriding SET control to the enable flip-flop.

Scan mode is selected by a logic HIGH at the SCAN input. Scan input data is shifted in through S-IN, and output data appears at the Q_2 output.

All registers are clocked on the rising edge of CLK. Additional lead-frame grounding is provided through the ground pins (GND) which should be connected to 0V. The GND pins are not electrically connected to the chip.

PACKAGE/ORDERING INFORMATION
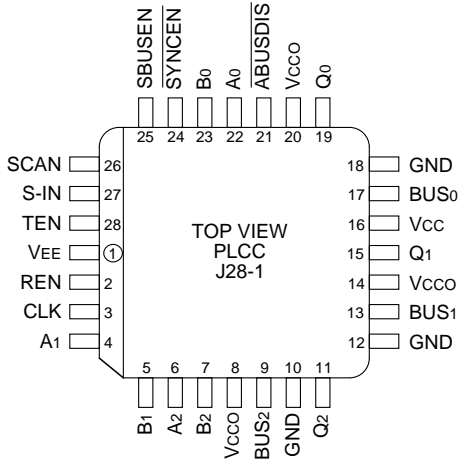

28-Pin PLCC (J28-1)

Ordering Information[1]

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10E337JC	J28-1	Commercial	SY10E337JC	Sn-Pb
SY10E337JCTR[2]	J28-1	Commercial	SY10E337JC	Sn-Pb
SY100E337JC	J28-1	Commercial	SY100E337JC	Sn-Pb
SY100E337JCTR[2]	J28-1	Commercial	SY100E337JC	Sn-Pb
SY10E337JZ[3]	J28-1	Commercial	SY10E337JZ with Pb-Free bar-line indicator	Matte-Sn
SY10E337JZTR[2, 3]	J28-1	Commercial	SY10E337JZ with Pb-Free bar-line indicator	Matte-Sn
SY100E337JZ[3]	J28-1	Commercial	SY100E337JZ with Pb-Free bar-line indicator	Matte-Sn
SY100E337JZTR[2, 3]	J28-1	Commercial	SY100E337JZ with Pb-Free bar-line indicator	Matte-Sn

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25°C$, DC Electricals only.

2. Tape and Reel.

3. Pb-Free package is recommended for new designs.

BLOCK DIAGRAM
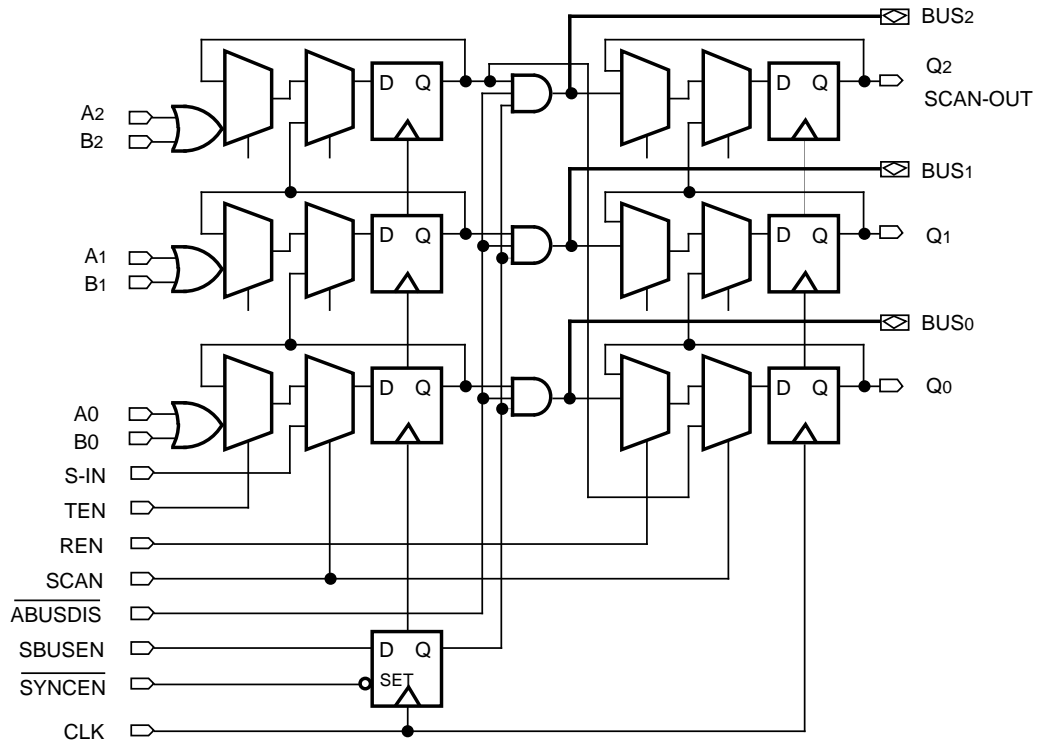
DC ELECTRICAL CHARACTERISTICS

V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = V_{CCO} = GND

Symbol	Parameter	T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
V_{CUT}	Cut-off Output Voltage	−2.10	—	−2.03	−2.10	—	−2.03	−2.10	—	−2.03	V	1
I_{IH}	Input HIGH Current All Other Inputs	—	—	150	—	—	150	—	—	150	µA	—
I_{EE}	Power Supply Current 10E 100E	— —	145 145	174 174	— —	145 125	174 174	— —	145 167	174 200	mA	—

Note:

1. Applies to BUS outputs only. Measured with V_{TT} = −2.10V.

AC ELECTRICAL CHARACTERISTICS

V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = V_{CCO} = GND

Symbol	Parameter	T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
t_{PD}	Propagation Delay to Output CLK to Q CLK to BUS ABUSDIS SYNCEN	450 800 500 800	— — — —	1000 1800 1500 1800	450 800 500 800	— — — —	1000 1800 1500 1800	450 800 500 800	— — — —	1000 1800 1500 1800	ps	—
t_S	Set-up Time BUS SBUSEN Data, S-IN TEN, REN, SCAN	350 100 400 550	— — — —	— — — —	350 100 400 550	— — — —	— — — —	350 100 400 550	— — — —	— — — —	ps	—
t_H	Hold Time BUS SBUSEN Data, S-IN TEN, REN, SCAN	350 500 350 200	— — — —	— — — —	350 500 350 200	— — — —	— — — —	350 500 350 200	— — — —	— — — —	ps	—
t_{PW}	Minimum Pulse Width	400	—	—	400	—	—	400	—	—	ps	—
t_r t_f	Rise/Fall Time 20% to 80% (Q_n) 20% to 80% (BUS_n Rise) 20% to 80% (BUS_n Fall)	300 500 300	— — —	800 1000 800	300 500 300	— — —	800 1000 800	300 500 300	— — —	800 1000 800	ps	—

28-PIN PLCC (J28-1)

TOP VIEW

0.048[1.22]
0.042[1.07]

0.048[1.22]
0.042[1.07]

0.490 +0.005 −0.005
[12.45 +0.13 −0.13]

0.452 +0.002 −0.002
[11.48 +0.05 −0.05]

0.452 +0.002 −0.002
[11.48 +0.05 −0.05]

0.490 +0.005 −0.005
[12.45 +0.13 −0.13]

0.0125[0.32]
0.0075[0.19]

0.020[0.51]
MIN.

0.101 +0.009 −0.001
[2.56 +0.23 −0.02]

0.018 +0.005 −0.005
[0.46 +0.13 −0.13]

0.050[1.27]
BSC

0.032[0.81]
0.026[0.66]

DETAIL "A"

SIDE VIEW

SEE DETAIL "A"

0.172 +0.008 −0.007
[4.37 +0.20 −0.18]

0.004[0.10]
−C−

BOTTOM VIEW
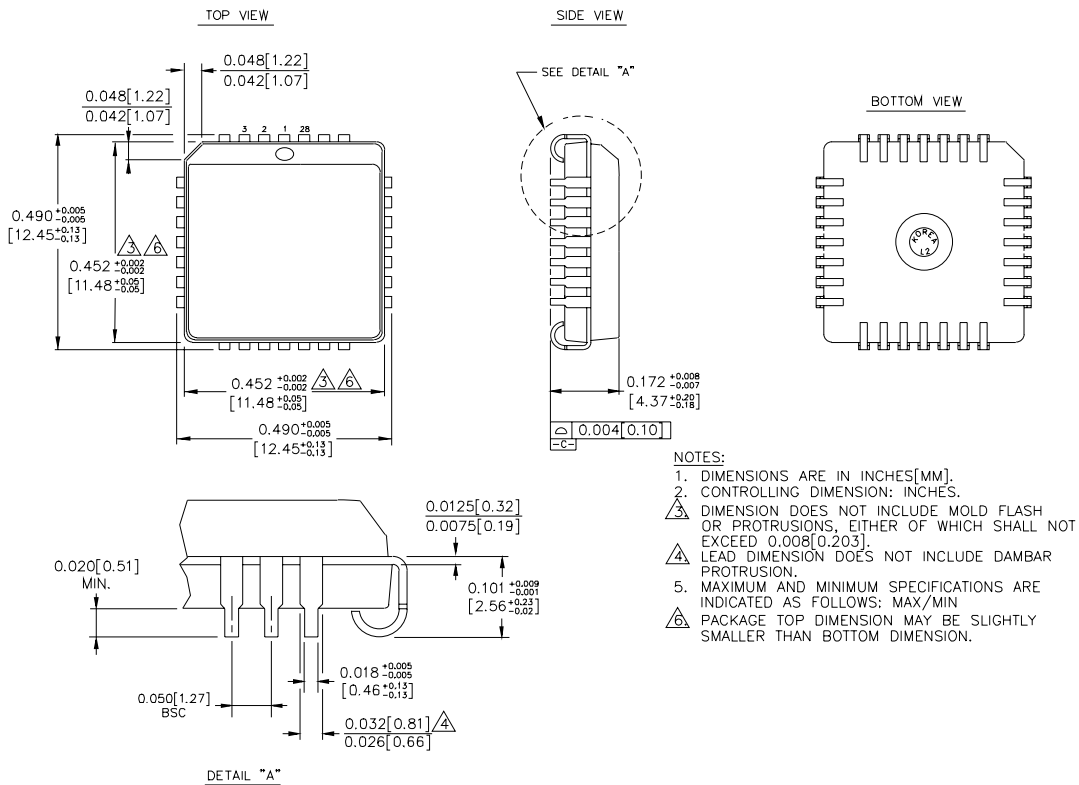
NOTES:
1. DIMENSIONS ARE IN INCHES[MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.008[0.203].
4. LEAD DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION.
5. MAXIMUM AND MINIMUM SPECIFICATIONS ARE INDICATED AS FOLLOWS: MAX/MIN
6. PACKAGE TOP DIMENSION MAY BE SLIGHTLY SMALLER THAN BOTTOM DIMENSION.

Rev. 03