



3-BIT SCANNABLE REGISTERED BUS TRANSCIVER

SY10E337
SY100E337

FEATURES

- 1500ps max. clock to bus (data transmit)
- 1000ps max. clock to Q (data receive)
- Extended 100E VEE 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
A0–A2	Data Inputs A
B0–B2	Data Inputs B
S-IN	Serial (Scan) Data Input
TEN, REN	LOAD/HOLD Controls
SCAN	Scan Control
ABUSDIS	Asynchronous Bus Disable
SBUSEN	Synchronous Bus Enable
SYNCEN	Synchronous Enable Control
CLK	Clock
BUS0–BUS2	25Ω Cutoff BUS Outputs
Q0–Q2	Receive Data Outputs (Q2 serves as SCAN_OUT in scan mode)
Vcco	Vcc 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 (BUS0–BUS2) are designed to drive a 25Ω bus; the receive outputs (Q0–Q2) are designed for 50Ω. The bus outputs feature a normal logic HIGH level (VOH) 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.

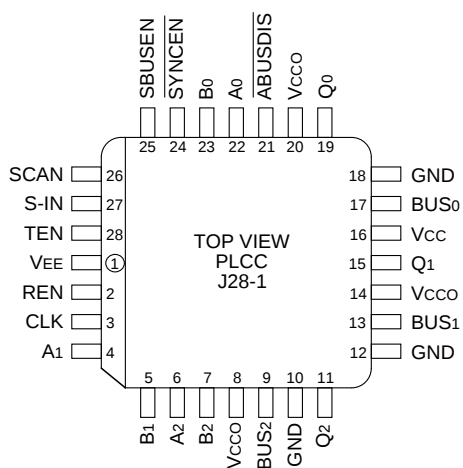
Both drive and receive sides feature the same logic, including a loopback path to hold data. The LOAD/HOLD function is controlled by Transmit Enable (TEN) and Receive Enable (REN) on the transmit and receive sides, respectively, with a HIGH selecting LOAD. The implementation of the E337 Receive Enable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

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

The SYNCEN input allows either synchronous or asynchronous re-enabling after disabling with ABUSDIS. An alternative use is asynchronous-only operation with ABUSDIS, in which case SYNCEN is tied LOW. 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 Q2 output.

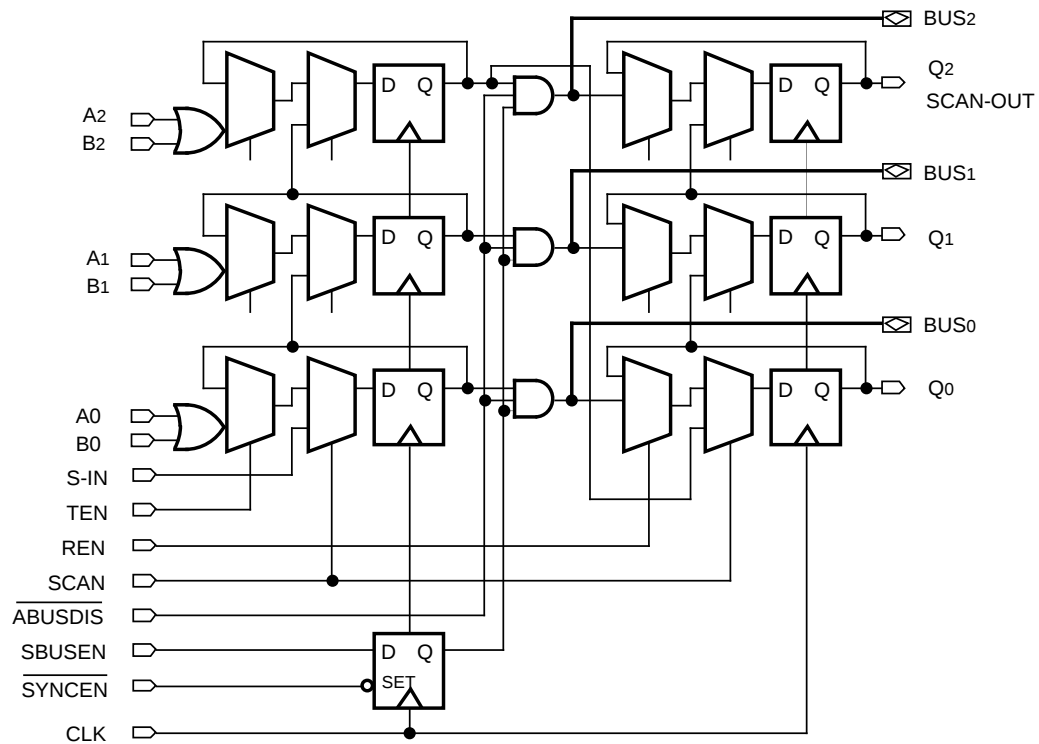
All registers are clocked on the rising edge of CLK. Additional lead-frame grounding is provided through the ground pins (GND) which should be connected to 0V. The GND pins are not electrically connected to the chip.

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 $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

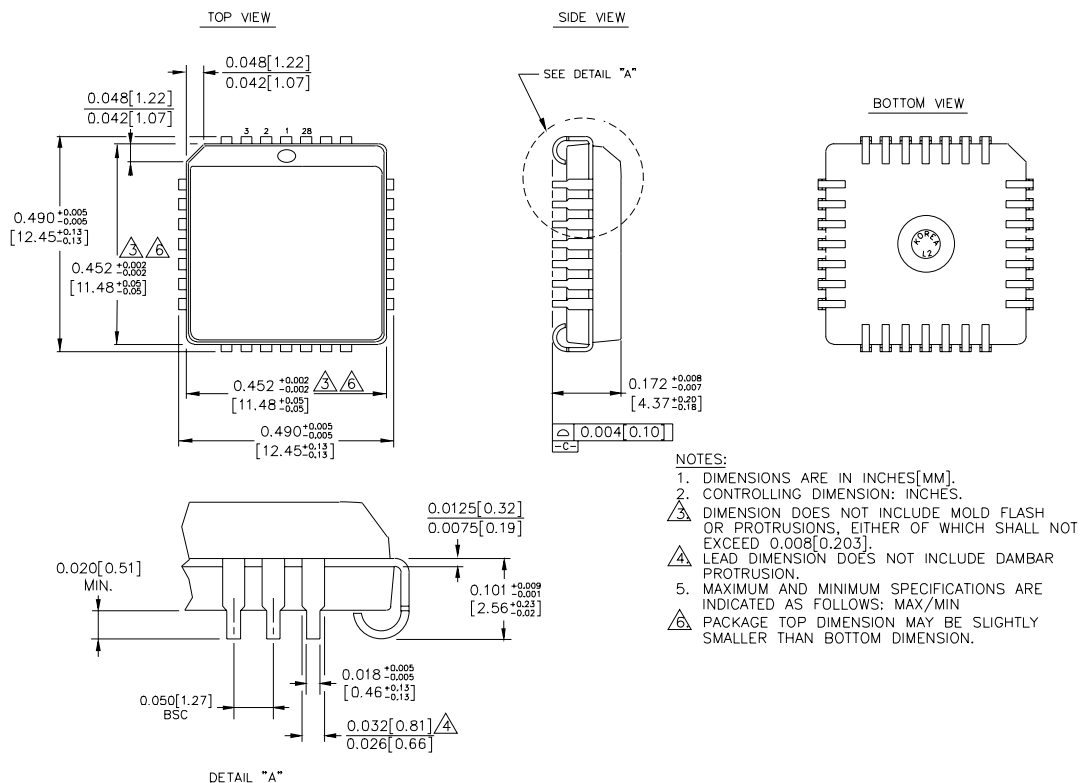
BLOCK DIAGRAM

DC ELECTRICAL CHARACTERISTICSV_{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	—	—	—	—	—	—	—	—	—	mA	—
	10E	—	145	174	—	145	174	—	145	174		
	100E	—	145	174	—	125	174	—	167	200		

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	—	—	—	—	—	—	—	—	—	ps	—
	CLK to Q	450	—	1000	450	—	1000	450	—	1000		
	CLK to BUS	800	—	1800	800	—	1800	800	—	1800		
	ABUSDIS	500	—	1500	500	—	1500	500	—	1500		
t _S	Set-up Time	—	—	—	—	—	—	—	—	—	ps	—
	BUS	350	—	—	350	—	—	350	—	—		
	SBUSEN	100	—	—	100	—	—	100	—	—		
	Data, S-IN	400	—	—	400	—	—	400	—	—		
t _H	Hold Time	—	—	—	—	—	—	—	—	—	ps	—
	BUS	350	—	—	350	—	—	350	—	—		
	SBUSEN	500	—	—	500	—	—	500	—	—		
	Data, S-IN	350	—	—	350	—	—	350	—	—		
t _{TPW}	TEN, REN, SCAN	200	—	—	200	—	—	200	—	—	ps	—
	Minimum Pulse Width	400	—	—	400	—	—	400	—	—		
t _r t _f	Rise/Fall Time	—	—	—	—	—	—	—	—	—	ps	—
	20% to 80% (Q _n)	300	—	800	300	—	800	300	—	800		
	20% to 80% (BUS _n Rise)	500	—	1000	500	—	1000	500	—	1000		
	20% to 80% (BUS _n Fall)	300	—	800	300	—	800	300	—	800		

28-PIN PLCC (J28-1)

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