TRIPLE DIFFERENTIAL 2:1 MULTIPLEXER

SY10E457
SY100E457

FEATURES

- **Differential D and Q**
- **Extended 100E V_{EE} range of –4.2V to –5.5V**
- **VBB output for single-ended use**
- **700ps max. propagation delay**
- **High frequency outputs**
- **Separate and common select**
- **Internal 75KΩ input pulldown resistors**
- **Available in 28-pin PLCC package**

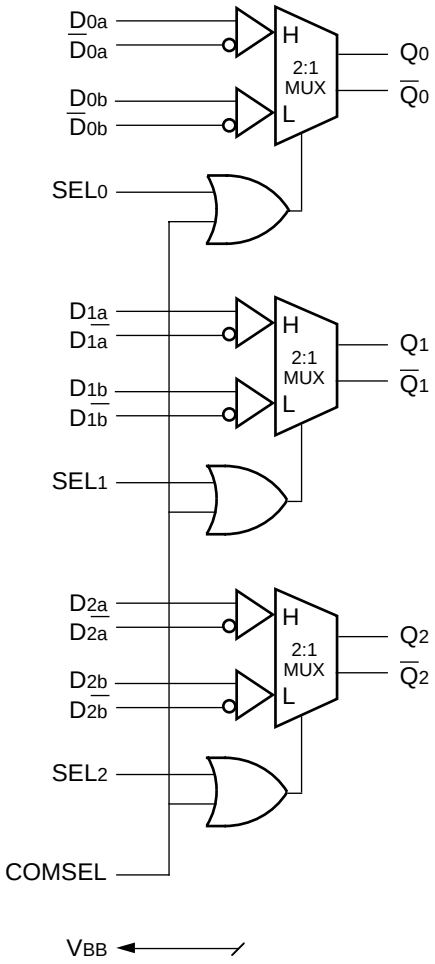
DESCRIPTION

The SY10/100E457 are 3-bit differential 2:1 multiplexers. The fully differential data path makes the devices ideal for multiplexing low skew clock or other skew sensitive signals. Multiple V_{BB} pins are provided to ease AC coupling input signals.

The higher frequency outputs provide the device with a >1.0GHz bandwidth to meet the needs of the most demanding system clock.

Both separate selects and a common select are provided to make the device well suited for both data path and random logic applications.

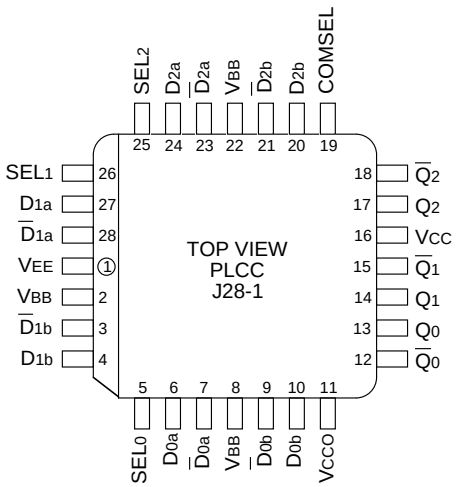
BLOCK DIAGRAM



PIN NAMES

Pin	Function
D_n[0:2], $\overline{D}_n$[0:2]	Differential Data Inputs
SEL	Individual Select Input
COMSEL	Common Select Input
V_{BB}	V_{BB} Reference Output
Q[0:2], $\overline{Q}$[0:2]	Differential Data Outputs
V_{CCO}	V_{CC} to Output

PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

Ordering Information[1]

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10E457JC	J28-1	Commercial	SY10E457JC	Sn-Pb
SY10E457JCTR[2]	J28-1	Commercial	SY10E457JC	Sn-Pb
SY100E457JC	J28-1	Commercial	SY100E457JC	Sn-Pb
SY100E457JCTR[2]	J28-1	Commercial	SY100E457JC	Sn-Pb
SY10E457JZ[3]	J28-1	Commercial	SY10E457JZ with Pb-Free bar-line indicator	Matte-Sn
SY10E457JZTR[2, 3]	J28-1	Commercial	SY10E457JZ with Pb-Free bar-line indicator	Matte-Sn
SY100E457JZ[3]	J28-1	Commercial	SY100E457JZ with Pb-Free bar-line indicator	Matte-Sn
SY100E457JZTR[2, 3]	J28-1	Commercial	SY100E457JZ 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.

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_{BB}	Output Reference Voltage										V	—
	10E	–1.38	—	–1.27	–1.35	—	–1.25	–1.31	—	–1.19		
	100E	–1.38	—	–1.26	–1.38	—	–1.26	–1.38	—	–1.26		
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	µA	—
I_{EE}	Power Supply Current										mA	—
	10E	—	92	110	—	92	110	—	92	110		
	100E	—	92	110	—	92	110	—	106	127		
V_{PP} (DC)	Input Sensitivity	50	—	—	50	—	—	50	—	—	mV	1
V_{CMR}	Common Mode Range	–1.5	—	0	–1.5	—	0	–1.5	—	0	V	2

Notes:

1. Differential input voltage required to obtain a full ECL swing on the outputs.
2. V_{CMR} is referenced to the most positive side of the differential input signal. Normal operation is obtained when the input signals are within the V_{CMR} range and the input swing is greater than V_{PP} (min.) and <1V.

AC ELECTRICAL CHARACTERISTICS

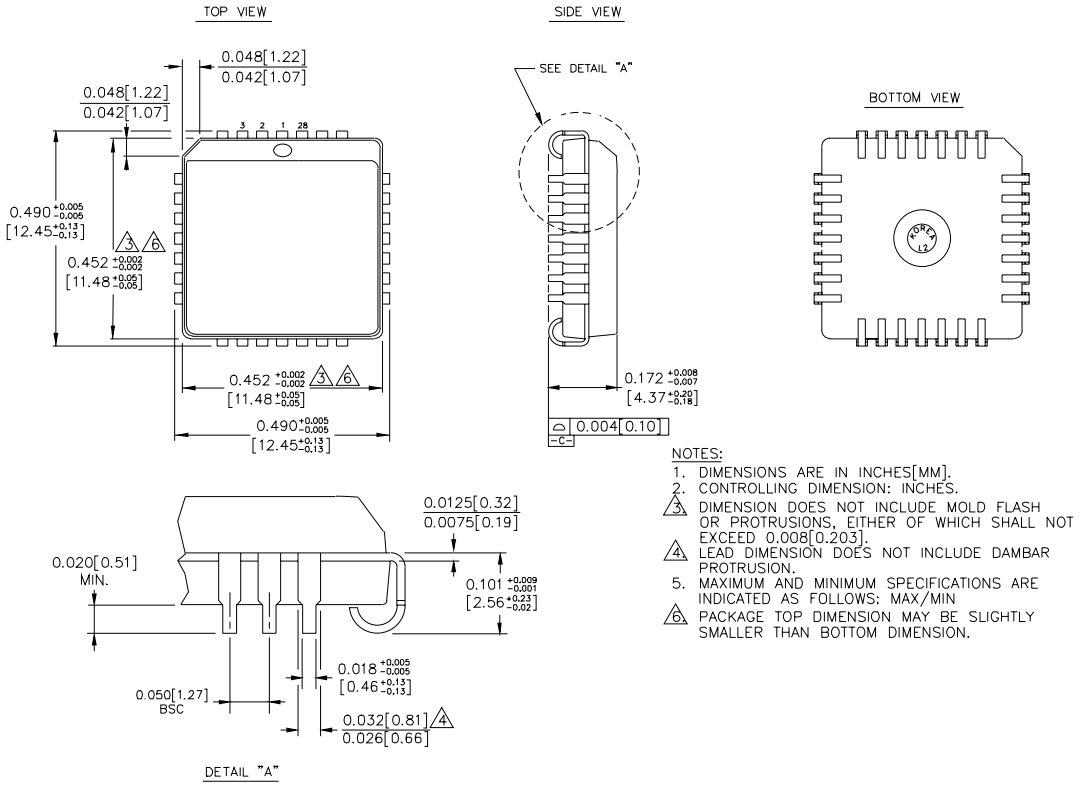
V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = V_{CCO} = GND

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	—
	D (Diff)	375	475	650	375	475	650	375	475	650		
	D	325	475	700	325	475	700	325	475	700		
	SEL	350	500	725	350	500	725	350	500	725		
	COMSEL	375	525	750	375	525	750	375	525	750		
t_{skew}	Within-Device Skew	—	40	—	—	40	—	—	40	—	ps	1
t_{skew}	Duty Cycle Skew t_{PLH}–t_{PHL}	—	±10	—	—	±10	—	—	±10	—	ps	2
V_{PP} (AC)	Minimum Input Swing	150	—	—	150	—	—	150	—	—	mV	3
t_r t_f	Rise/Fall Time 20–80%	150	275	450	150	275	450	150	275	450	ps	—

Notes:

1. Within-device skew is defined as identical transitions on similar paths through a device.
2. Duty cycle skew guarantee holds only for differential operation when the delays are measured from the cross point of the inputs to the cross point of the outputs.
3. Minimum input swing for which AC parameters are guaranteed.

28-PIN PLCC (J28-1)



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.

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