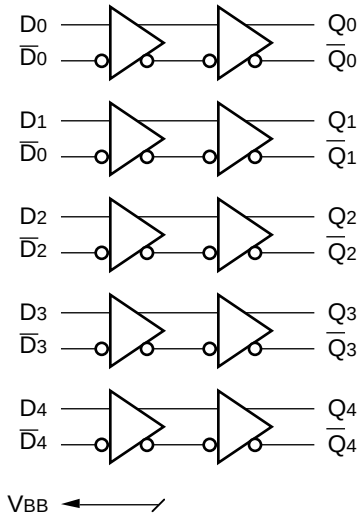
Differential D and Q

- **Extended 100E V_{EE} range of –4.2V to –5.5V**
- **V_{BB} output for single-ended use**
- **600ps max. propagation delay**
- **High frequency outputs**
- **2 stages of gain**
- **Internal 75KΩ input pull-down resistors**
- **Fully compatible with Motorola 10E/100E416**
- **Available in 28-pin PLCC package**

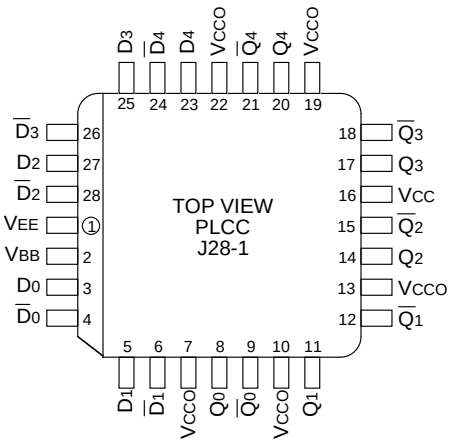
The SY10/100E416 are 5-bit differential line receiving devices. The 2.0GHz of bandwidth provided by the high frequency outputs make the devices ideal for buffering of very high speed oscillators.

A V_{BB} pin is available to AC couple an input signal to the devices.

The design incorporates two stages of gain internal to the devices, making them an excellent choice for use in high bandwidth amplifier applications.



Pin	Function
D[0:4], $\overline{D}$[0:4]	Differential Data Inputs
Q[0:4], $\overline{Q}$[0:4]	Differential Data Outputs
V_{CCO}	V_{CC} to Output



28-Pin PLCC (J28-1)

(1)

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10E416JI	J28-1	Industrial	SY10E416JI	Sn-Pb
SY10E416JITR(2)	J28-1	Industrial	SY10E416JI	Sn-Pb
SY100E416JI	J28-1	Industrial	SY100E416JI	Sn-Pb
SY100E416JITR(2)	J28-1	Industrial	SY100E416JI	Sn-Pb
SY10E416JC	J28-1	Commercial	SY10E416JC	Sn-Pb
SY10E416JCTR(2)	J28-1	Commercial	SY10E416JC	Sn-Pb
SY100E416JC	J28-1	Commercial	SY100E416JC	Sn-Pb
SY100E416JCTR(2)	J28-1	Commercial	SY100E416JC	Sn-Pb
SY10E416JY(3)	J28-1	Industiral	SY10E416JY with Pb-Free bar-line indicator	Matte-Sn
SY10E416JYTR(2, 3)	J28-1	Industrial	SY10E416JY with Pb-Free bar-line indicator	Matte-Sn
SY100E416JY(3)	J28-1	Industrial	SY100E416JY with Pb-Free bar-line indicator	Matte-Sn
SY100E416JYTR(2, 3)	J28-1	Industrial	SY100E416JY 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.

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	—	135	162	—	135	162	—	135	162		
	100E	—	135	162	—	135	162	—	155	186		
$V_{PP\ (DC)}$	Input Sensitivity	50	—	—	50	—	—	50	—	—	mV	1
V_{CMR}	Common Mode Range	–1.5	—	0	–1.5	—	0	–1.5	—	0	V	2

Notes:

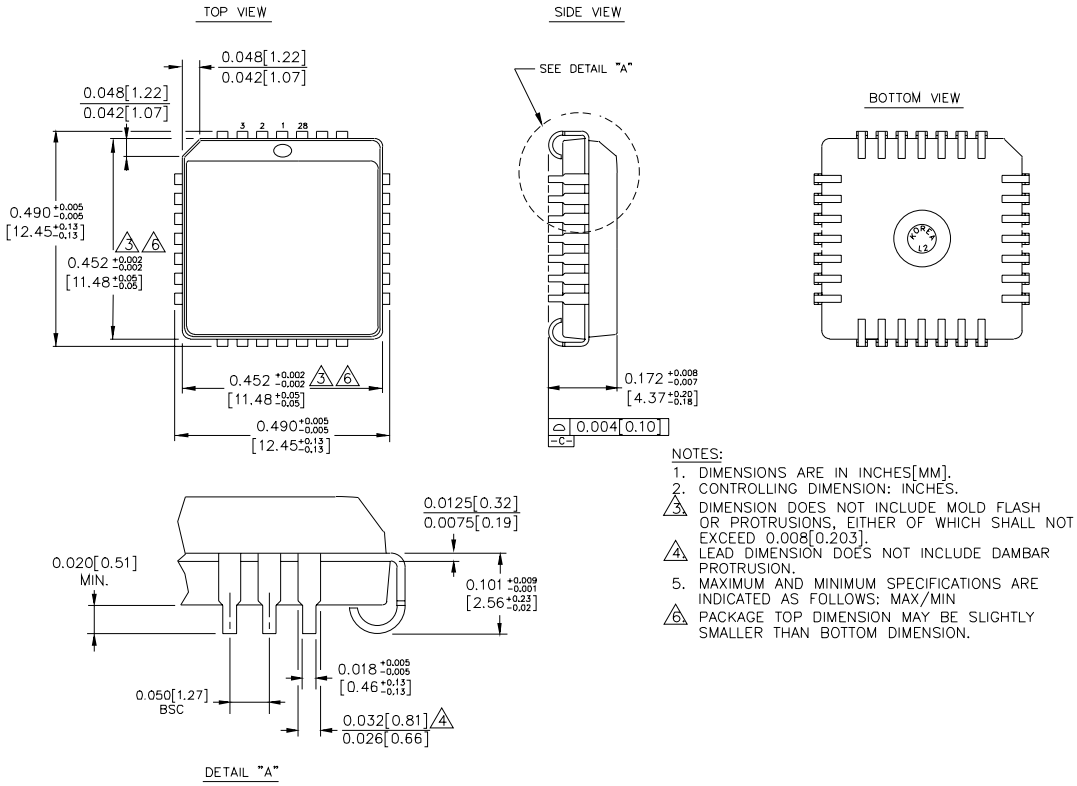
1. Differential input voltage required to obtain a full ECL swing on the outputs.
2. V_{CMR} is referenced to the most positive side of the differential input signal. Normal operation is obtained when the input signals are within the V_{CMR} range and the input swing is greater than V_{PP} (min.) and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

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)	250	350	500	250	350	500	250	350	500		
	D (SE)	200	350	550	200	350	550	200	350	550		
t_{skew}	Within-Device Skew	—	50	—	—	50	—	—	50	—	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	Rise/Fall Time	100	200	350	100	200	350	100	200	350	ps	—
t_f	20–80%											

Notes:

1. Within-device skew is defined as identical transitions on similar paths through a device.
2. Duty cycle skew defined 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.



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

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