6-BIT REGISTER DIFFERENTIAL DATA CLOCK

SY10E451
SY100E451

FEATURES

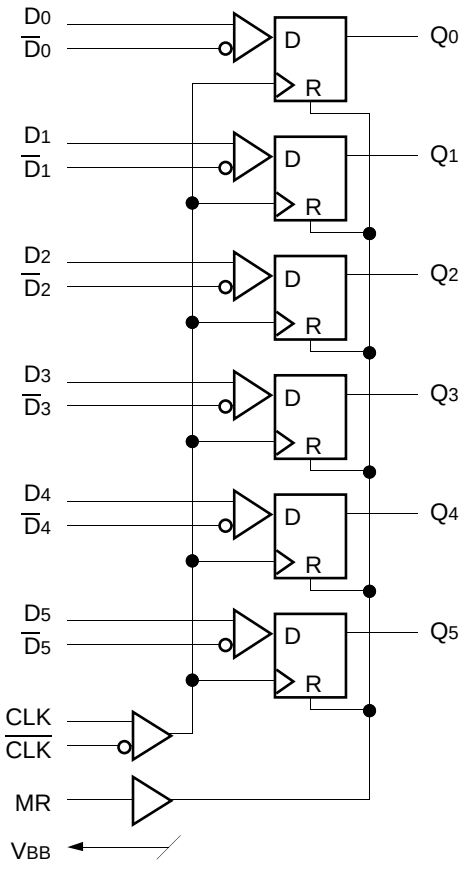
- **1100MHz min. toggle frequency**
- **Extended 100E V_{EE} range of –4.2V to –5.5V**
- **Differential inputs: data and clock**
- **V_{BB} output for single-ended use**
- **Asynchronous Master Reset**
- **Fully compatible with industry standard 10KH, 100K ECL levels**
- **Internal 75KΩ input pulldown resistors**
- **Fully compatible with Motorola MC10E/100E451**
- **Available in 28-pin PLCC package**

DESCRIPTION

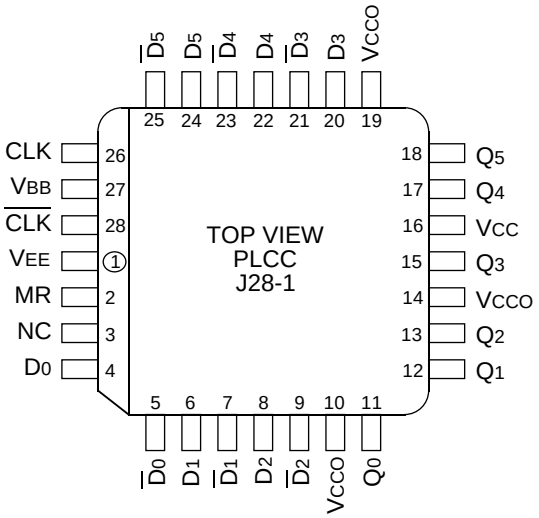
The SY10/100E451 offer six D-type flip-flops with single-ended outputs and differential data and clock inputs, designed for use in new, high-performance ECL systems. The registers are triggered by the rising edge of the CLK input.

A logic HIGH on the Master Reset (MR) input resets all outputs to a logic LOW. The V_{BB} output is provided for use as a reference voltage for single-ended reception of ECL signals to that device only. When used for this purpose, it is recommended that V_{BB} is decoupled to V_{CC} via a 0.01µF capacitor.

BLOCK DIAGRAM



PIN CONFIGURATION



PIN NAMES

Pin	Function
D_0–D_5	+ Data Input
$\overline{D}_0$–$\overline{D}_5$	– Data Input
CLK	+ Clock Input
$\overline{CLK}$	– Clock Input
MR	Master Reset Input
V_{BB}	V_{BB} Output
Q_0–Q_5	Data Outputs
V_{CCO}	V_{CC} to Output

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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	—	84	101	—	84	101	—	84	101		
	100E	—	84	101	—	84	101	—	97	116		
V_{CMR}	Common Mode Range	–2.0	—	–0.4	–2.0	—	–0.4	–2.0	—	–0.4	V	1

NOTE:

1. V_{CMR} is referenced to the most psitive side of the differential input signal. Normal operation is obtained when the "HIGH" input is 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.		
f_{MAX}	Max. Toggle Frequency	1100	1400	—	1100	1400	—	1100	1400	—	MHz	—
t_{PLH} t_{PHL}	Propagation Delay to Output										ps	—
	CLK (Diff)	475	650	800	475	650	800	475	650	800		
	CLK (SE)	425	650	850	425	650	850	425	650	850		
	MR	425	600	850	425	600	850	425	600	850		
t_S	Set-up Time, D	150	–100	—	150	–100	—	150	–100	—	ps	—
t_H	Hold Time, D	250	100	—	250	100	—	250	100	—	ps	—
$V_{PP\ (AC)}$	Minimum Input Swing	150	—	—	150	—	—	150	—	—	mV	1
t_{RR}	Reset Recovery Time	750	600	—	750	600	—	750	600	—	ps	—
t_{PW}	Minimum Pulse Width CLK, MR	400	—	—	400	—	—	400	—	—	ps	—
t_{skew}	Within-Device Skew	—	100	—	—	100	—	—	100	—	ps	2
t_r t_f	Rise/Fall Time 20% to 80%	275	450	800	275	450	800	275	450	800	ps	—

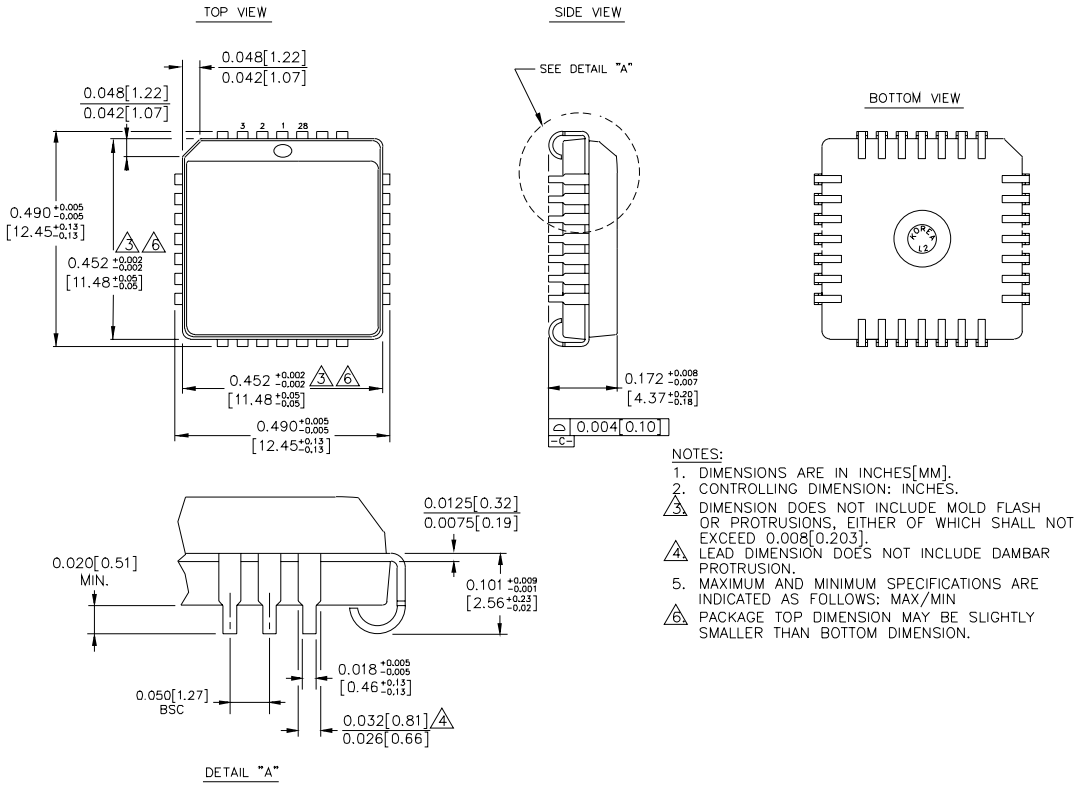
NOTES:

1. Minimum input voltage for which AC parameters are guaranteed.
2. Within-device skew is defined as identical transitions on similar paths through a device.

PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY10E451JC	J28-1	Commercial
SY10E451JCTR	J28-1	Commercial
SY100E451JC	J28-1	Commercial
SY100E451JCTR	J28-1	Commercial

28 LEAD 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.

Rev. 03

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