



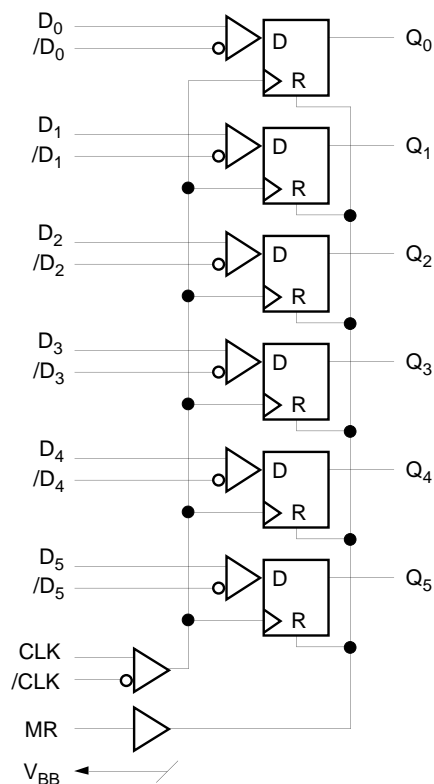
**6-BIT REGISTER
DIFFERENTIAL DATA CLOCK**

**SY10E451
SY100E451**

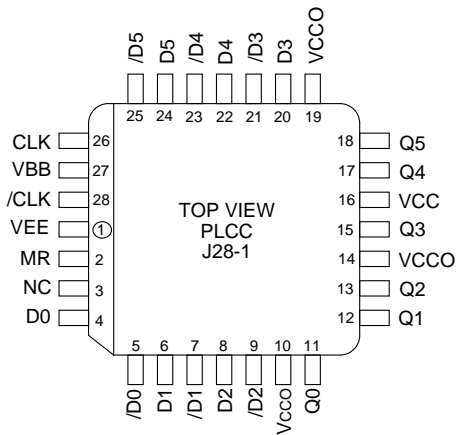
- 1100MHz min. toggle frequency
- Extended 100E V_{EE} range of $-4.2V$ to $-5.5V$
- Differential inputs: data and clock
- V_{BB} output for single-ended use
- Asynchronous Master Reset
- Fully compatible with industry standard 10KH, 100K ECL levels
- Internal 75K Ω input pulldown resistors
- Fully compatible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

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 0.01 μF capacitor.



Pin	Function
D0-D5	+ Data Input
/D0-/D5	- Data Input
CLK	+ Clock Input
/CLK	- Clock Input
Q0-Q5	Data Outputs
MR	Master Reset Input
V_{BB}	V_{BB} Output
V_{CCO}	V_{CC} to Output



28-Pin PLCC (J28-1)

Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10E451JI	J28-1	Industrial	SY10E451JI	Sn-Pb
SY10E451JITR ⁽²⁾	J28-1	Industrial	SY10E451JI	Sn-Pb
SY100E451JI	J28-1	Industrial	SY100E451JI	Sn-Pb
SY100E451JITR ⁽²⁾	J28-1	Industrial	SY100E451JI	Sn-Pb
SY10E451JC	J28-1	Commercial	SY10E451JC	Sn-Pb
SY10E451JCTR ⁽²⁾	J28-1	Commercial	SY10E451JC	Sn-Pb
SY100E451JC	J28-1	Commercial	SY100E451JC	Sn-Pb
SY100E451JCTR ⁽²⁾	J28-1	Commercial	SY100E451JC	Sn-Pb
SY10E451JY ⁽³⁾	J28-1	Industrial	SY10E451JY with Pb-Free bar-line indicator	Matte-Sn
SY10E451JYTR ^(2, 3)	J28-1	Industrial	SY10E451JY with Pb-Free bar-line indicator	Matte-Sn
SY100E451JY ⁽³⁾	J28-1	Industrial	SY100E451JY with Pb-Free bar-line indicator	Matte-Sn
SY100E451JYTR ^(2, 3)	J28-1	Industrial	SY100E451JY 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.

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

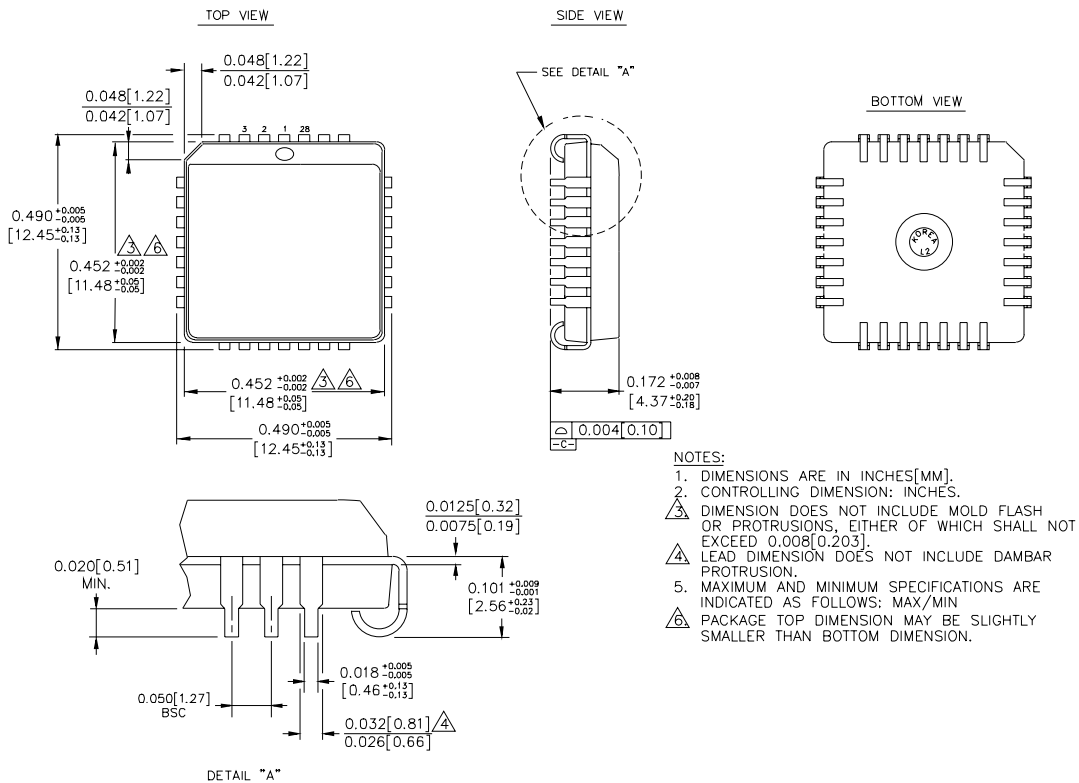
Symbol	Parameter	TA = -40°C			TA = 0°C			TA = 25°C			TA = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V _{BB}	Output Reference Voltage 10E 100E				-1.38	—	-1.27	-1.35	—	-1.25	-1.31	—	-1.19	V
I _{IH}	Input HIGH Current				—	—	150	—	—	150	—	—	150	μA
I _{EE}	Power Supply Current 10E 100E				—	84	101	—	84	101	—	84	101	mA
V _{CMR}	Common Mode Range ⁽¹⁾				-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	V

- Note:**
- V_{CMR} is referenced to the most positive 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.

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

Symbol	Parameter	TA = -40°C			TA = 0°C			TA = 25°C			TA = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
f _{MAX}	Max. Toggle Frequency				1100	1400	—	1100	1400	—	1100	1400	—	MHz
t _{PD}	Propagation Delay to Output CLK (Diff) CLK (SE) MR				475	650	800	475	650	800	475	650	800	ps
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 ⁽¹⁾				150	—	—	150	—	—	150	—	—	mV
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 ⁽²⁾				—	100	—	—	100	—	—	100	—	ps
t _r t _f	Rise/Fall Time 20% to 80%				275	450	800	275	450	800	275	450	800	ps

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



Rev. 03

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL + 1 (408) 944-0800 FAX + 1 (408) 474-1000 WEB <http://www.micrel.com>

The information furnished by Micrel in this data sheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is at Purchaser's own risk and Purchaser agrees to fully indemnify

Micrel for any damages resulting from such use or sale.

© 2006 Micrel, Incorporated.