

Triple Differential 2:1 Multiplexer

The MC10E457/100E457 is a 3-bit differential 2:1 multiplexer. The fully differential data path makes the device 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.

The differential inputs have internal clamp structures which will force the Q output of a gate in an open input condition to go to a LOW state. Thus, inputs of unused gates can be left open and will not affect the operation of the rest of the device. Note that the input clamp will take affect only if both inputs fall 2.5V below V_{CC} .

- Differential D and Q; V_{BB} available
- 700ps Max. Propagation Delay
- High Frequency Outputs
- Separate and Common Select
- Extended 100E V_{EE} Range of -4.2V to -5.46V
- Internal 75k Ω Input Pulldown Resistors

MC10E457
MC100E457

TRIPLE DIFFERENTIAL
2:1 MULTIPLEXER

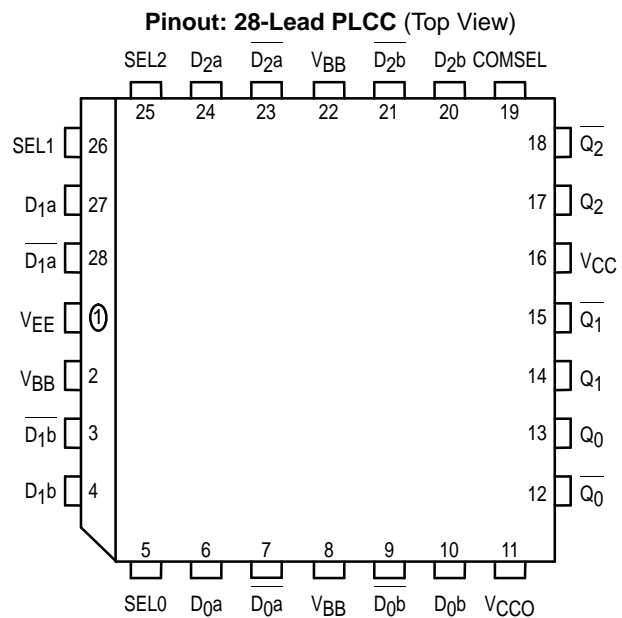


PIN NAMES

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

FUNCTION TABLE

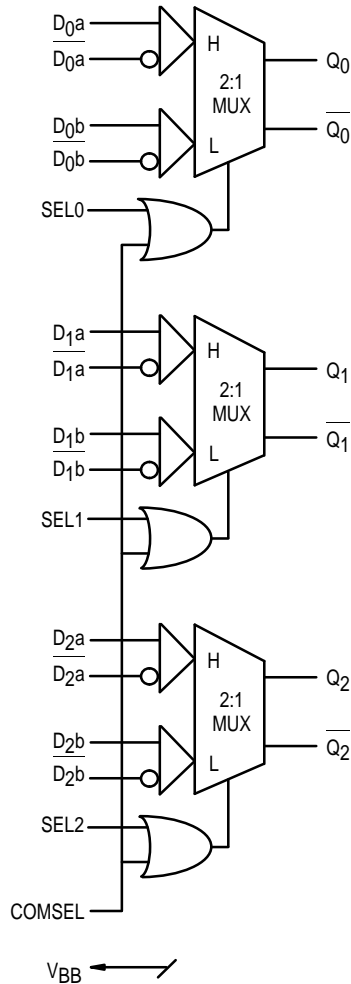
SEL	Data
H	a
L	b



* All V_{CC} and V_{CCO} pins are tied together on the die.



LOGIC DIAGRAM



DC CHARACTERISTICS ($V_{EE} = V_{EE(min)}$ to $V_{EE(max)}$; $V_{CC} = V_{CCO} = GND$)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit	Cond	
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max			
V_{BB}	Output Reference Voltage	10E	-1.43	-1.30	-1.38	-1.27	-1.35	-1.25	-1.31	-1.19				V		
		100E	-1.38	-1.26	-1.38	-1.26	-1.38	-1.26	-1.38	-1.26						
I_{IH}	Input HIGH Current			150			150			150			150	μA		
I_{EE}	Power Supply Current	10E		92	110		92	110		92	110		92	110	mA	
		100E		92	110		92	110		92	110		106	127		
$V_{PP(DC)}$	Input Sensitivity		50			50			50			50		mV	1	
V_{CMR}	Common Mode Range		-1.5	0		-1.5	0		-1.5	0		-1.5	0	V	2	

1. Differential input voltage required to obtain a full ECL swing on the outputs.
2. V_{CMR} is defined as the range within which the V_{IH} level may vary, with the device still meeting the propagation delay specification. The V_{IL} level must be such that the peak to peak voltage is less than 1.0 V and greater than or equal to $V_{PP(min)}$.

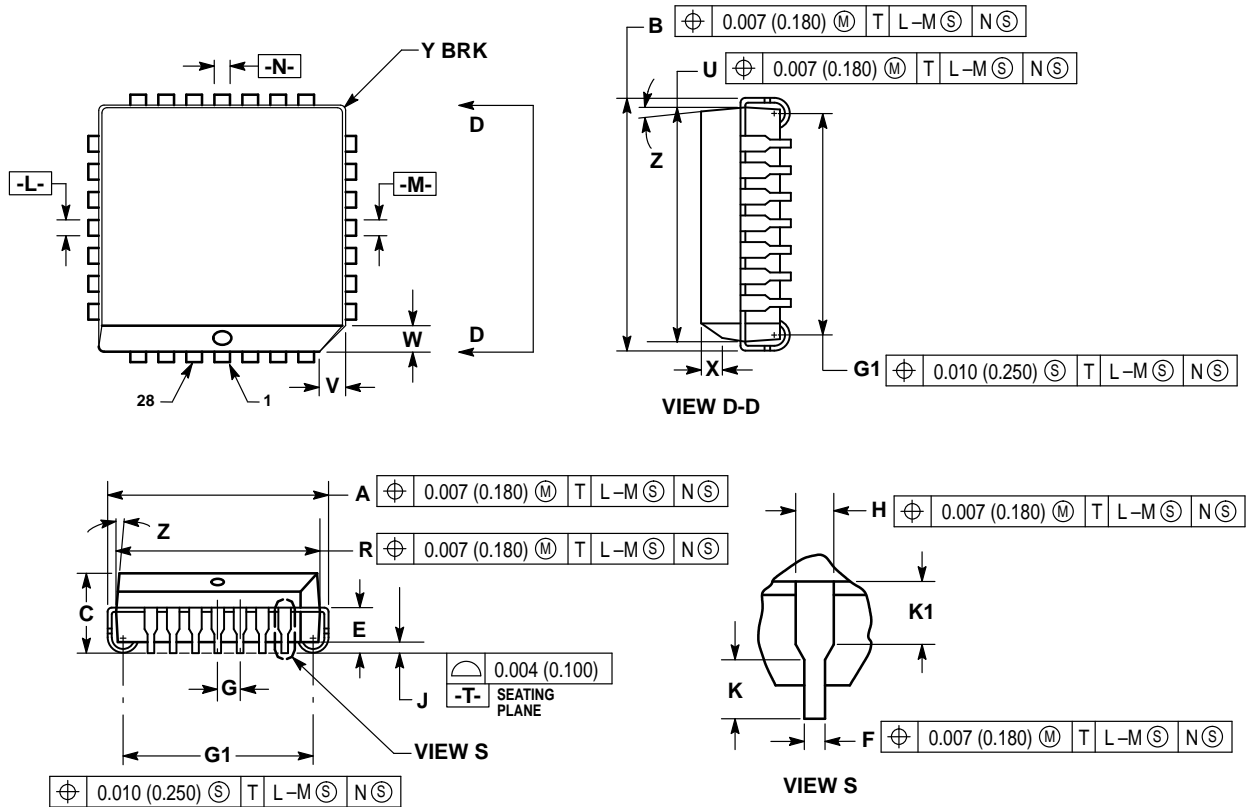
AC CHARACTERISTICS ($V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$; $V_{CC} = V_{CCO} = \text{GND}$)

Symbol	Characteristic	0°C			0°C to 85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max		
t _{PLH} t _{PHL}	Propagation Delay to Output D (Differential) D (Single-Ended) SEL COMSEL	325 275 300 325	475 475 500 525	700 750 775 800	375 325 350 375	475 475 500 525	650 700 725 750	ps	
t _{skew}	Within-Device Skew		40			40		ps	1
t _{skew}	Duty Cycle Skew t _{PLH} – t _{PHL}		±10			±10		ps	2
V _{PP(AC)}	Minimum Input Swing	150			150			mV	3
t _r /t _f	Rise/Fall Time	125	275	500	150	275	450	ps	20–80%

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

OUTLINE DIMENSIONS


FN SUFFIX
 PLASTIC PLCC PACKAGE
 CASE 776-02
 ISSUE D



NOTES:

- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIM G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIM R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	—	0.51	—
K	0.025	—	0.64	—
R	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	—	0.020	—	0.50
Z	2°		10°	
G1	0.410	0.430	10.42	10.92
K1	0.040	—	1.02	—

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