Low-Voltage Quad Differential Receiver

The MC100LVEL17 is a low-voltage, quad differential receiver. The device is functionally equivalent to the E116 device with the capability of operation from either a -3.3V or +3.3V supply voltage. The MC100EL17 is pin and functionally equivalent to the MC100LVEL17, but is specified for operation at the standard 100E ECL voltage supply.

The LVEL17 provides a V_{BB} output for either single-ended use or as a DC bias for AC coupling to the device. The V_{BB} pin should be used only as a bias for the LVEL17 as its current sink/source capability is limited. Whenever used, the V_{BB} pin should be bypassed to ground via a 0.01µf capacitor.

Under open input conditions, the \overline{D} input will be biased at V_{CC}/2 and the D input will be pulled down to V_{EE}. This operation will force the Q output LOW and ensure stability.

- 325ps Propagation Delay
- High Bandwidth Output Transitions
- >2000V ESD Protection
- Operates from -3.3/-4.5V (or +3.3/+5.0V) Supply



Logic Diagram and Pinout: 20-Lead SOIC (Top View)

MC100LVEL17 MC100EL17



PIN NAMES

Pins	Function
Dn	Data Inputs
Qn	Data Outputs
V _{BB}	Reference Voltage Output

MC100LVEL17 DC CHARACTERISTICS (V_{EE} = -3.0V to -3.8V; V_{CC} = GND) Note 1

		–40°C			0°C			25°C			85°C			
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
IEE	Power Supply Current		26	31		26	31		26	31		27	33	mA
V _{BB}	Output Reference Voltage	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	V
Iн	Input HIGH Current			150			150			150			150	μΑ
I _{INL}	Input LOW Current Dn Dn	0.5 300			0.5 -300			0.5 300			0.5 -300			μΑ

1. All other DC characteristics are the same as Standard 100K ECL.



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MC100LVEL17 AC CHARACTERISTICS (V_{EE} = -3.0V to -3.8V; V_{CC} = GND)

		–40°C		0°C			25°C			85°C				
Symbol	Characteristic	Min	Тур	Max	Unit									
^t PLH ^t PHL	Propagation Delay Diff D to Q S.E.	330 280		530 580	340 290		540 590	350 300		550 600	360 310		560 610	ps
^t SKEW	Skew Output–to–Output ¹ Part–to–Part (Diff) ¹ Duty Cycle (Diff) ²			75 200 25			75 200 25			75 200 25			75 200 25	ps
VPP	Minimum Input Swing ³	150			150			150			150			mV
VCMR	Common Mode Range ⁴ Vpp < 500mV Vpp ≥ 500mV	-2.0 -1.8		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	V
t _r t _f	Output Rise/Fall Times Q (20% – 80%)	280		550	280		550	280		550	280		550	ps

Skews are valid across specified voltage range, part-to-part skew is for a given temperature.
Duty cycle skew is the difference between a TPLH and TPHL propagation delay through a device.

3. Minimum input swing for which AC parameters guaranteed. The device has a DC gain of ≈40.

The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within 4. the specified range and the peak-to-peak voltage lies between Vppmin and 1V. The lower end of the CMR range varies 1:1 with VFF. The numbers in the spec table assume a nominal $V_{EE} = -3.3V$. Note for PECL operation, the $V_{CMR}(min)$ will be fixed at $3.3V - |V_{CMR}(min)|$.

MC100EL17 DC CHARACTERISTICS (VEE = -4.2V to -5.5V; VCC = GND) Note 1

		–40°C			0°C			25°C			85°C			
Symbol	Characteristic	Min	Тур	Max	Unit									
IEE	Power Supply Current		26	31		26	31		26	31		27	33	mA
V _{BB}	Output Reference Voltage	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	V
ΙΗ	Input HIGH Current			150			150			150			150	μΑ
INL	Input LOW Current Dn Dn	0.5 -300			0.5 -300			0.5 -300			0.5 -300			μΑ

1. All other DC characteristics are the same as Standard 100K ECL.

MC100EL17 AC CHARACTERISTICS ($V_{EE} = -4.20V$ to -5.5V; $V_{CC} = GND$)

		-40°C			0°C			25°C			85°C			
Symbol	Characteristic	Min	Тур	Мах	Min	Тур	Мах	Min	Тур	Max	Min	Тур	Max	Unit
^t PLH ^t PHL	Propagation Delay Diff D to Q S.E.	330 280		530 580	340 290		540 590	350 300		550 600	360 310		560 610	ps
^t SKEW	Skew Output–to–Output ¹ Part–to–Part (Diff) ¹ Duty Cycle (Diff) ²			75 200 25			75 200 25			75 200 25			75 200 25	ps
V _{PP}	Minimum Input Swing ³	150			150			150			150			mV
VCMR	Common Mode Range ⁴ Vpp < 500mV Vpp ≥ 500mV	-3.2 -3.0		-0.4 -0.4	-3.3 -3.1		-0.4 -0.4	-3.3 -3.1		-0.4 -0.4	-3.3 -3.1		-0.4 -0.4	V
t _r t _f	Output Rise/Fall Times Q (20% – 80%)	280		550	280		550	280		550	280		550	ps

1. Skews are valid across specified voltage range, part-to-part skew is for a given temperature.

Duty cycle skew is the difference between a TPLH and TPHL propagation delay through a device. 2.

Minimum input swing for which AC parameters guaranteed. The device has a DC gain of ≈40. 3.

The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within 4. the specified range and the peak-to-peak voltage lies between V_{PP}min and 1V. The lower end of the CMR range varies 1:1 with V_{EE}. The numbers in the spec table assume a nominal V_{EE} = -4.5V. Note for PECL operation, the V_{CMR}(min) will be fixed at 5.0V - |V_{CMR}(min)|.

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