

F10125 • F10525

QUAD ECL TO TTL TRANSLATOR

F10K VOLTAGE COMPENSATED ECL

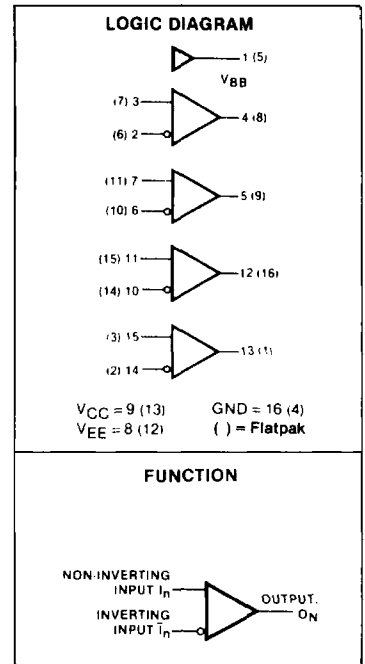
DESCRIPTION — The F10125 and F10525 are Quad Translators for converting F10K logic levels to TTL logic levels. Differential inputs allow each circuit to be used as an inverting, non-inverting or as a differential receiver. An Internal reference voltage generator provides V_{BB} on Pin 1 for single-ended operation or for use in Schmitt trigger applications. The outputs, which will go LOW when the inputs are left unconnected, have a fan-out of 10 Schottky TTL loads.

When used in the differential mode, the inputs have a common mode rejection of +1 V, making this device tolerant of ground offsets and transients between the signal source and the translator.

TRUTH TABLE

INPUTS		OUTPUT O_n
Non-Inverting I_n	Inverting \bar{I}_n	
L	H	L
H	L	H
L	L	•
H	H	•
OPEN	OPEN	L
V_{EE}	V_{EE}	L
L	V_{BB}	L
H	V_{BB}	H
V_{BB}	L	H
V_{BB}	H	L

•Undetermined



DC CHARACTERISTICS: $V_{EE} = -5.2$ V, $V_{CC} = GND$

SYMBOL	CHARACTERISTIC	LIMITS			UNITS	T_A	CONDITIONS	
		B	TYP	A				
V_{OH}	Output Voltage HIGH	+2.5 +2.5 +2.5			V	-55/0 °C 25 °C 125/75 °C	$V_{IN} = V_{IH A}$ or $V_{IL B}$ per Truth Table	Loading is -2.0 mA V_{OH} +20mA V_{OL}
V_{OL}	Output Voltage LOW			+0.5 +0.5 +0.5	V	-55/0 °C 25 °C 125/75 °C		
V_{OHC}	Output Voltage HIGH	+2.5 +2.5 +2.5			V	-55/0 °C 25 °C 125/75 °C	$V_{IN} = V_{IH B}$ or $V_{IL A}$ per Truth Table	
V_{OLC}	Output Voltage LOW			+0.5 +0.5 +0.5	V	-55/0 °C 25 °C 125/75 °C		

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DC CHARACTERISTICS: $V_{EE} = -5.2 \text{ V}$, $V_{CC} = \text{GND}$ (Cont'd)

V_{IH}	Common Mode Rejection Input Voltage HIGH + 1.0 V			+ 0.160 + 0.190 + 0.280	V	0 °C 25 °C 75 °C	
V_{IL}	Common Mode Rejection Input Voltage LOW + 1.0 V	- 0.870 - 0.850 - 0.830			V	0 °C 25 °C 75 °C	
V_{IHL}	Common Mode Rejection Input Voltage HIGH - 1.0 V			- 1.840 - 1.810 - 1.720	V	0 °C 25 °C 75 °C	
V_{ILL}	Common Mode Rejection Input Voltage LOW - 1.0 V	- 2.870 - 2.850 - 2.830			V	0 °C 25 °C 75 °C	
V_{BB}	Reference Voltage	- 1380 - 1350 - 1305		- 1250 - 1230 - 1165	mV	0 °C 25 °C 75 °C	$V_{IN} = V_{ILB}$
I_{CBO}	Input Leakage Current	- 1.0			μA	25 °C	$V_{IN} = V_{EE}$ Note 1
I_{IH}	Input Current HIGH			115	μA	25 °C	$V_{IN} = V_{IHA}$ Note 1
I_{OS}	Short Circuit Current	- 100		- 40	mA	25 °C	$V_{IN} = \text{GND}$ Note 2
I_{EE}	Negative Power Supply	- 40			mA	25 °C	Inputs and Outputs Open
I_{CCH}	Positive Power Supply			52	mA	25 °C	$V_{IN} = V_{IHA}$ Note 3
I_{CCL}	Positive Power Supply			39	mA	25 °C	$V_{IN} = V_{ILB}$ Note 3
V_{IHH}	Common Mode Rejection Input Voltage HIGH + 1.0 V			+ 0.170 + 0.280 + 0.420	V	- 55 °C 25 °C 125 °C	
V_{ILH}	Common Mode Rejection Input Voltage LOW + 1.0 V	- 0.920 - 0.850 - 0.820			V	- 55 °C 25 °C 125 °C	
V_{IHL}	Common Mode Rejection Input Voltage HIGH - 1.0 V			- 1.830 - 1.720 - 1.580	V	- 55 °C 25 °C 125 °C	
V_{ILL}	Common Mode Rejection Input Voltage - 1.0 V	- 2.920 - 2.850 - 2.820			V	- 55 °C 25 °C 125 °C	
V_{BB}	Reference Voltage	- 1.440 - 1350 - 1240		- 1320 - 1230 - 1120	mV	- 55 °C 25 °C 125 °C	$V_{IN} = V_{ILB}$

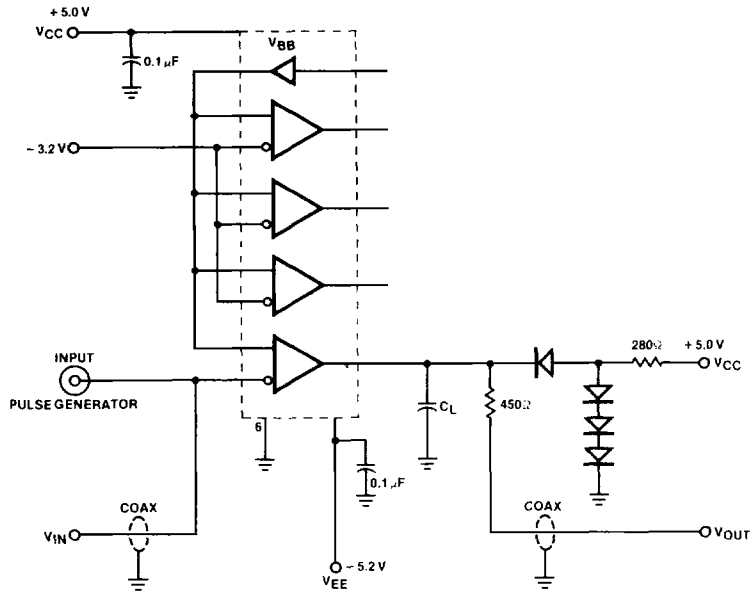
NOTES:

1. Complementary Input = V_{BB}
2. One Output at a Time
3. Pin 2, 6, 10, 14 = V_{IN}
Pin 3, 7, 11, 15 = Pin 1 (V_{BB})

SWITCHING CHARACTERISTICS: $V_{EE} = -5.2 \text{ V}$, $T_A = 25^\circ\text{C}$

SYMBOL	CHARACTERISTIC	LIMITS			UNITS	CONDITIONS
		B	TYP	A		
t_{PLH} , t_{PHL}	Propagation Delay, LOW to HIGH, HIGH to LOW	1.0		6.0	ns	See Figure 1
t_{TLH} , t_{THL}	Output Transition Time 1.0 V to 2.0 V, 2.0 V to 1.0 V			3.3	ns	

SWITCHING CIRCUIT AND WAVEFORMS



50Ω termination to ground located in each scope channel input.

$C_L = 25 \text{ pF}$, including fixture

All input and output cables to the scope are equal lengths of 50Ω coaxial cable. Wire length should be $< 1/4$ inch from TP_{IN} to input pin and TP_{OUT} to output pin.

One input from each gate must be tied to V_{BB} during testing.

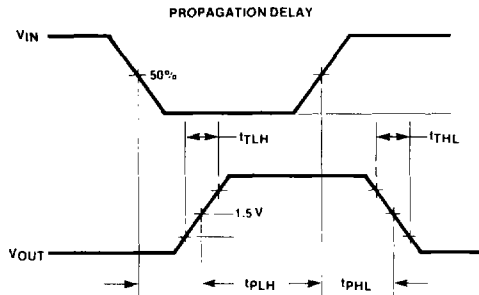


Fig. 1