MOTOROLA

Triple 4-3-3 Input Bus Driver

Military 10523

ELECTRICALLY TESTED PER:
MPG 10523

The 10523 consists of three NOR gates designed for bus driving applications on card or between cards. Output low logic levels are specified with V_{OL} = - 2.1 Vdc so that the bus may be terminated to - 2.0 Vdc. The gate output, when low, appears as a high impedance to the bus, because the output emitter-followers of the 10523 are "turned-off". This eliminates discontinuities in the characteristic impedance of the bus.

The V_{OH} level is specified when driving a 25-ohm load terminated to - 2.0 Vdc, the equivalent of a 50-ohm bus terminated at both ends. Although 25 ohms is the lowest characteristic impedance that can be driven by the 10523, higher impedance values may be used with this part. A typical 50-ohm bus is shown in Figure 2.

3

- 435 mW Max/Pkg (No Load)
- t_{pd} = 3.0 ns typ (1.5 Vdc in to 50% out)
- t_r, t_f = 2.5 ns typ (20% - 80%)

AVAILABLE AS

1) JAN: N/A
2) SMD: N/A
3) 883: 10523/BXAJC
X = CASE OUTLINE AS FOLLOWS:

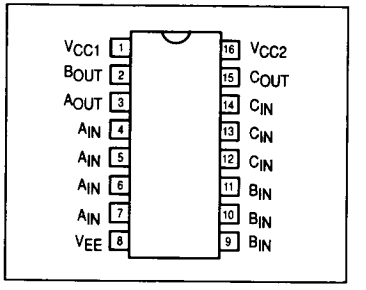
PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

The letter "M" appears before the slash on LCC.

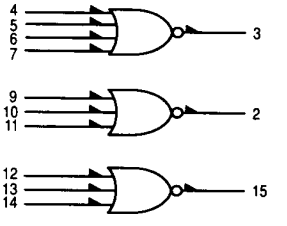
PIN ASSIGNMENTS

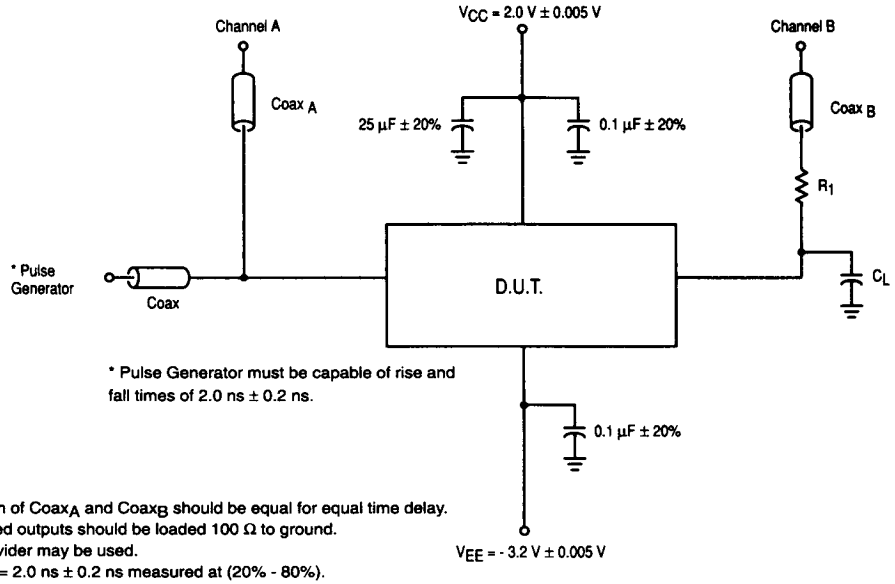
FUNCTION	DIL	FLATS	LCC	BURN-IN (CONDITION C)
V_{CC1}	1	5	2	GND
B_{OUT}	2	6	3	51 Ω to V_{TT}
A_{OUT}	3	7	4	50 Ω to V_{TT}
A_{IN}	4	8	5	OPEN
A_{IN}	5	9	7	OPEN
A_{IN}	6	10	8	OPEN
A_{IN}	7	11	9	OPEN
V_{EE}	8	12	10	V_{EE}
B_{IN}	9	13	12	OPEN
B_{IN}	10	14	13	OPEN
B_{IN}	11	15	14	OPEN
C_{IN}	12	16	15	OPEN
C_{IN}	13	1	17	OPEN
C_{IN}	14	2	18	OPEN
C_{OUT}	15	3	19	51 Ω to V_{TT}
V_{CC2}	16	4	20	GND

BURN - IN CONDITIONS:
V_{TT} = - 2.0 V MAX/ - 2.2 V MIN
V_{EE} = - 5.7 V MAX/ - 5.2 V MIN



LOGIC DIAGRAM





NOTES

1. Length of $Coax_A$ and $Coax_B$ should be equal for equal time delay.
2. Unused outputs should be loaded 100 Ω to ground.
3. 2:1 divider may be used.
4. $t_r = t_f$ = 2.0 ns ± 0.2 ns measured at (20% - 80%).
5. $P_W \geq 20$ ns.
6. P_{RF} = 1.0 MHz.
7. R_1 = 50 Ω resistor in series with 50 Ω coax constituting the 100 Ω load.
8. CL = Jig and stray capacitance ≤ 5.0 pF.

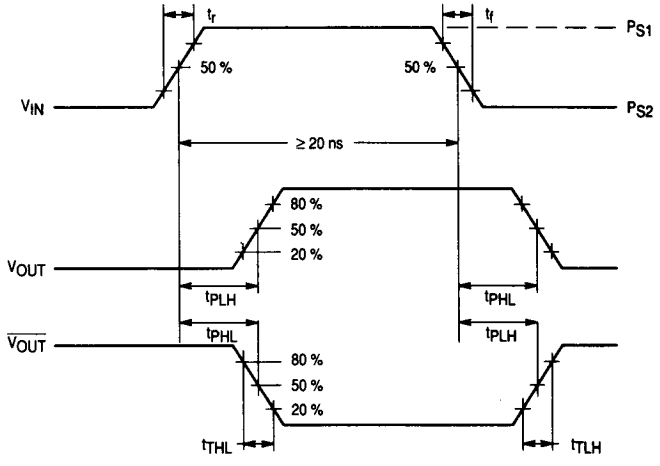


Figure 1. Switching Test Circuit and Waveforms

10523
QUIESCENT LIMIT TABLE *

* ELECTRICAL CHARACTERISTICS

Each MECL 10K series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to - 2.0 volts.

Test Temperature	Test Voltage Values (Volts)							
	V_{IH1}	V_{IL1}	V_{IL2}	V_{IH2}	P_{S1}	P_{S2}	V_{EE}	V_{EEL}
T_A = 25 °C	– 0.78	– 1.85	– 1.475	– 1.105	+ 1.11	+ 0.31	- 5.2	- 3.2
T_A = 125 °C	– 0.63	– 1.82	– 1.400	– 1.000	+ 1.32	+ 0.445	- 5.2	- 3.2
T_A = - 55 °C	– 0.88	– 1.89	– 1.510	– 1.255	+ 1.30	+ 0.385	- 5.2	- 3.2

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW						
	Functional Parameters:	+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments V_{CC} = 0 V, Output Load = 100 Ω to - 2.0 V						
		Subgroup 1		Subgroup 2		Subgroup 3									
		Min	Max	Min	Max	Min	Max		V_{IH1}	V_{IL1}	V_{IH2}	V_{IL2}	V_{EE}	V_{CC}	P. U. T.
V_{OH}	High Output Voltage	- 0.93	- 0.78	- 0.825	- 0.63	- 1.08	- 0.88	V					8	1, 16	2, 3, 15
V_{OL}	Low Output Voltage	- 2.15	- 2.03	- 2.15	- 2.03	- 2.15	- 2.03	V	4 - 7, 9 - 15				8	1, 16	2, 3, 15
V_{OH1}	High Output Voltage	- 0.95	- 0.78	- 0.845	- 0.63	- 1.10	- 0.88	V				4 - 7, 9 - 15	8	1, 16	2, 3, 15
V_{OL1}	Low Output Voltage	- 2.15	- 1.60	- 2.15	- 1.525	- 2.15	- 1.635	V	4, 9, 12		4 - 7, 9 - 15		8	1, 16	2, 3, 15
I_{EE}	Power Supply Current	- 75		- 83		- 83		mA	4 - 7, 9 - 15				8	1, 16	8
I_{IH}	Input Current High		220		373		373	μA	4 - 7, 9 - 15				8	1, 16	4 - 7, 9 - 15
I_{IL}	Input Current Low	0.5		0.3		0.5		μA		4 - 7, 9 - 15			8	1, 16	4 - 7, 9 - 15

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QUIESCENT LIMIT TABLE *

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Test Temperature	Test Voltage Values (Volts)							
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T_A = 125 °C	− 0.63	− 1.82	− 1.400	− 1.000	+ 1.32	+ 0.445	- 5.2	- 3.2
T_A = - 55 °C	− 0.88	− 1.89	− 1.510	− 1.255	+ 1.30	+ 0.385	- 5.2	- 3.2

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW			
	Functional Parameters:	+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments V_{CC} = + 2.0 V, Output Load = 100 Ω to GND			
		Subgroup 9		Subgroup 10		Subgroup 11						
		Min	Max	Min	Max	Min	Max		V_{IN}	V_{OUT}	V_{EEL}	P. U. T.
t_{TLH}	Rise Time	1.0	3.5	1.0	3.5	1.0	3.5	ns	4 - 7, 9 - 14	2, 3, 15	8	2, 3, 15
t_{THL}	Fall Time	1.0	3.5	1.0	3.5	1.0	3.5	ns	4 - 7, 9 - 14	2, 3, 15	8	2, 3, 15
t_{PHL}	Propagation Delay High to Low	1.2	4.4	1.2	6.0	1.2	4.4	ns	4 - 7, 9 - 14	2, 3, 15	8	2, 3, 15
t_{PLH}	Propagation Delay Low to High	1.2	4.4	1.2	6.0	1.2	4.4	ns	4 - 7, 9 - 14	2, 3, 15	8	2, 3, 15

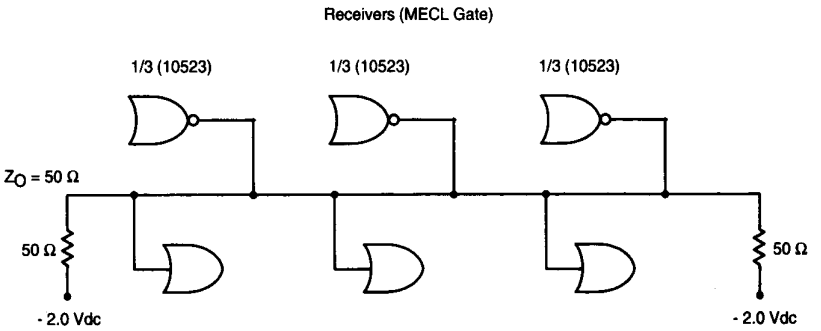

Figure 2. 50 Ohm Bus Driver