

QUAD 2-INPUT "NAND" POWER GATE

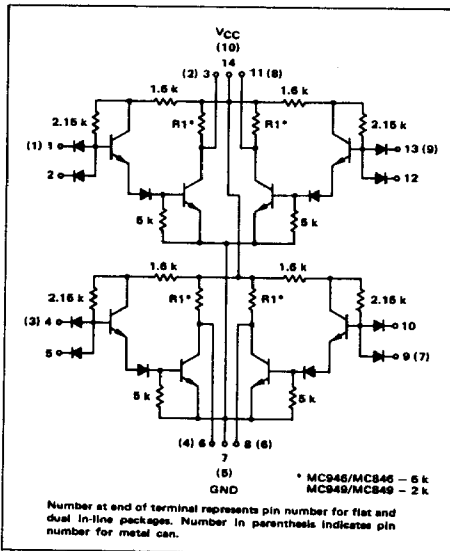
MDTL MC930/830 series

MC946F · MC846F, P
MC949F · MC849F, P

QUAD INVERTER

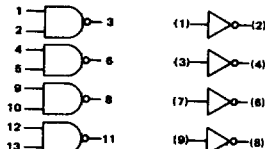
MC946G · MC846G
MC949G · MC849G

This gate element, in the 14-pin flat and dual in-line packages, consists of four 2-input NAND gate circuits. This circuit can be used as a dual 2-input non-inverting gate, or as two bistable circuits when two dual 2-input gates are cross-coupled. Since the metal can (G suffix) has only 10 pins, that circuit consists of four inverters.



MC946F/MC846F, P
 MC949F/MC849F, P

MC946G/MC846G
 MC949G/MC849G



Positive Logic: $3 = 1 \cdot 2$
 Negative Logic: $3 = 1 \cdot \bar{2}$

Positive Logic: $2 = \bar{1}$
 Negative Logic: $2 = \bar{\bar{1}}$

Input Loading Factor = 1

Output Loading Factor:

MC946/MC846 = 8

MC949/MC849 = 7

Total Power Dissipation:

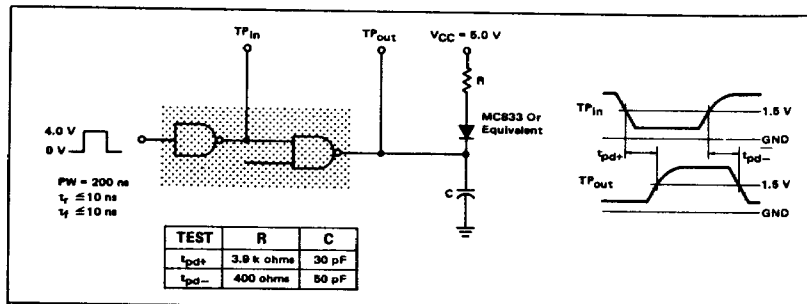
	MC946 MC846	MC949 MC849
Inputs Low	24 mW	24 mW
Inputs High	82 mW	84 mW
50% Duty Cycle	38 mW	84 mW

Propagation Delay Time:

MC946/MC846 = 30 ns typ

MC949/MC849 = 25 ns typ

SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



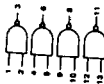
51

MC946F/MC846F, P, MC949F/MC849F, P (continued)
 MC946G/MC846G, MC949G/MC849G (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one gate. The other gates are tested in the same manner.

NOTE: Although the test conditions and test limits are the same for all gates made in ALL available packages, the table shows pin connections for testing only the first and dual in-line packaged devices. To test devices in the metal can, substitute pin numbers shown in the optional test table below.



PACKAGE	PIN NUMBER													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pin/Dual In-Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Metal Can	1	2	3	4	5	6	7	8	9	10				

Characteristic	Symbol	Pin Number	TEST CURRENT / VOLTAGE LIMITS														TEST CURRENT / VOLTAGE APPLIED TO PMS LISTED BELOW:													
			-55°C		+25°C		+125°C		0°C		+25°C		+75°C		-55°C		+25°C		+125°C		0°C		+25°C		+75°C					
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				
Output Voltage	V _{OL}	3	0.40	-	0.40	-	0.45	V _{cc}	-	0.45	-	0.45	-	0.50	V _{cc}	-	0.50	V _{cc}	-	0.50	V _{cc}	-	0.50	V _{cc}	-	0.50				
	V _{OH}	3	2.50	-	2.60	-	2.50	V _{cc}	-	2.60	-	2.60	-	2.50	V _{cc}	-	2.50	V _{cc}	-	2.50	V _{cc}	-	2.50	V _{cc}	-	2.50				
Short-Circuit Current	I _{SC}	3	-1.34	-	-1.34	-	-1.50	mA _{dc}	-	-1.30	-	-1.30	-	-1.25	mA _{dc}	-	-1.25	mA _{dc}	-	-1.25	mA _{dc}	-	-1.25	mA _{dc}	-	-1.25				
Reverse Current	I _R	1	2.0	-	2.0	-	2.0	mA _{dc}	-	2.0	-	2.0	-	2.0	mA _{dc}	-	2.0	mA _{dc}	-	2.0	mA _{dc}	-	2.0	mA _{dc}	-	2.0				
Output Leakage Current	I _{CEX}	3	-	-	50	-	-	μA _{dc}	-	-	-	100	-	-	μA _{dc}	-	-	μA _{dc}	-	-	-	1	-	2	-	2				
Forward Current	I _F	2	-1.60	-	-1.60	-	-1.60	mA _{dc}	-	-1.40	-	-1.40	-	-1.35	mA _{dc}	-	-1.35	mA _{dc}	-	-1.35	mA _{dc}	-	-1.35	mA _{dc}	-	-1.35				
Power Drain Current (Total Device)	I _{PDH}	14	-	-	13	-	-	mA _{dc}	-	-	-	18	-	-	mA _{dc}	-	-	mA _{dc}	-	-	-	14	-	-	-	7				
MC946/MC846	I _{PDH}	14	-	-	21.4	-	-	mA _{dc}	-	-	-	26.2	-	-	mA _{dc}	-	-	mA _{dc}	-	-	-	14	-	-	-	7				
MC949/MC849	I _{PDH}	14	-	-	11	-	-	mA _{dc}	-	-	-	15	-	-	mA _{dc}	-	-	mA _{dc}	-	-	-	14	-	-	-	7				
All Types	I _{PDH} max	14	-	-	11	-	-	mA _{dc}	-	-	-	15	-	-	mA _{dc}	-	-	mA _{dc}	-	-	-	14	-	-	-	7				
Switching Times	t _{pd}	1,3	-	-	25	80	-	ns	-	-	-	25	80	-	ns	-	-	ns	-	-	-	14	-	-	-	7				
MC946/MC846	t _{pd}	1,3	-	-	10	30	-	ns	-	-	-	10	30	-	ns	-	-	ns	-	-	-	14	-	-	-	7				
MC949/MC849	t _{pd}	1,3	-	-	15	60	-	ns	-	-	-	15	60	-	ns	-	-	ns	-	-	-	14	-	-	-	7				
	t _{pd}	1,3	-	-	10	30	-	ns	-	-	-	10	30	-	ns	-	-	ns	-	-	-	14	-	-	-	7				

Pin not listed are left open.

52

PRODUCT DOCUMENTATION

The three documents listed in the following table are required for a complete description of the DSP56301 and are necessary to design properly with the part. Documentation is available from one of the following locations (see back cover for detailed information):

- A local Motorola distributor
- A Motorola semiconductor sales office
- A Motorola Literature Distribution Center
- The World Wide Web (WWW)

See the **Additional Support** section of the *DSP56300 Family Manual* for detailed information on the multiple support options available to you.

Table 1 DSP56301 Documentation

Name	Description	Order Number
DSP56300 Family Manual	Detailed description of the DSP56300 family processor core and instruction set	DSP56300FM/AD
DSP56301 User's Manual	Detailed functional description of the DSP56301 memory configuration, operation, and register programming	DSP56301UM/AD
DSP56301 Technical Data	DSP56301 features list and physical, electrical, timing, and package specifications	DSP56301/D

