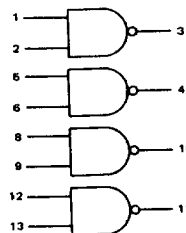
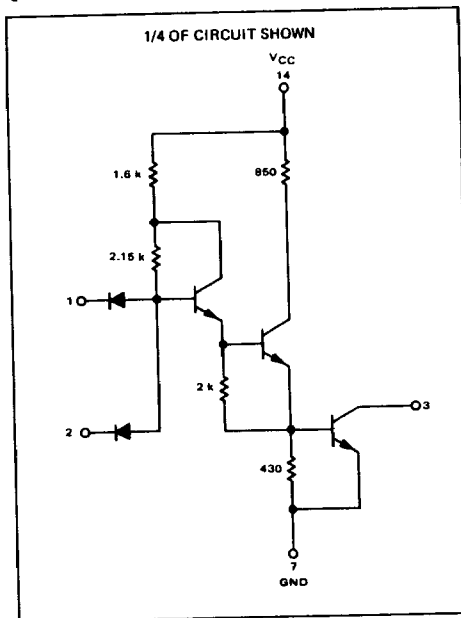


QUAD 2-INPUT "NAND"  
POWER GATE

MDTL MC930/830 series

MC958F · MC858F,P

The MC958/MC858 is a quad NAND power gate with an output transistor capable of sinking more current than standard gate elements. It is useful as a high fan-out gate (with an external pull-up resistor), and as a line, relay, or lamp driver. Each output of the MC958/MC858 is capable of sinking up to 100 mA individually (60 mA if all outputs are conducting simultaneously) provided that temperature extremes are limited to 0°C to +100°C for MC958, and +15°C to +55°C for MC858. The typical breakdown voltage of the output transistor is greater than 12 V.



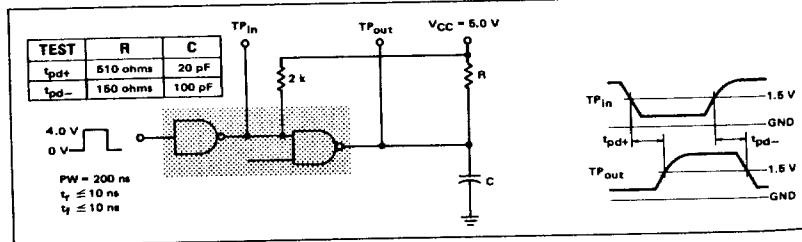
Positive Logic:  $3 = \overline{1 \cdot 2}$   
Negative Logic:  $3 = \overline{1 + 2}$

Input Loading Factor = 1  
Output Loading Factor = 27  
Total Power Dissipation = 130 mW typ/pkg  
Propagation Delay Time = 30 ns typ

OPERATING RULES

- The outputs of the Quad Power Gate may be tied together to perform the wired-collector OR function.
- An external load resistor should be utilized with the Quad Power Gate. At  $V_{CC} = 5.0 \pm 0.5$  V, subtract the following output loads:
  - R  
2 kΩ - 2 loads  
1 kΩ - 4 loads  
510 Ω - 8 loads
- For increased current capability, the inputs and outputs of %MC858 and %MC857 can be paralleled (up to and including 4 common outputs). The combined output will equal 100 loads while each combined input will equal 4 loads.

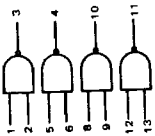
SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



MC958F/MC858F, P (continued)

ELECTRICAL CHARACTERISTICS

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



Characteristic	Symbol	Pin Under Test	MC958 Test Limits						MC858 Test Limits						TEST CURRENT / VOLTAGE VALUES														
			-55°C		+25°C		+125°C		0°C		+25°C		+75°C		@ Test Temperature														
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Unit	mA													
Output Voltage	V <sub>OL</sub>	3	-	0.40	-	0.40	-	0.45	Vdc	-	0.45	-	0.45	Vdc	-	0.50	Vdc	I <sub>OL</sub>	I <sub>CE</sub>	V <sub>IL</sub>	V <sub>IH</sub>	V <sub>F</sub>	V <sub>OH</sub>	V <sub>OL</sub>	V <sub>CEX</sub>	V <sub>CC</sub>	V <sub>CEH</sub>	V <sub>max</sub>	
Output Breakdown Voltage	V <sub>YCE</sub>	3	-	6.0	-	6.0	-	6.0	Vdc	-	6.0	-	6.0	Vdc	-	6.0	Vdc	-	-	-	-	-	-	-	-	-	-	-	-
Reverse Current	I <sub>R</sub>	1, 2	-	2.0	-	2.0	-	5.0	μAdc	-	5.0	-	5.0	μAdc	-	10	μAdc	-	-	-	-	-	-	-	-	-	-	-	-
Output Leakage Current	I <sub>CEX</sub>	3	-	-	-	50	-	-	μAdc	-	-	-	100	μAdc	-	100	μAdc	-	-	-	-	-	-	-	-	-	-	-	-
Forward Current	I <sub>F</sub>	1, 2	-	-1.60	-	-1.60	-	-1.40	mAdc	-	-1.40	-	-1.40	mAdc	-	-1.33	mAdc	-	-	-	-	-	-	-	-	-	-	-	-
Power Dissip. Current (Total Device)	I <sub>PDH</sub> I <sub>max</sub>	14	-	-	-	40	-	-	mAdc	-	-	-	45	mAdc	-	45	mAdc	-	-	-	-	-	-	-	-	-	-	-	-
Switching Times	t <sub>pd-</sub> t <sub>pd-</sub>	1, 3 1, 3	-	-	-	15	50	-	ns	-	-	-	15	50	-	ns	-	-	-	-	-	-	-	-	-	-	-	-	-

TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW:

mA	I <sub>OL</sub>	I <sub>CE</sub>	V <sub>IL</sub>	V <sub>IH</sub>	V <sub>F</sub>	V <sub>OH</sub>	V <sub>OL</sub>	V <sub>CEX</sub>	V <sub>CC</sub>	V <sub>CEH</sub>	V <sub>max</sub>
36	-	-	2.10	0	4.00	-	-	-	-	-	4.50
40	5.00	1.10	2.00	0	4.00	4.50	5.00	4.50	5.00	4.50	5.50
36	-	-	2.00	0	4.00	-	-	-	-	-	4.50
40	-	-	2.00	0.45	4.00	-	-	-	-	-	5.00
40	5.00	1.10	1.90	0.45	4.00	5.00	5.00	5.00	5.00	5.00	5.50
36	-	-	1.80	0.50	4.00	-	-	-	-	-	5.00

Pins not listed are left open.

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## 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

