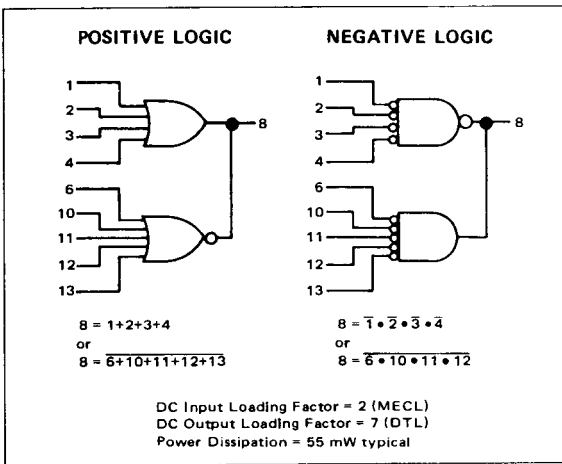
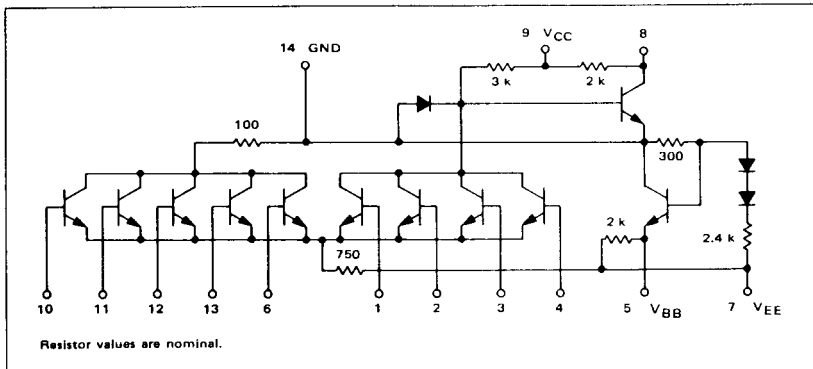


**MC1018**  
**MC1218**

This level translator converts MECL signal levels to saturate logic levels. The translator will provide the positive logic OR or logic NOR function by connecting the internal bias driver output to the corresponding inputs of the differential amplifier, i.e., when pin 4 is connected to the reference bias, pin 5, pins 6, 10, 11, 12, and 13 become the inputs of a 5-input NOR gate. When pin 6 is connected to the reference bias, pin 5, pins 1, 2, 3, and 4 become the inputs of a 4-input OR gate.

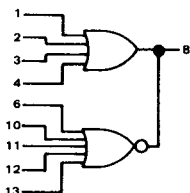


**CIRCUIT SCHEMATIC**



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MC1018, MC1218 (continued)



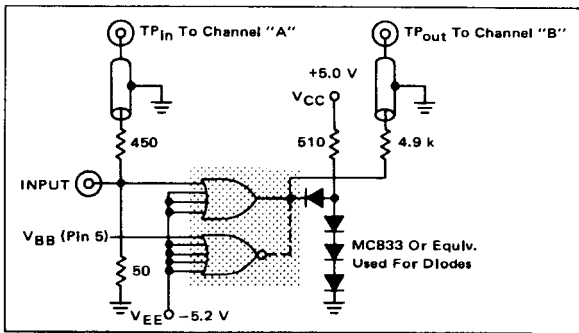
ELECTRICAL CHARACTERISTICS

| Characteristic                | Symbol  | Pin Under Test                  | MC1218 Test Limits |       |       |       |        |       | Unit      | MC1018 Test Limits |       |       |       |       |       | Unit      |
|-------------------------------|---|---------------------------------|--------------------|-------|-------|-------|--------|-------|-----------|--------------------|-------|-------|-------|-------|-------|-----------|
|                               |   |                                 | -55°C              |       | +25°C |       | +125°C |       |           | 0°C                |       | +25°C |       | +75°C |       |           |
|                               |   |                                 | Min                | Max   | Min   | Max   | Min    | Max   |           | Min                | Max   | Min   | Max   | Min   | Max   |           |
| Positive Supply Drain Current | $I_C$   | 9                               | -                  | -     | -     | 3.0   | -      | -     | mAdc      | -                  | -     | -     | 3.0   | -     | -     | mAdc      |
| Negative Supply Drain Current | $I_E$   | 7                               | -                  | -     | -     | 11.0  | -      | -     | mAdc      | -                  | -     | -     | 11.0  | -     | -     | mAdc      |
| Input Current                 | $I_{in}$  | 1, 2, 3, 4, 6, 10, 11, 12, 13   | -                  | -     | -     | 200   | -      | -     | $\mu$ Adc | -                  | -     | -     | 200   | -     | -     | $\mu$ Adc |
| Input Leakage Current         | $I_R$   | 1, 2, 3, 4*, 6, 10, 11, 12, 13* | -                  | -     | -     | 0.2   | -      | 2.0   | $\mu$ Adc | -                  | -     | -     | 0.2   | -     | 2.0   | $\mu$ Adc |
| Output Voltage High           | $V_{OH}$  | 8                               | -                  | -     | 4.6   | -     | 4.4    | Vdc   | -         | -                  | 4.6   | -     | 4.5   | -     | Vdc   |           |
| Output Voltage Low            | $V_{OL}$  | 8                               | -                  | 0.40  | -     | 0.40  | -      | 0.45  | Vdc       | -                  | 0.45  | -     | 0.45  | -     | 0.50  | Vdc       |
| Bias Driver Output Voltage    | $V_{BB}$ ①                                      | 5                               | -1.35              | -1.20 | -1.26 | -1.10 | -1.11  | -0.98 | Vdc       | -1.28              | -1.14 | -1.26 | -1.10 | -1.19 | -1.04 | Vdc       |
| Output Short Circuit Current  | $I_{SC}$  | 8                               | -                  | -4.0  | -     | -3.8  | -      | -3.6  | mAdc      | -                  | -3.9  | -     | -3.8  | -     | -3.6  | mAdc      |
| Switching Times               | $t_{1-8}$ , $t_{1-8+}$ , $t_{6-8}$ , $t_{6-8+}$ | 8                               | Typ                | Max   | Typ   | Max   | Typ    | Max   | ns        | Typ                | Max   | Typ   | Max   | Typ   | Max   | ns        |
|                               |   |                                 | 19                 | 25    | 19    | 25    | 19     | 25    |           | 19                 | 25    | 19    | 25    | 19    | 25    |           |
|                               |   |                                 | 8.0                | 12    | 8.0   | 12    | 10     | 14    |           | 8.0                | 12    | 8.0   | 12    | 9.0   | 13    |           |
|                               |   |                                 | 8.0                | 12    | 8.0   | 12    | 10     | 14    |           | 8.0                | 12    | 8.0   | 12    | 9.0   | 13    |           |
|                               |   |                                 | 19                 | 25    | 19    | 25    | 19     | 25    |           | 12                 | 25    | 19    | 25    | 19    | 25    |           |

①  $V_{BB}$  is supplied from pin 5, and applies from no load (0 mA) to full load (-1.0 mAdc)

\* Individually test each input using the pin connections shown.

SWITCHING TIME TEST CIRCUIT @ 25°C



Circuit Shown For OR Configurations. Connect Pin 5 to 4 For NOR.

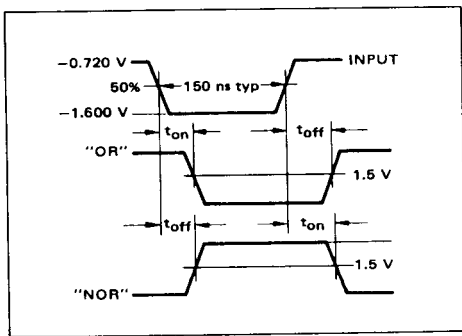
MC1218  
MC1018

@Test Temperature  
-55°C  
+25°C  
+125°C  
0°C  
+25°C  
+75°C

| TEST VOLTAGE/CURRENT VALUES                |  |                     |                 |                 |                 |                 |                 |                |      |
|--|--|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------|
| V <sub>dc</sub> ± 1.0%                     |  |                     |                 |                 |                 |                 |                 |                |      |
| V <sub>IL min</sub> to V <sub>IL max</sub> | V <sub>IH min</sub> to V <sub>IH max</sub> | V <sub>IH max</sub> | V <sub>CC</sub> | V <sub>EE</sub> | V <sub>BB</sub> | I <sub>OH</sub> | I <sub>OL</sub> | I <sub>L</sub> | mAdc |
| -5.2 to -1.405                             | -1.165 to -0.825                           | -                   | 5.0             | -5.2            | 1               | -120            | 11.4            | 1.0            | -    |
| -5.2 to -1.325                             | -1.025 to -0.700                           | -0.700              | 5.0             | -5.2            | 1               | -120            | 12.0            | 1.0            | -    |
| -5.2 to -1.205                             | -0.875 to -0.530                           | -                   | 5.0             | -5.2            | 1               | -120            | 10.8            | 1.0            | -    |
| -5.2 to -1.350                             | -1.070 to -0.740                           | -                   | 5.0             | -5.2            | (1)             | -120            | 12.0            | 1.0            | -    |
| -5.2 to -1.325                             | -1.025 to -0.700                           | -0.700              | 5.0             | -5.2            | 1               | -120            | 12.0            | 1.0            | -    |
| -5.2 to -1.260                             | -0.950 to -0.615                           | -                   | 5.0             | -5.2            | (1)             | -120            | 11.4            | 1.0            | -    |

TEST VOLTAGE/CURRENT APPLIED TO PINS LISTED BELOW:

| Characteristic                | Pin Under Test                  | V <sub>IL min</sub> to V <sub>IL max</sub> | V <sub>IH min</sub> to V <sub>IH max</sub> | V <sub>IH max</sub> | V <sub>CC</sub>            | V <sub>EE</sub>               | V <sub>BB</sub>            | I <sub>OH</sub> | I <sub>OL</sub> | I <sub>L</sub> | V <sub>CC</sub> (Gnd) |    |
|-------------------------------|---------------------------------|--|--|---------------------|----------------------------|-------------------------------|----------------------------|-----------------|-----------------|----------------|-----------------------|----|
| Positive Supply Drain Current | 9                               | -  | -  | -                   | 9                          | 1, 2, 3, 6, 7, 10, 11, 12, 13 | 4                          | -               | -               | -              | 14                    |    |
| Negative Supply Drain Current | 7                               | -  | -  | -                   | 9                          | 1, 2, 3, 6, 7, 10, 11, 12, 13 | 4                          | -               | -               | -              | 14                    |    |
| Input Current                 | 1                               | -  | -  | 1                   | 9                          | 2, 3, 4, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
|                               | 2                               | -  | -  | 2                   | 9                          | 1, 3, 4, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
|                               | 3                               | -  | -  | 3                   | 9                          | 1, 2, 4, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
|                               | 4                               | -  | -  | 4                   | 9                          | 1, 2, 3, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
|                               | 6                               | -  | -  | 6                   | 9                          | 1, 2, 3, 7, 10, 11, 12, 13    | 4                          | -               | -               | -              | 14                    |    |
|                               | 10                              | -  | -  | 10                  | 9                          | 1, 2, 3, 6, 7, 11, 12, 13     | 4                          | -               | -               | -              | 14                    |    |
|                               | 11                              | -  | -  | 11                  | 9                          | 1, 2, 3, 6, 7, 10, 12, 13     | 4                          | -               | -               | -              | 14                    |    |
| 12                            | -                               | -  | 12   | 9                   | 1, 2, 3, 6, 7, 10, 11, 13  | 4                             | -                          | -               | -               | 14             |                       |    |
| 13                            | -                               | -  | 13   | 9                   | 1, 2, 3, 6, 7, 10, 11, 12  | 4                             | -                          | -               | -               | 14             |                       |    |
| Input Leakage Current         | 1, 2, 3, 4*, 6, 10, 11, 12, 13* | -  | -  | -                   | 9                          | 1, 2, 3, 4, 7, 10, 11, 12, 13 | 6                          | -               | -               | -              | 14                    |    |
|                               | 6, 10, 11, 12, 13*              | -  | -  | -                   | 9                          | 1, 2, 3, 6, 7, 10, 11, 12, 13 | 4                          | -               | -               | -              | 14                    |    |
| Output Voltage High           | 8                               | 6, 10, 11, 12, 13                          | -  | -                   | 9                          | 1, 2, 3, 7                    | 4                          | 8               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 1  | -                   | 9                          | 2, 3, 4, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 2  | -                   | 9                          | 1, 3, 4, 7, 10, 11, 12, 13    | 4                          | -               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 3  | -                   | 9                          | 1, 2, 4, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 14                    |    |
| ↓                             | -                               | 4  | -  | 9                   | 1, 2, 3, 7, 10, 11, 12, 13 | 4                             | -                          | -               | -               | 14             |                       |    |
| Output Voltage Low            | 8                               | 1, 2, 3, 4                                 | -  | -                   | 9                          | 7, 10, 11, 12, 13             | 6                          | -               | 8               | -              | 14                    |    |
|                               | ↓                               | -  | 6  | -                   | 9                          | 1, 2, 3, 7, 10, 11, 12, 13    | 4                          | -               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 10   | -                   | 9                          | 1, 2, 3, 6, 7, 11, 12, 13     | 4                          | -               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 11   | -                   | 9                          | 1, 2, 3, 6, 7, 10, 12, 13     | 4                          | -               | -               | -              | 14                    |    |
|                               | ↓                               | -  | 12   | -                   | 9                          | 1, 2, 3, 6, 7, 10, 11, 13     | 4                          | -               | -               | -              | 14                    |    |
| ↓                             | -                               | 13   | -  | 9                   | 1, 2, 3, 6, 7, 10, 11, 12  | 4                             | -                          | -               | -               | 14             |                       |    |
| Bias Driver Output Voltage    | 5                               | -  | -  | -                   | 9                          | 7                             | -                          | -               | -               | 5              | 14                    |    |
| Output Short Circuit Current  | 8                               | -  | -  | 4                   | 9                          | 1, 2, 3, 7, 10, 11, 12, 13    | 6                          | -               | -               | -              | 8, 14                 |    |
| Switching Times               | 8                               | Pulse In                                   |  | Pulse Out           |                            | 9                             | 2, 3, 4, 7, 10, 11, 12, 13 | 6               | -               | -              | -                     | 14 |
|                               |                                 | 1  | 8  |                     |                            |                               |                            |                 |                 |                |                       |    |
|                               |                                 | 1  | 8  |                     |                            |                               |                            |                 |                 |                |                       |    |
|                               |                                 | 6  | 8  |                     |                            |                               |                            |                 |                 |                |                       |    |
|                               |                                 | 6  | 8  |                     |                            |                               |                            |                 |                 |                |                       |    |



SWITCHING TIME WAVEFORMS