



# Error Detection-Correction Circuit

ELECTRICALLY TESTED PER:

MPG 10563

The 10563 is an error detection and correction circuit. It is a building block designed for use with memory systems. The 10563 offers economy in the design of the error detection/correction subsystems for mainframe and add-on memory systems.

For example, using eight 10563s together with eight 12-bit parity checkers (10560), single bit error detection/correction and double-bit error detection can be done on a word of 64-bit length. Only eight check bits (B<sub>0</sub>-B<sub>7</sub>) need be added to the word.

- 720 mW Max/Pkg (No Load)
- t<sub>pd</sub> = 5.0 ns typ

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## PIN ASSIGNMENTS

| FUNCTION         | DIL | FLATS | LCC | BURN-IN<br>(CONDITION C) |
|------------------|-----|-------|-----|--------------------------|
| V <sub>CC1</sub> | 1   | 5     | 2   | GND                      |
| P <sub>0B</sub>  | 2   | 6     | 3   | 51 Ω to V <sub>TT</sub>  |
| P <sub>3</sub>   | 3   | 7     | 4   | 51 Ω to V <sub>TT</sub>  |
| B <sub>5</sub>   | 4   | 8     | 5   | OPEN                     |
| B <sub>6</sub>   | 5   | 9     | 7   | OPEN                     |
| B <sub>2</sub>   | 6   | 10    | 8   | GND                      |
| B <sub>1</sub>   | 7   | 11    | 9   | GND                      |
| V <sub>EE</sub>  | 8   | 12    | 10  | V <sub>EE</sub>          |
| B <sub>0</sub>   | 9   | 13    | 12  | OPEN                     |
| B <sub>3</sub>   | 10  | 14    | 13  | GND                      |
| B <sub>7</sub>   | 11  | 15    | 14  | GND                      |
| B <sub>4</sub>   | 12  | 16    | 15  | OPEN                     |
| P <sub>2</sub>   | 13  | 1     | 17  | 51 Ω to V <sub>TT</sub>  |
| P <sub>1</sub>   | 14  | 2     | 18  | 51 Ω to V <sub>TT</sub>  |
| P <sub>0A</sub>  | 15  | 3     | 19  | 51 Ω to V <sub>TT</sub>  |
| V <sub>CC2</sub> | 16  | 4     | 20  | GND                      |

## BURN - IN CONDITIONS:

V<sub>TT</sub> = - 2.0 V MAX/- 2.2 V MIN

V<sub>EE</sub> = - 5.7 V MAX/- 5.2 V MIN

## Military 10563

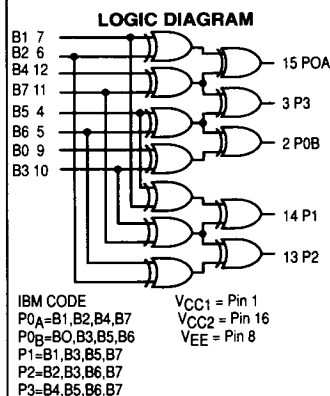
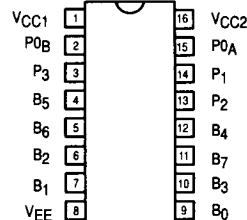


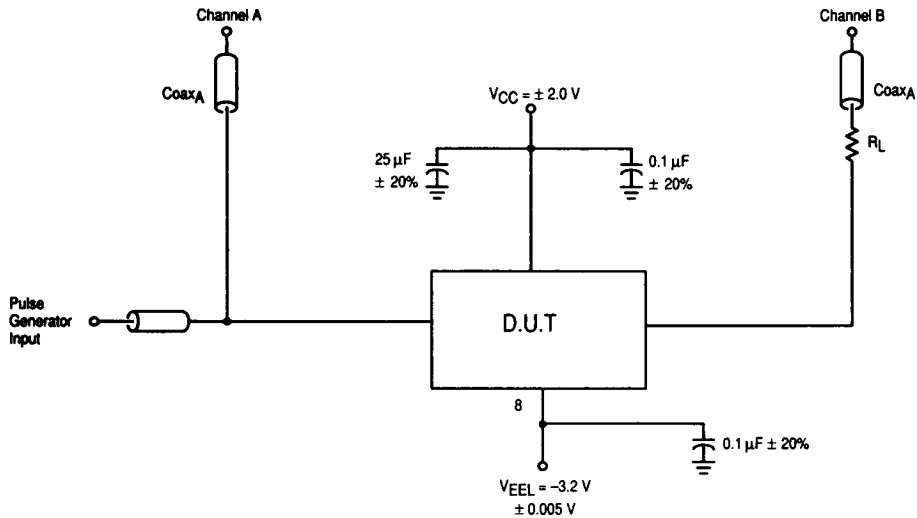
## AVAILABLE AS

- 1) JAN: N/A
  - 2) SMD: N/A
  - 3) 883: 10563/BXAJC
- X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERDIP: E  
CERFLAT: F  
LCC: 2

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



**NOTES**

1. Pulse generator must be capable of rise and fall times of  $2.0 \text{ ns} \pm 0.2 \text{ ns}$ .
2. Length of Coax<sub>A</sub> and Coax<sub>B</sub> should be equal for equal time delay.
3. 2:1 divider may be used.
4.  $t_r = t_f = 2.0 \text{ ns} \pm 0.2 \text{ ns}$  (20% to 80%)
5.  $R_L = 50 \Omega$  resistor in series with  $50 \Omega$  coax constituting the  $100 \Omega$  load.
6.  $V_{IN}$  has the following characteristics:
  - a) pulse width  $\geq 20 \text{ ns}$ .
  - b) frequency =  $1.0 \text{ MHz}$ .
7. Unused outputs should be loaded  $100 \Omega$  to ground.

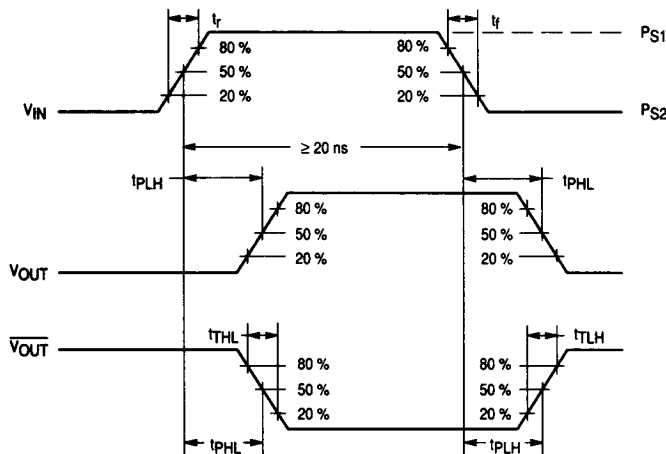


Figure 1. Switching Test Circuit and Waveforms

# 10563 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  $\Omega$  resistor to -2.0 volts.

| Test Temperature        | Test Voltage Values (Volts) |                 |                  |                  |                 |                 |      |
|-------------------------|-----------------------------|-----------------|------------------|------------------|-----------------|-----------------|------|
|                         | V <sub>IH</sub>             | V <sub>IL</sub> | V <sub>IH1</sub> | V <sub>IL1</sub> | PS <sub>1</sub> | PS <sub>2</sub> | VEEL |
| T <sub>A</sub> = 25 °C  | -0.78                       | -1.85           | -1.105           | -1.475           | +1.11           | +0.31           | -5.2 |
| T <sub>A</sub> = 125 °C | -0.63                       | -1.82           | -1.000           | -1.400           | +1.24           | +0.36           | -5.2 |
| T <sub>A</sub> = -55 °C | -0.88                       | -1.92           | -1.255           | -1.510           | +1.01           | +0.28           | -5.2 |

| 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<br>VCC = 0 V, Output Load = 100 Ω to - 2.0 V |                 |                  |                  |                 |                 |                   |       |   |  |
|        |                            | Subgroup 1 |        | Subgroup 2 |         | Subgroup 3 |         |       |                                                                                                            |                 |                  |                  |                 |                 |                   |       |   |  |
|        |                            | Min        | Max    | Min        | Max     | Min        | Max     |       |                                                                                                            |                 |                  |                  |                 |                 |                   |       |   |  |
| VOH    | High Output Voltage        | - 0.93     | - 0.78 | - 0.825    | - 0.63  | - 1.08     | - 0.88  | V     | V <sub>IH</sub>                                                                                            | V <sub>IL</sub> | V <sub>IH1</sub> | V <sub>IL1</sub> | V <sub>EE</sub> | V <sub>CC</sub> | P. U. T.          |       |   |  |
| VOL    | Low Output Voltage         | - 1.85     | - 1.62 | - 1.82     | - 1.545 | - 1.92     | - 1.655 | V     |                                                                                                            |                 |                  |                  | 8               | 1, 16           | 2, 3, 13 - 15     |       |   |  |
| VOL1   | Low Output Voltage         | - 1.85     | - 1.60 | - 1.82     | - 1.525 | - 1.92     | - 1.635 | V     |                                                                                                            |                 |                  | 4 - 7, 9 - 12    | 8               | 1, 16           | 2, 3, 13 - 15     |       |   |  |
| VOH1   | High Output Voltage        | - 0.95     | - 0.78 | - 0.845    | - 0.63  | - 1.10     | - 0.88  | V     |                                                                                                            |                 | 4 - 7, 9 - 12    |                  | 8               | 1, 16           | 2, 3, 13 - 15     |       |   |  |
| IIH    | Input Current High         |            | 220    |            | 375     |            | 375     | μA    | 4, 6, 10                                                                                                   |                 |                  |                  | 8               | 1, 16           | 4, 6, 10          |       |   |  |
| IIH1   | Input Current High         |            | 265    |            | 450     |            | 450     | μA    | 5, 7, 9, 11, 12                                                                                            |                 |                  |                  | 8               | 16              | 5, 7, 9, 11<br>12 |       |   |  |
| IL     | Input Current Low          | 0.5        |        | 0.3        |         | 0.5        |         | μA    |                                                                                                            |                 |                  |                  | 8               | 16              | 2, 7, 9, 14<br>15 |       |   |  |
| IEE    | Power Supply Drain Current | - 125      |        | - 138      |         | - 138      |         | mA    |                                                                                                            |                 |                  |                  |                 |                 | 8                 | 1, 16 | 8 |  |

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|                          | V <sub>IH</sub>             | V <sub>IL</sub> | V <sub>IH1</sub> | V <sub>IL1</sub> | PS <sub>1</sub> | PS <sub>2</sub> | VEE  | VEEL |
| T <sub>A</sub> = 25 °C   | -0.78                       | -1.85           | -1.105           | -1.475           | +1.11           | +0.31           | -5.2 | -3.2 |
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| T <sub>A</sub> = - 55 °C | -0.88                       | -1.92           | -1.255           | -1.510           | +1.01           | +0.28           | -5.2 | -3.2 |

| Symbol            | Parameter         | Limits     |     |             |     |             |     | Units | TEST VOLTAGE APPLIED TO PINS BELOW                                                                       |                   |                   |                    |                  |               |  |  |
|-------------------|-------------------|------------|-----|-------------|-----|-------------|-----|-------|----------------------------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|------------------|---------------|--|--|
|                   |                   | + 25 °C    |     | + 125 °C    |     | - 55 °C     |     |       | Pinouts referenced are for DIL package, check Pin Assignments<br>VCC = 2.0 V, Output Load = 100 Ω to GND |                   |                   |                    |                  |               |  |  |
|                   |                   | Subgroup 9 |     | Subgroup 10 |     | Subgroup 11 |     |       |                                                                                                          |                   |                   |                    |                  |               |  |  |
|                   |                   | Min        | Max | Min         | Max | Min         | Max |       | V <sub>I</sub> N                                                                                         | V <sub>O</sub> UT | V <sub>C</sub> CC | V <sub>E</sub> EEL | P <sub>S</sub> 1 | P. U. T.      |  |  |
| t <sub>TL</sub> H | Rise Time         | 1.1        | 3.9 | 1.1         | 4.5 | 1.1         | 4.4 | ns    | 4 - 7, 9 - 12                                                                                            | 2, 3<br>13 - 15   | 1, 16             | 8                  | 7, 9, 14         | 2, 3, 13 - 15 |  |  |
| t <sub>TH</sub> L | Fall Time         | 1.1        | 3.9 | 1.1         | 4.5 | 1.1         | 4.4 | ns    | 4 - 7, 9 - 12                                                                                            | 2, 3<br>13 - 15   | 1, 16             | 8                  | 7, 9, 14         | 2, 3, 13 - 15 |  |  |
| t <sub>PL</sub> H | Propagation Delay | 1.5        | 6.5 | 1.5         | 7.5 | 1.3         | 7.0 | ns    | 4 - 7, 9 - 12                                                                                            | 2, 3<br>13 - 15   | 1, 16             | 8                  | 7, 9, 14         | 2, 3, 13 - 16 |  |  |
| t <sub>PH</sub> L | Propagation Delay | 1.5        | 6.5 | 1.5         | 7.5 | 1.3         | 7.0 | ns    | 4 - 7, 9 - 12                                                                                            | 2, 3<br>13 - 15   | 1, 16             | 8                  | 7, 9, 14         | 2, 3, 13 - 15 |  |  |