

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

August 1997

CMOS Analog Multiplexers

Features

- Low Power Consumption
- TTL and CMOS-Compatible Address and Enable Inputs
- 44V Maximum Power Supply Rating
- High Latch-Up Immunity
- Break-Before-Make Switching
- Alternate Source

Applications

- Data Acquisition Systems
- Communication Systems
- Signal Multiplexing/Demultiplexing
- Audio Signal Multiplexing

Description

The DG506A, DG507A, DG508A and DG509A are CMOS Monolithic 16-Channel/Dual 8-Channel and 8-Channel/Dual 4-Channel Analog Multiplexers, which can also be used as demultiplexers. An enable input is provided. When the enable input is high, a channel is selected by the address inputs, and when low, all channels are off.

A channel in the ON state conducts current equally well in both directions. In the OFF state each channel blocks voltages up to the supply rails. The address inputs and the enable input are TTL and CMOS compatible over the full specified operating temperature range.

The DG506A, DG507A, DG508A and DG509A are pinout compatible with the industry standard devices.

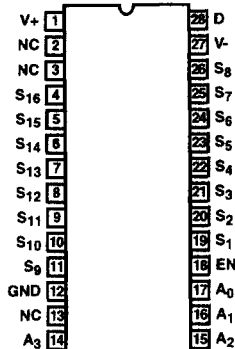
Ordering Information

| PART NUMBER | TEMP. RANGE (°C) | PACKAGE | PKG. NO. |
|---------------|------------------|--------------|----------|
| DG506AAK | -55 to 125 | 28 Ld CERDIP | F28.6 |
| DG506AAK/883B | -55 to 125 | 28 Ld CERDIP | F28.6 |
| DG506ABK | -25 to 85 | 28 Ld CERDIP | F28.6 |
| DG506ABY | -25 to 85 | 28 Ld PDIP | E28.6 |
| DG506ACJ | 0 to 70 | 28 Ld PDIP | E28.6 |
| DG506ACY | 0 to 70 | 28 Ld SOIC | M28.3 |
| DG507AAK | -55 to 125 | 28 Ld CERDIP | F28.6 |
| DG507AAK/883B | -55 to 125 | 28 Ld CERDIP | F28.6 |
| DG507ABK | -25 to 85 | 28 Ld CERDIP | F28.6 |
| DG507ABY | -25 to 85 | 28 Ld PDIP | E28.6 |
| DG507ACJ | 0 to 70 | 28 Ld PDIP | E28.6 |
| DG507ACK | 0 to 70 | 28 Ld CERDIP | F28.6 |
| DG507ACY | 0 to 70 | 28 Ld SOIC | M28.3 |
| DG508AAK | -55 to 125 | 16 Ld CERDIP | F16.3 |

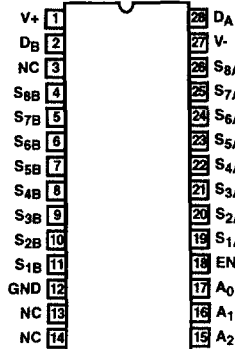
| PART NUMBER | TEMP. RANGE (°C) | PACKAGE | PKG. NO. |
|---------------|------------------|--------------|----------|
| DG508AAK/883B | -55 to 125 | 16 Ld CERDIP | F16.3 |
| DG508ABK | -25 to 85 | 16 Ld CERDIP | F16.3 |
| DG508ABY | -25 to 85 | 16 Ld SOIC | M16.3 |
| DG508ACJ | 0 to 70 | 16 Ld PDIP | E16.3 |
| DG508ACK | 0 to 70 | 16 Ld CERDIP | F16.3 |
| DG508ACY | 0 to 70 | 16 Ld SOIC | M16.3 |
| DG509AAK | -55 to 125 | 16 Ld CERDIP | F16.3 |
| DG509AAK/883B | -55 to 125 | 16 Ld CERDIP | F16.3 |
| DG509ABK | -25 to 85 | 16 Ld CERDIP | F16.3 |
| DG509ABY | -25 to 85 | 16 Ld SOIC | M16.3 |
| DG509ACJ | 0 to 70 | 16 Ld PDIP | E16.3 |
| DG509ACK | 0 to 70 | 16 Ld CERDIP | F16.3 |
| DG509ACY | 0 to 70 | 16 Ld SOIC | M16.3 |

Pinouts

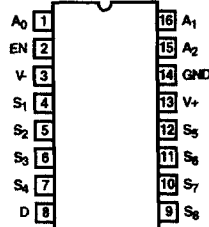
DG506A (PDIP, CERDIP, SOIC)
TOP VIEW



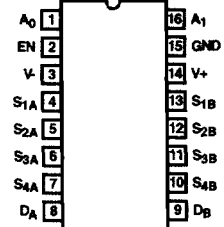
DG507A (PDIP, CERDIP, SOIC)
TOP VIEW



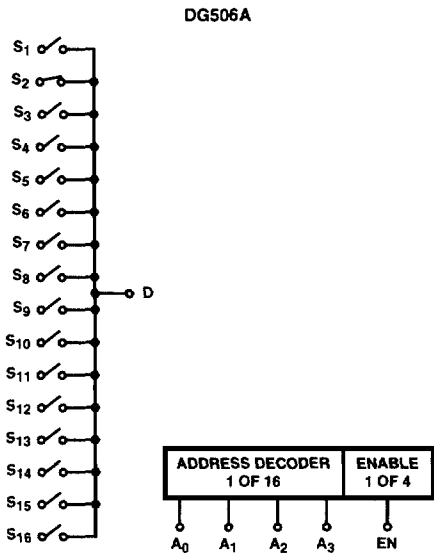
DG508A (PDIP, CERDIP, SOIC)
TOP VIEW



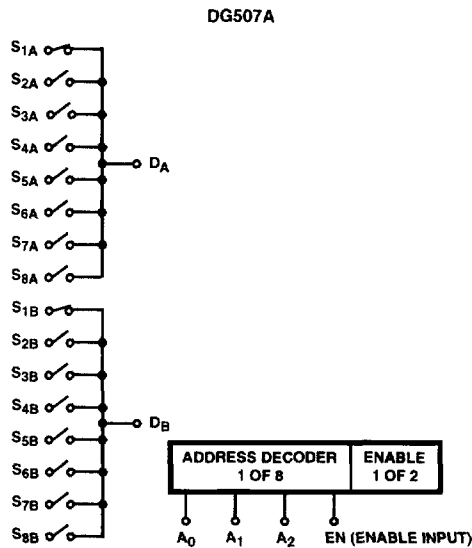
DG509A (PDIP, CERDIP, SOIC)
TOP VIEW



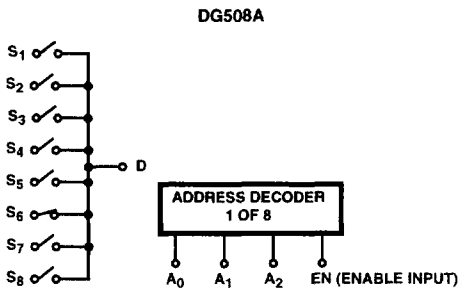
Functional Block Diagrams



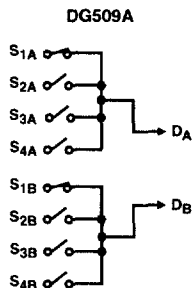
4 Line Binary Address Inputs
(0 0 0 1) and EN = 5V
Above example shows channel 2 turned ON.



3 Line Binary Address Inputs
(0 0 0) and EN = 5V
Above example shows channels 1A and 1B turned ON.

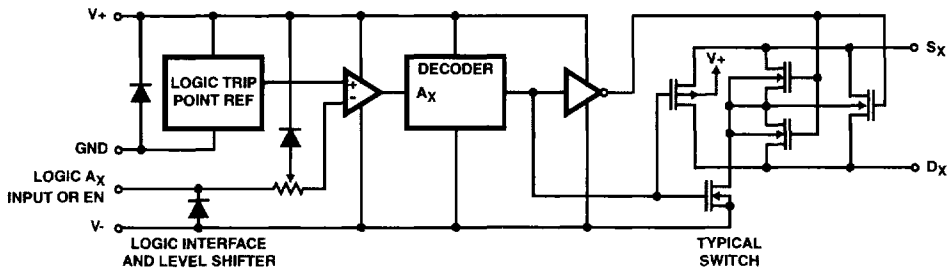


3 Line Binary Address Inputs
(1 0 1) and EN = 1
Above example shows channel 6 turned ON.



2 Line Binary Address Inputs
(0 0) and EN = 1
Above example shows channels 1A and 1B turned ON.

Schematic Diagram



DG506A, DG507A, DG508A, DG509A

Absolute Maximum Ratings

| | |
|--|--------------------|
| V+ to V- | 44V |
| V- to Ground | -25V |
| V _{IN} to Ground (Note 1) | (V- -2V), (V+ +2V) |
| V _S or V _D to V+ (Note 1) | +2, (V- -2V) |
| V _S or V _D to V- (Note 1) | -2, (V+ +2V) |
| Current, any Terminal Except S or D | 30mA |
| Continuous Current, S or D | 20mA |
| Peak Current, S or D (Pulsed at 1ms, 10% Duty Cycle Max) | 40mA |

Operating Conditions

| | |
|-----------------------------|----------------|
| Operating Temperature Range | |
| C Suffix | 0°C to 70°C |
| B Suffix | -25°C to 85°C |
| A Suffix | -55°C to 125°C |

Thermal Information

| | | |
|--|----------------------|----------------------|
| Thermal Resistance (Typical, Note 2) | θ_{JA} (°C/W) | θ_{JC} (°C/W) |
| 16 Ld CERDIP Package | 75 | 20 |
| 28 Ld CERDIP Package | 55 | 18 |
| 16 Ld PDIP Package | 100 | N/A |
| 28 Ld PDIP Package | 60 | N/A |
| 16 Ld SOIC Package | 100 | N/A |
| 28 Ld SOIC Package | 70 | N/A |
| Maximum Junction Temperature | | |
| CERDIP Package | 175°C | |
| PDIP Package | 150°C | |
| Maximum Storage Temperature | | |
| C Suffix | -65°C to 125°C | |
| A and B Suffix | -65°C to 150°C | |
| Maximum Lead Temperature (Soldering 10s) | | |
| (SOIC - Lead Tips Only) 300°C | | |

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

NOTES:

- Signals on V_S, V_D or V_{IN} exceeding V+ or V- will be clamped by internal diodes. Limit diode forward current to maximum current ratings.
- θ_{JA} is measured with the component mounted on an evaluation PC board in free air.

Electrical Specifications $T_A = 25^\circ\text{C}$, V+ = +15V, V- = -15V, GND = 0V, V_{EN} = 2.4V, Unless Otherwise Specified

| PARAMETER | TEST CONDITIONS | DG506AA, DG507AA, DG508AA, DG509AA | | | DG506AB/C, DG507AB/C, DG508AB/C, DG509AB/C | | | UNITS |
|--|--|---------------------------------------|-----------------|-----|---|-----------------|-----|---------------|
| | | MIN | (NOTE 1) TYP | MAX | MIN | (NOTE 1) TYP | MAX | |
| DYNAMIC CHARACTERISTICS | | | | | | | | |
| Switching Time of Multiplexer, $t_{\text{TRANSITION}}$ | See Figure 3 | - | 0.6 | 1 | - | 0.6 | - | μs |
| Break-Before-Make Interval, t_{OPEN} | See Figure 5 | - | 0.2 | - | - | 0.2 | - | μs |
| Enable Turn-On Time, $t_{\text{ON(EN)}}$ | See Figure 4 | - | 1 | 1.5 | - | 1 | - | μs |
| Enable Turn-Off Time, $t_{\text{OFF(EN)}}$ | See Figure 4 | - | 0.4 | 1.0 | - | 0.4 | - | μs |
| Off Isolation, OIRR | V _{EN} = 0V, R _L = 1k Ω , C _L = 15pF, V _S = 7V _{RMS} , f = 500kHz (Note 3) | - | 68 | - | - | 68 | - | dB |
| Source Off Capacitance, C _{S(OFF)} DG506A, DG507A DG508A, DG509A | V _S = 0V, V _{EN} = 0V, f = 140kHz | - | 6 | - | - | 6 | - | pF |
| | | - | 5 | - | - | 5 | - | pF |
| Drain Off Capacitance, C _{D(OFF)} DG506A DG507A DG508A DG509A | V _D = 0V, V _{EN} = 0V, f = 140kHz | - | 45 | - | - | 45 | - | pF |
| | | - | 23 | - | - | 23 | - | pF |
| | | - | 25 | - | - | 25 | - | pF |
| | | - | 12 | - | - | 12 | - | pF |
| Charge Injection, Q DG506A, DG507A DG508A, DG509A | See Figure 6 | - | 6 | - | - | 6 | - | pC |
| | | - | 4 | - | - | 4 | - | pC |
| INPUT | | | | | | | | |
| Address Input Current, Input Voltage High, I _{AH} | V _A = 2.4V | -10 | -0.002 | - | -10 | -0.002 | - | μA |
| | V _A = 15V | - | 0.006 | 10 | - | 0.006 | 10 | μA |

DG506A, DG507A, DG508A, DG509A

Electrical Specifications $T_A = 25^\circ\text{C}$, $V_+ = +15\text{V}$, $V_- = -15\text{V}$, $\text{GND} = 0\text{V}$, $V_{\text{EN}} = 2.4\text{V}$, Unless Otherwise Specified (Continued)

| PARAMETER | TEST CONDITIONS | | DG506AA, DG507AA, DG508AA, DG509AA | | | DG506AB/C, DG507AB/C, DG508AB/C, DG509AB/C | | | UNITS | |
|---|---|--|---|-----------------|--------|---|-----------------|--------|---------------|----|
| | | | MIN | (NOTE 1) TYP | MAX | MIN | (NOTE 1) TYP | MAX | | |
| Address Input Current Input Voltage Low, I_{AL} | $V_{\text{EN}} = 2.4\text{V}$ | $V_A = 0\text{V}$ | -10 | -0.002 | - | -10 | -0.002 | - | μA | |
| | $V_{\text{EN}} = 0\text{V}$ | | -10 | -0.002 | - | -10 | -0.0002 | - | μA | |
| SWITCH | | | | | | | | | | |
| Analog Signal Range, V_{ANALOG} | (Note 5) | | -15 | - | +15 | -15 | - | +15 | V | |
| Drain Source On Resistance, $r_{\text{DS(ON)}}$ | Sequence Each Switch On $V_{\text{AL}} = 0.8\text{V}$ $V_{\text{AH}} = 2.4\text{V}$ | $I_{\text{S}} = -200\mu\text{A}$, $V_{\text{D}} = +10\text{V}$ | - | 270 | 400 | - | 270 | 450 | Ω | |
| | | $I_{\text{S}} = -200\mu\text{A}$, $V_{\text{D}} = -10\text{V}$ | - | 230 | 400 | - | 230 | 450 | Ω | |
| Greatest Change in Drain Source On Resistance Between Channels, $\Delta r_{\text{DS(ON)}}$ | $-10\text{V} \leq V_{\text{S}} \leq +10\text{V}$ $\Delta r_{\text{DS(ON)}} = \frac{r_{\text{DS(ON)MAX}} - r_{\text{DS(ON)MIN}}}{r_{\text{DS(ON)AVG}}}$ | | - | 6 | - | - | 6 | - | % | |
| Source Off Leakage Current, $I_{\text{S(OFF)}}$ | $V_{\text{EN}} = 0\text{V}$ | $V_{\text{S}} = +10\text{V}$, $V_{\text{D}} = -10\text{V}$ | -1 | 0.002 | 1 | -5 | 0.002 | 5 | nA | |
| | | $V_{\text{S}} = -10\text{V}$, $V_{\text{D}} = +10\text{V}$ | -1 | -0.005 | 1 | -5 | -0.005 | 5 | nA | |
| Drain Off Leakage Current, $I_{\text{D(OFF)}}$ DG506A | $V_{\text{EN}} = 0\text{V}$ | $V_{\text{S}} = -10\text{V}$, $V_{\text{D}} = +10\text{V}$ | -10 | 0.02 | 10 | -20 | 0.02 | 20 | nA | |
| | | $V_{\text{S}} = +10\text{V}$, $V_{\text{D}} = -10\text{V}$ | -10 | -0.03 | 10 | -20 | -0.03 | 20 | nA | |
| | | DG507A | $V_{\text{S}} = -10\text{V}$, $V_{\text{D}} = +10\text{V}$ | -5 | 0.007 | 5 | -10 | 0.007 | 10 | nA |
| | | | $V_{\text{S}} = +10\text{V}$, $V_{\text{D}} = -10\text{V}$ | -5 | -0.015 | 5 | -10 | -0.015 | 10 | nA |
| | | DG508A | $V_{\text{S}} = -10\text{V}$, $V_{\text{D}} = +10\text{V}$ | - | 0.01 | 10 | - | 0.01 | 20 | nA |
| | | | $V_{\text{S}} = +10\text{V}$, $V_{\text{D}} = -10\text{V}$ | -10 | -0.015 | - | -20 | -0.015 | - | nA |
| | | DG509A | $V_{\text{S}} = -10\text{V}$, $V_{\text{D}} = +10\text{V}$ | - | 0.005 | 10 | - | 0.005 | 20 | nA |
| | $V_{\text{S}} = +10\text{V}$, $V_{\text{D}} = -10\text{V}$ | -10 | -0.008 | - | -20 | -0.008 | - | nA | | |
| Drain On Leakage Current, $I_{\text{D(ON)}}$ DG506A | (Note 4) Sequence Each Switch On $V_{\text{AL}} = 0.8\text{V}$ $V_{\text{AH}} = 2.4\text{V}$ | $V_{\text{D}} = V_{\text{S(ALL)}} = +10\text{V}$ | -10 | 0.03 | 10 | -20 | 0.03 | 20 | nA | |
| | | $V_{\text{D}} = V_{\text{S(ALL)}} = -10\text{V}$ | -10 | -0.06 | 10 | -20 | -0.06 | 20 | nA | |
| | | DG507A | $V_{\text{D}} = V_{\text{S(ALL)}} = +10\text{V}$ | -5 | 0.015 | 5 | -10 | 0.015 | 10 | nA |
| | | | $V_{\text{D}} = V_{\text{S(ALL)}} = -10\text{V}$ | -5 | -0.03 | 5 | -10 | -0.03 | 10 | nA |
| | | DG508A | $V_{\text{D}} = V_{\text{S(ALL)}} = +10\text{V}$ | - | 0.015 | 10 | - | 0.015 | 20 | nA |
| | | | $V_{\text{D}} = V_{\text{S(ALL)}} = -10\text{V}$ | -10 | -0.03 | - | -20 | -0.03 | - | nA |
| | | DG509A | $V_{\text{D}} = V_{\text{S(ALL)}} = +10\text{V}$ | - | 0.007 | 10 | - | 0.007 | 20 | nA |
| | $V_{\text{D}} = V_{\text{S(ALL)}} = -10\text{V}$ | -10 | -0.015 | - | -20 | -0.015 | - | nA | | |
| POWER SUPPLY CHARACTERISTICS | | | | | | | | | | |
| Positive Supply Current, I_+ | $V_{\text{EN}} = 5.0\text{V}$, $V_A = 0\text{V}$ | | - | 1.3 | 2.4 | - | 1.3 | 2.4 | mA | |
| Negative Supply Current, I_- | $V_{\text{EN}} = 5.0\text{V}$, $V_A = 0\text{V}$ | | -1.5 | -0.7 | - | -1.5 | -0.7 | - | mA | |
| Positive Supply Current, I_+ Standby | $V_{\text{EN}} = 0\text{V}$, $V_A = 0\text{V}$ | | - | 1.3 | 2.4 | - | 1.3 | 2.4 | mA | |
| Negative Supply Current, I_- Standby | $V_{\text{EN}} = 0\text{V}$, $V_A = 0\text{V}$ | | -1.5 | -0.7 | - | -1.5 | -0.7 | - | mA | |

DG506A, DG507A, DG508A, DG509A

Electrical Specifications T_A = Over Operating Temperature Range, $V_+ = +15V$, $V_- = -15V$, $GND = 0V$, $V_{EN} = 2.4V$,
Unless Otherwise Specified

| PARAMETER | TEST CONDITIONS | DG506AA, DG507AA, DG508AA, DG509AA | | | DG506AB/C, DG507AB/C, DG508AB/C, DG509AB/C | | | UNITS |
|--|--|---------------------------------------|-----------------|-----|---|-----------------|-----|----------|
| | | MIN | (NOTE 2) TYP | MAX | MIN | (NOTE 2) TYP | MAX | |
| INPUT | | | | | | | | |
| Address Input Current, Input Voltage High, I_{AH} | $V_A = 2.4V$ | -30 | - | - | - | - | - | μA |
| | $V_A = 15V$ | - | - | 30 | - | - | - | μA |
| Address Input Current Input Voltage Low, I_{AL} | $V_{EN} = 2.4V$ | $V_A = 0V$ | -30 | - | - | - | - | μA |
| | $V_{EN} = 0V$ | | -30 | - | - | - | - | μA |
| SWITCHING CHARACTERISTICS | | | | | | | | |
| Analog Signal Range, V_{ANALOG} | (Note 5) | -15 | - | +15 | - | - | - | V |
| Drain Source On Resistance, $r_{DS(ON)}$ | Sequence Each Switch On $V_{AL} = 0.8V$ $V_{AH} = 2.4V$ | $I_S = -200\mu A, V_D = +10V$ | - | - | 500 | - | - | Ω |
| | | $I_S = -200\mu A, V_D = -10V$ | - | - | 500 | - | - | Ω |
| Source Off Leakage Current, $I_{S(OFF)}$ | $V_{EN} = 0V$ | $V_S = +10V, V_D = -10V$ | - | - | 50 | - | - | nA |
| | | $V_S = -10V, V_D = +10V$ | -50 | - | - | - | - | nA |
| Drain Off Leakage Current, $I_{D(OFF)}$ DG506A | $V_{EN} = 0V$ | $V_S = -10V, V_D = +10V$ | - | - | 300 | - | - | nA |
| | | $V_S = +10V, V_D = -10V$ | -300 | - | - | - | - | nA |
| DG507A | $V_{EN} = 0V$ | $V_S = -10V, V_D = +10V$ | - | - | 200 | - | - | nA |
| $V_S = +10V, V_D = -10V$ | | -200 | - | - | - | - | nA | |
| DG508A | $V_{EN} = 0V$ | $V_S = -10V, V_D = +10V$ | - | - | 200 | - | - | nA |
| $V_S = +10V, V_D = -10V$ | | -200 | - | - | - | - | nA | |
| DG509A | $V_{EN} = 0V$ | $V_S = -10V, V_D = +10V$ | - | - | 100 | - | - | nA |
| $V_S = +10V, V_D = -10V$ | | -100 | - | - | - | - | nA | |
| Drain On Leakage Current, $I_{D(ON)}$ DG506A | (Note 4) Sequence Each Switch On $V_{AL} = 0.8V$ $V_{AH} = 2.4V$ | $V_D = V_{S(ALL)} = +10V$ | - | - | 300 | - | - | nA |
| | | $V_D = V_{S(ALL)} = -10V$ | -300 | - | - | - | - | nA |
| DG507A | $V_{EN} = 0V$ | $V_D = V_{S(ALL)} = +10V$ | - | - | 200 | - | - | nA |
| $V_D = V_{S(ALL)} = -10V$ | | -200 | - | - | - | - | nA | |
| DG508A | $V_{EN} = 0V$ | $V_D = V_{S(ALL)} = +10V$ | - | - | 200 | - | - | nA |
| $V_D = V_{S(ALL)} = -10V$ | | -200 | - | - | - | - | nA | |
| DG509A | $V_{EN} = 0V$ | $V_D = V_{S(ALL)} = +10V$ | - | - | 100 | - | - | nA |
| $V_D = V_{S(ALL)} = -10V$ | | -100 | - | - | - | - | nA | |
| POWER SUPPLY CHARACTERISTICS | | | | | | | | |
| Positive Supply Current, I_+ | $V_{EN} = 5.0V, V_A = 0V$ | -3.2 | - | 4.5 | - | - | - | mA |
| Negative Supply Current I_- | $V_{EN} = 5.0V, V_A = 0V$ | -3.2 | - | 4.5 | - | - | - | mA |
| Positive Standby Supply Current I_+ | $V_{EN} = 0V, V_A = 0V$ | -3.2 | - | 4.5 | - | - | - | mA |
| Negative Standby Supply Current I_- | $V_{EN} = 0V, V_A = 0V$ | -3.2 | - | 4.5 | - | - | - | mA |

NOTES:

1. Typical values are for design aid only, not guaranteed and not subject to production testing.
2. The algebraic convention whereby the most negative value is a minimum, and the most positive value is a maximum, is used in this data sheet.
3. Off isolation = $20 \log |V_S|/|V_D|$, where V_S = input to Off switch, and V_D = output due to V_S .
4. $I_{D(ON)}$ is leakage from driver into "ON" switch.
5. Parameter not tested. Parameter guaranteed by design or characterization.

Typical Performance Curves

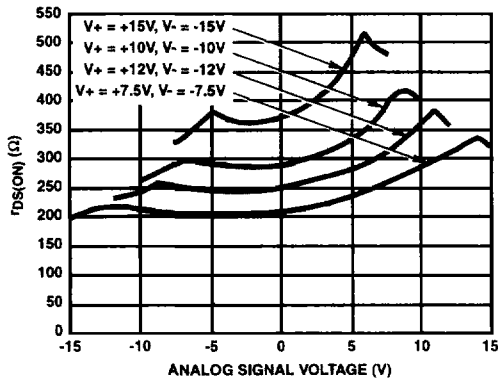


FIGURE 1. $r_{DS(ON)}$ vs ANALOG SIGNAL VOLTAGE vs SUPPLY VOLTAGE

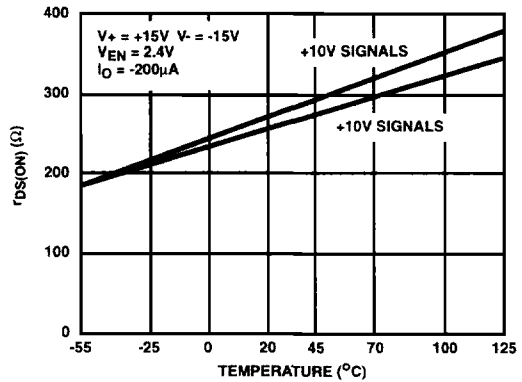
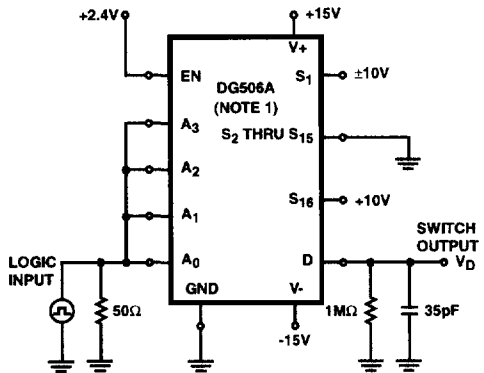


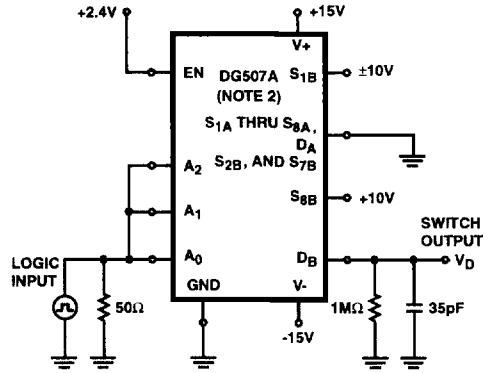
FIGURE 2. TYPICAL $r_{DS(ON)}$ VARIATION WITH TEMPERATURE

Test Circuits and Waveforms



NOTE: 1. Similar connections for DG508A

FIGURE 3A. t_r TRANSITION SWITCHING TIME TEST CIRCUIT



NOTE: 2. Similar connections for DG509A

FIGURE 3B. t_r TRANSITION SWITCHING TIME TEST CIRCUIT

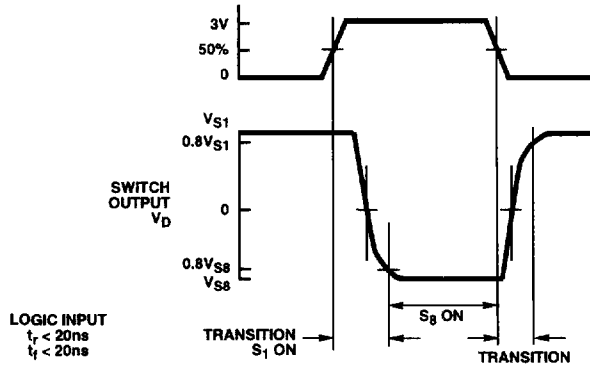
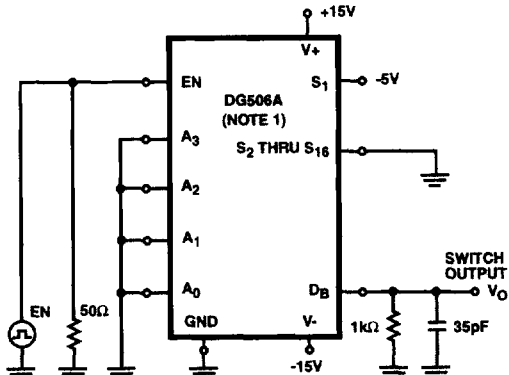


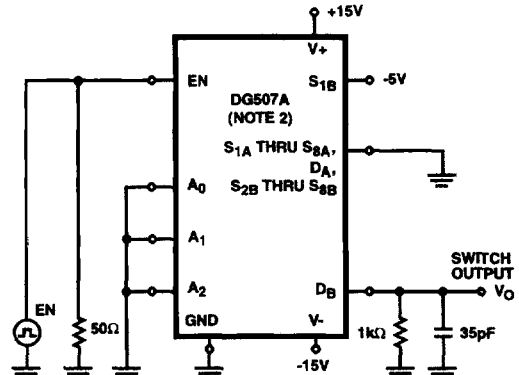
FIGURE 3C. t_r TRANSITION SWITCHING TIME WAVEFORMS

Test Circuits and Waveforms (Continued)



NOTE: 1. Similar connections for DG508A

FIGURE 4A. ENABLE t_{ON} and t_{OFF} SWITCHING TIME TEST CIRCUIT



NOTE: 2. Similar connections for DG509A

FIGURE 4B. ENABLE t_{ON} and t_{OFF} SWITCHING TIME TEST CIRCUIT

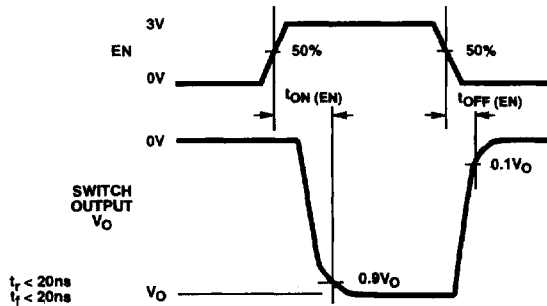
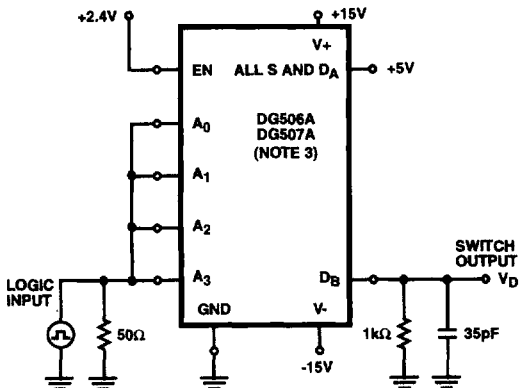


FIGURE 4C. ENABLE t_{ON} and t_{OFF} SWITCHING TIME WAVEFORMS



NOTE: 3. Similar connections for DG508A, DG509A.

FIGURE 5A. t_{OPEN} (BREAK-BEFORE-MAKE) SWITCHING TIME TEST CIRCUIT

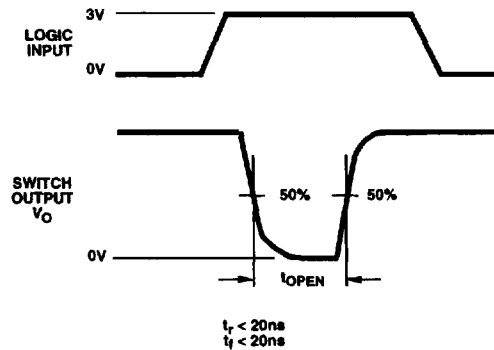
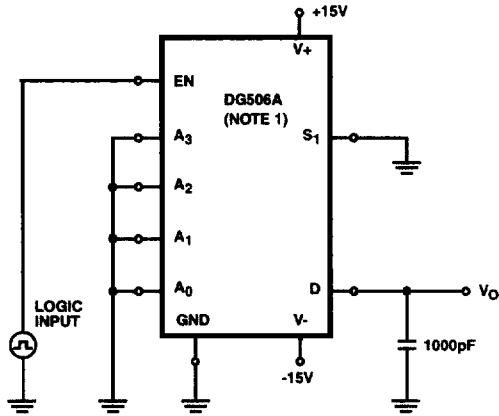


FIGURE 5B. t_{OPEN} (BREAK-BEFORE-MAKE) SWITCHING TIME WAVEFORMS

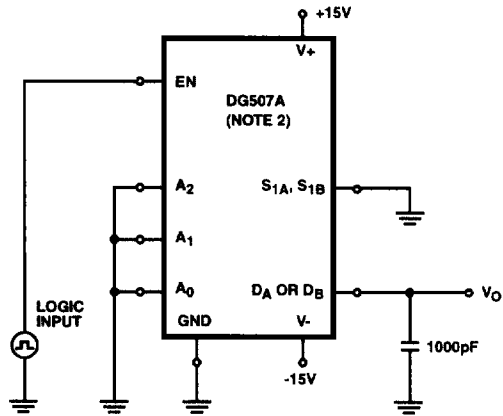
Test Circuits and Waveforms (Continued)



NOTE:

1. Similar connections for DG508A.

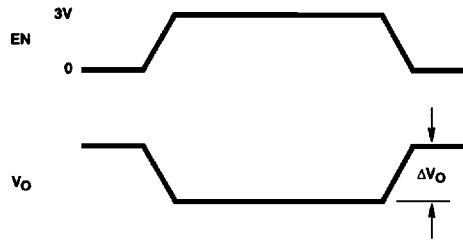
FIGURE 6A. CHARGE INJECTION TEST CIRCUIT



NOTE:

2. Similar connections for DG509A.

FIGURE 6B. CHARGE INJECTION TEST CIRCUIT



ΔV_O is the measured voltage error due to charge injection.
The error voltage in Coulombs is $Q = C_L \times \Delta V_O$.

FIGURE 6C. CHARGE INJECTION WAVEFORMS

DG506A, DG507A, DG508A, DG509A

Truth Tables

DG506A

| A ₃ | A ₂ | A ₁ | A ₀ | EN | ON SWITCH |
|----------------|----------------|----------------|----------------|----|-----------|
| X | X | X | X | 0 | None |
| 0 | 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 1 | 2 |
| 0 | 0 | 1 | 0 | 1 | 3 |
| 0 | 0 | 1 | 1 | 1 | 4 |
| 0 | 1 | 0 | 0 | 1 | 5 |
| 0 | 1 | 0 | 1 | 1 | 6 |
| 0 | 1 | 1 | 0 | 1 | 7 |
| 0 | 1 | 1 | 1 | 1 | 8 |
| 1 | 0 | 0 | 0 | 1 | 9 |
| 1 | 0 | 0 | 1 | 1 | 10 |
| 1 | 0 | 1 | 0 | 1 | 11 |
| 1 | 0 | 1 | 1 | 1 | 12 |
| 1 | 1 | 0 | 0 | 1 | 13 |
| 1 | 1 | 0 | 1 | 1 | 14 |
| 1 | 1 | 1 | 0 | 1 | 15 |
| 1 | 1 | 1 | 1 | 1 | 16 |

Logic "0" = V_{AL}, V_{ENL} ≤ 0.8V, Logic "1" = V_{AH}, V_{ENH} ≥ 2.4V.

DG508A

| A ₂ | A ₁ | A ₀ | EN | ON SWITCH |
|----------------|----------------|----------------|----|-----------|
| X | X | X | 0 | None |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 1 | 2 |
| 0 | 1 | 0 | 1 | 3 |
| 0 | 1 | 1 | 1 | 4 |
| 1 | 0 | 0 | 1 | 5 |
| 1 | 0 | 1 | 1 | 6 |
| 1 | 1 | 0 | 1 | 7 |
| 1 | 1 | 1 | 1 | 8 |

A₀, A₁, A₂, EN
Logic "1" = V_{AH} ≥ 2.4V, Logic "0" = V_{AL} ≤ 0.8V

DG507A

| A ₂ | A ₁ | A ₀ | EN | ON SWITCH |
|----------------|----------------|----------------|----|-----------|
| X | X | X | 0 | None |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 1 | 2 |
| 0 | 1 | 0 | 1 | 3 |
| 0 | 1 | 1 | 1 | 4 |
| 1 | 0 | 0 | 1 | 5 |
| 1 | 0 | 1 | 1 | 6 |
| 1 | 1 | 0 | 1 | 7 |
| 1 | 1 | 1 | 1 | 8 |

Logic "0" = V_{AL}, V_{ENL} ≤ 0.8V, Logic "1" = V_{AH}, V_{ENH} ≥ 2.4V.

DG509A

| A ₁ | A ₀ | EN | ON SWITCH |
|----------------|----------------|----|-----------|
| X | X | 0 | None |
| 0 | 0 | 1 | 1A, 1B |
| 0 | 1 | 1 | 2A, 2B |
| 1 | 0 | 1 | 3A, 3B |
| 1 | 1 | 1 | 4A, 4B |

A₀, A₁, EN
Logic "1" = V_{AH} ≥ 2.4V, Logic "0" = V_{AL} ≤ 0.8V.

DG506A, DG507A, DG508A, DG509A

Die Characteristics

DIE DIMENSIONS:

3810 μ m x 2770 μ m

METALLIZATION:

Type: Al

Thickness: 10k \AA \pm 1k \AA

PASSIVATION:

Type: PSG/Nitride

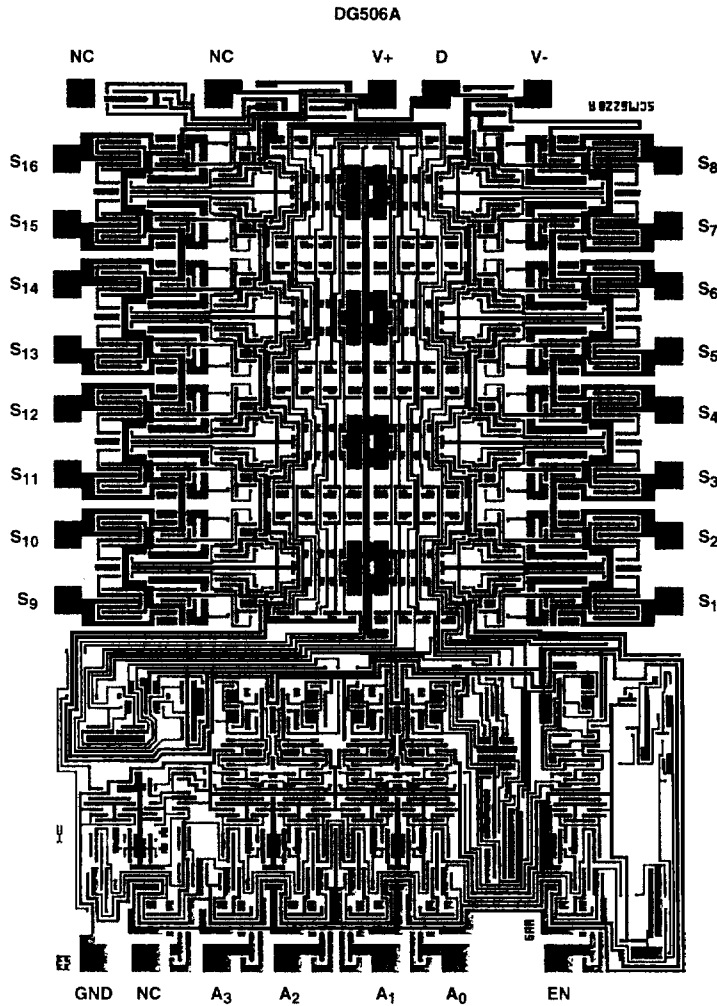
Thickness: PSG: 7k \AA \pm 1.4k \AA

Nitride: 8k \AA \pm 1.2k \AA

WORST CASE CURRENT DENSITY:

9.1 x 10⁴ A/cm²

Metallization Mask Layout



DG506A, DG507A, DG508A, DG509A

Die Characteristics

DIE DIMENSIONS:

3810 μ m x 2770 μ m

METALLIZATION:

Type: Al

Thickness: 10k \AA \pm 1k \AA

PASSIVATION:

Type: PSG/Nitride

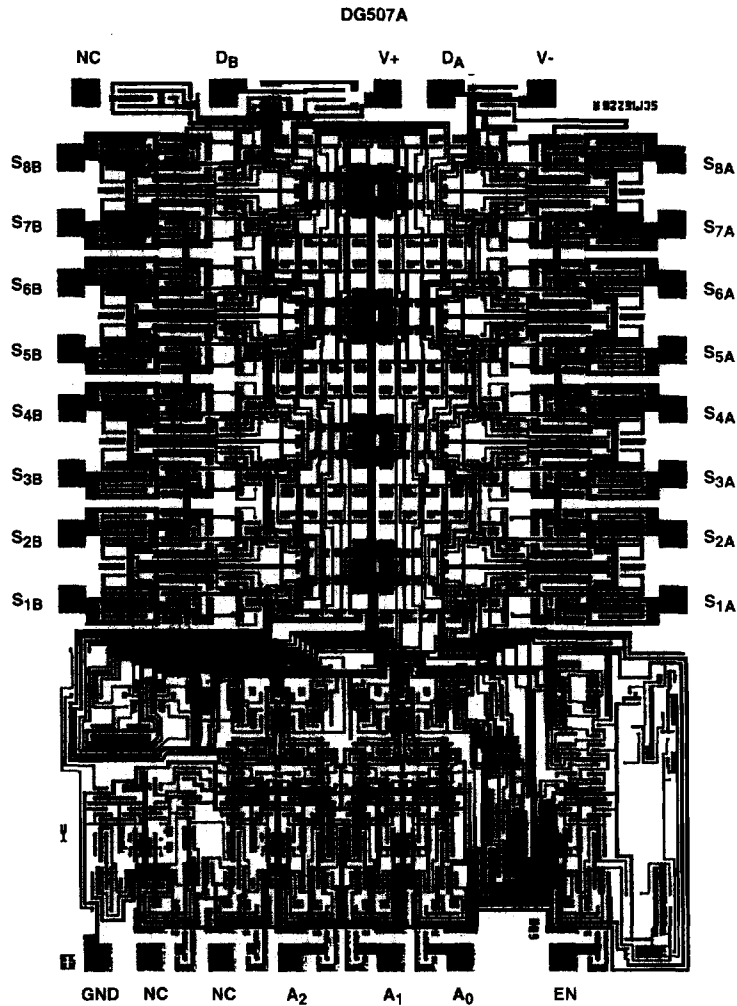
Thickness: PSG: 7k \AA \pm 1.4k \AA

Nitride: 8k \AA \pm 1.2k \AA

WORST CASE CURRENT DENSITY:

9.1 x 10⁴ A/cm²

Metallization Mask Layout



DG506A, DG507A, DG508A, DG509A

Die Characteristics

DIE DIMENSIONS:

3100 μ m x 2083 μ m

METALLIZATION:

Type: Al
Thickness: 10k \AA \pm 1k \AA

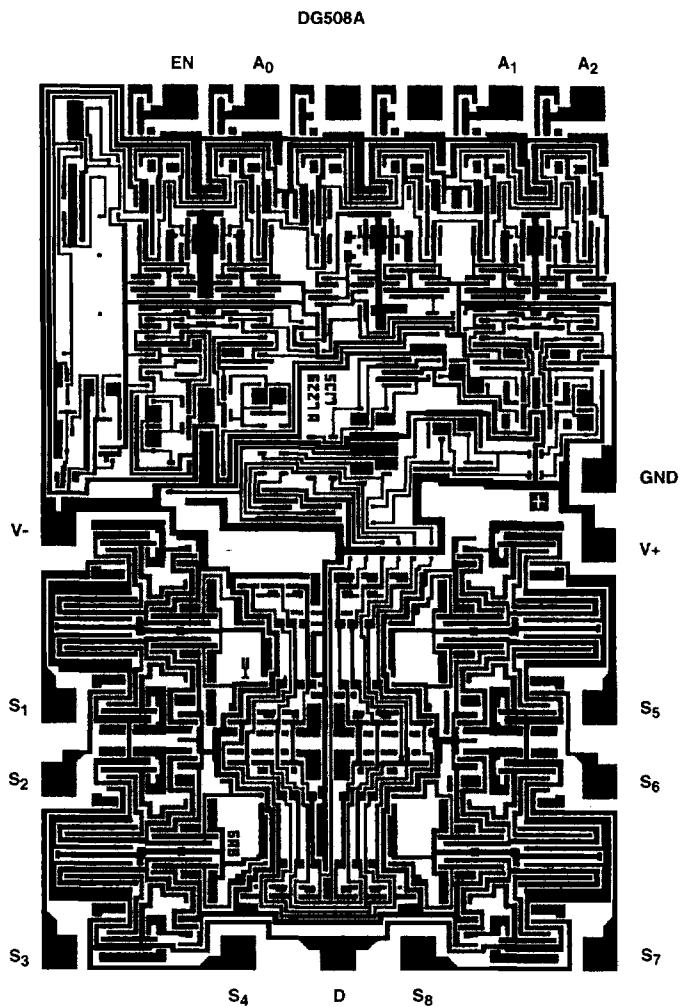
PASSIVATION:

Type: PSG/Nitride
Thickness: PSG: 7k \AA \pm 1.4k \AA
Nitride: 8k \AA \pm 1.2k \AA

WORST CASE CURRENT DENSITY:

9.1 x 10⁴ A/cm²

Metallization Mask Layout



DG506A, DG507A, DG508A, DG509A

Die Characteristics

DIE DIMENSIONS:

3100 μ m x 2083 μ m

METALLIZATION:

Type: Al

Thickness: 10k \AA \pm 1k \AA

PASSIVATION:

Type: PSG/Nitride

Thickness: PSG: 7k \AA \pm 1.4k \AA

Nitride: 8k \AA \pm 1.2k \AA

WORST CASE CURRENT DENSITY:

9.1 x 10⁴ A/cm²

Metallization Mask Layout

DG509A

