

MM450/451/452/455

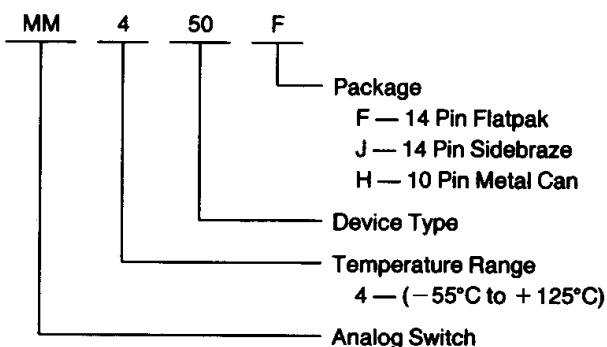
High Reliability High Voltage Analog Switch

GENERAL DESCRIPTION

The MM450, and MM550 series each contain p channel MOS enhancement mode transistors. These devices are useful in airborne and ground support systems requiring multiplexing, analog transmission, and numerous signal routing applications. The use of low threshold transistors ($V_{TH}=2$ volts) permits operations with large analog input swings (± 10 volts) at low gate voltages (-20 volts).

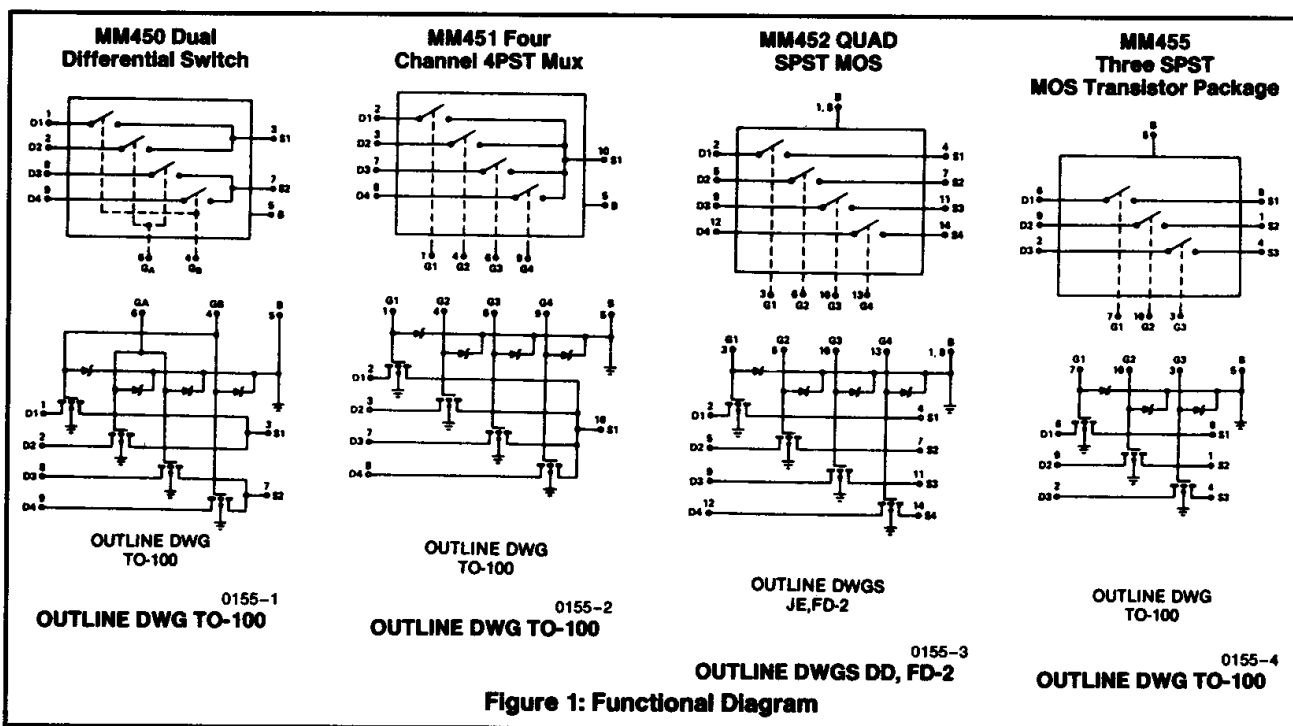
Each gate input is protected from static charge build-up by the incorporation of zener diode protective devices connected between the gate input and device bulk.

ORDERING INFORMATION



FEATURES

- Large Analog Input — $\pm 10\text{V}$
- Low Supply Voltage — $V_{BULK} = +10\text{V}$
 $V_{GG} = -20\text{V}$
- Typical ON Resistance — $V_{IN} = -10\text{V}$, 150Ω
 $V_{IN} = +10\text{V}$, 75Ω
- Low Leakage Current — 200pA Typical @ 25°C
- Input Gate Protection



MM450/451/452/455**ABSOLUTE MAXIMUM RATINGS** (Note 1)

| | |
|-----------------------------|----------------|
| Gate Voltage (V_{GG}) | +14.5V to -30V |
| Bulk Voltage (V_{BULK}) | +14V |
| Analog Input (V_{IN}) | +14V to -20V |
| Power Dissipation | 200mW |

Operating Temperature

| | |
|-------------------------------------|-----------------|
| MM450, MM451, MM452, MM455 | -55°C to +125°C |
| MM550, MM551, MM552, MM555 | 0°C to 70°C |
| Storage Temperature | -65°C to +150°C |
| Lead Temperature (Soldering, 10sec) | 300°C |

NOTE 1: Dissipation rating assumes device is mounted with all leads welded or soldered to printed circuit board in ambient temperature below 70°C. For higher temperature, derate at rate of 10mW/°C for FD package and 6.5 mW/°C for TW package.

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

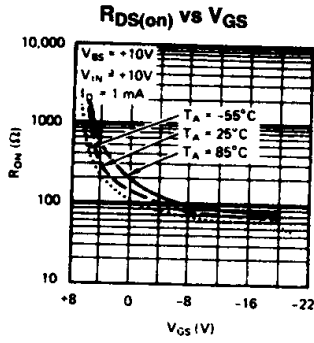
ELECTRICAL CHARACTERISTICS (per channel unless noted)

| Symbol | Characteristic | Type | Test Conditions | Limits | | | |
|--------------|----------------------------|------------------------------|--|--------------|-------|------------|----------|
| | | | | 25°C | 125°C | Min Max | Units |
| V_{IN} | Analog Input Voltage | All | | ±10 | | Max | V |
| $V_{GS(Th)}$ | Threshold Voltage | All | $V_{DG} = 0$ $I_D = -10\mu A$ | -3.0 -1.0 | | Min Max | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance | All | $V_{IN} = -10V$ $I_D = 10mA$ $V_B = 10V$ | 600 | 700 | Max | Ω |
| | | | $V_{IN} = +10V$ $V_{GS} = -20V$ | 200 | 250 | Max | Ω |
| I_{GBS} | Gate Leakage Current | All | $V_{GS} = -25V, V_{BS} = V_{DS} = 0$ | ±5 | 100 | Max | nA |
| $I_{D(OFF)}$ | Drain Leakage Current | MM450, MM451 MM452, MM455 | $V_{DB} = -25V$ $V_{GB} = V_{SB} = 0$ | ±0.5 | 200 | Max | nA |
| $I_{S(OFF)}$ | Source Leakage Current | MM450, MM451 MM452, MM455 | $V_{SB} = -25V$ $V_{DB} = V_{GB} = 0$ | ±0.5 | 400 | Max | nA |
| C_{DB} | Drain-Body Capacitance | All | $V_{DB} = V_{GB} = V_{SB} = 0$ $f = 1MHz$ (Note 1) | 10 | | Typ | pF |
| C_{SB} | Source-Body Capacitance | MM450 | | 14 | | Typ | pF |
| | | MM451 | | 24 | | Typ | pF |
| | | MM452 | | 11 | | Typ | pF |
| | | MM455 | | 11 | | Typ | pF |
| C_{GB} | Gate-Body Capacitance | MM450 | | 13 | | Typ | pF |
| | | MM451 | | 8 | | Typ | pF |
| | | MM452 | | 9 | | Typ | pF |
| | | MM455 | | 9 | | Typ | pF |
| C_{GS} | Gate-Source Capacitance | All | | 5 | | Typ | pF |

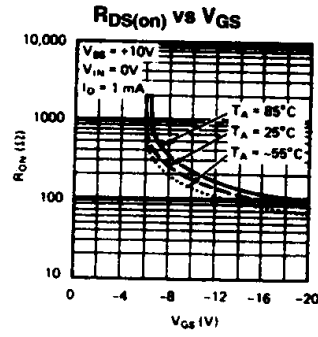
NOTE 1: Typical characteristics not tested in production

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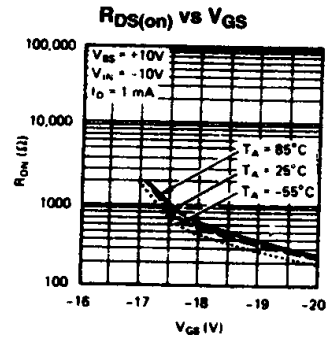
TYPICAL PERFORMANCE CHARACTERISTICS



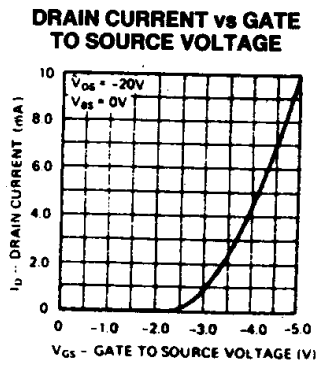
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0155-6



0155-7



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