

# MM450/451/452/455

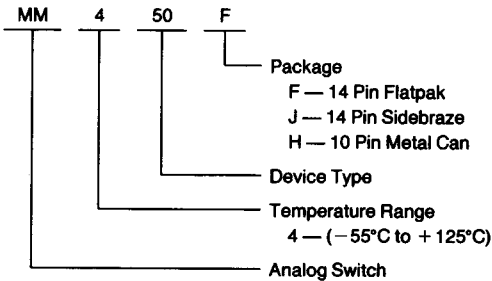
## High Reliability High Voltage Analog Switch

### 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 ( $\pm 10$  volts) at low gate voltages ( $-20$  volts).

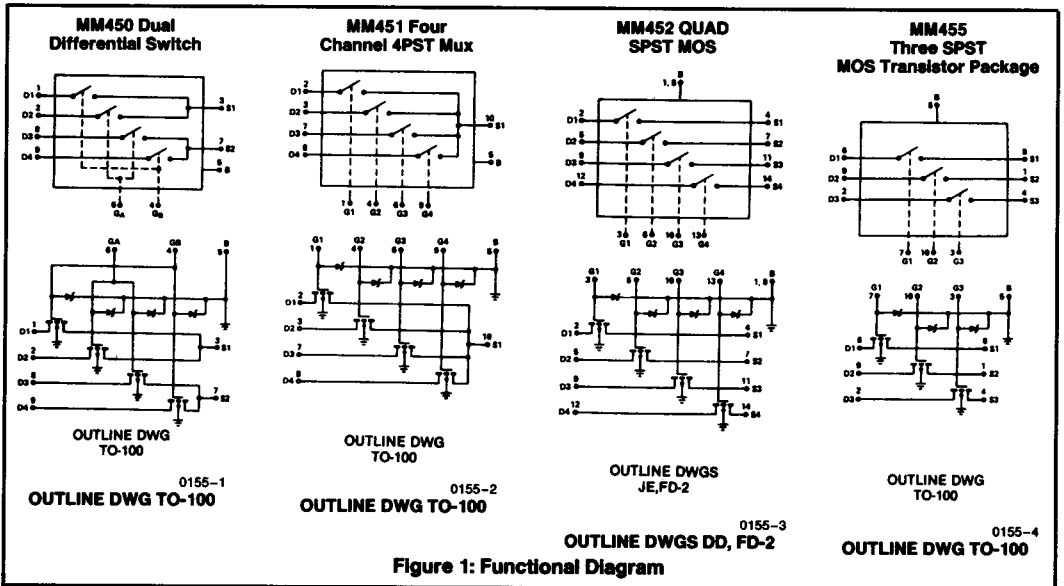
Each gate input is protected from static charge build-up by the incorporation of zener diode protective devices connected between the gate input and device bulk.

### ORDERING INFORMATION



### FEATURES

- Large Analog Input —  $\pm 10V$
- Low Supply Voltage —  $V_{BULK} = +10V$   
 $V_{GG} = -20V$
- Typical ON Resistance —  $V_{IN} = -10V, 150\Omega$   
 $V_{IN} = +10V, 75\Omega$
- 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.

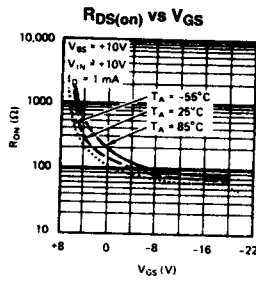
## ELECTRICAL CHARACTERISTICS (per channel unless noted)

Symbol	Characteristic	Type	Test Conditions	Limits			Units
				25°C	125°C	Min	
						Max	
$V_{IN}$	Analog Input Voltage	All		± 10		Max	V
$V_{GS(Th)}$	Threshold Voltage	All	$V_{DG} = 0$ $I_D = -10\mu A$	-3.0		Min	v
$R_{DS(ON)}$	Drain-Source On Resistance	All	$V_{IN} = -10V$	600	700	Max	$\Omega$
			$V_{IN} = +10V$				
$I_{GBS}$	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

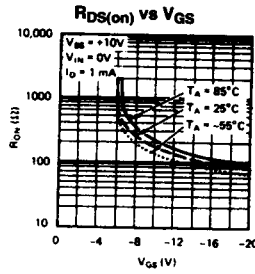
**NOTE 1:** Typical characteristics not tested in production

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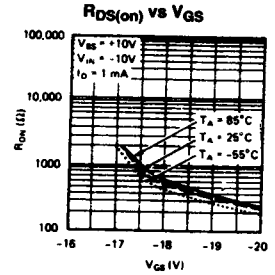
## TYPICAL PERFORMANCE CHARACTERISTICS



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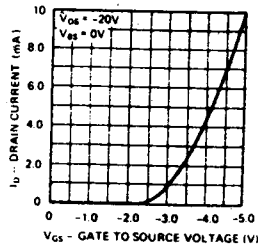


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### DRAIN CURRENT vs GATE TO SOURCE VOLTAGE



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