

MFE9200

CASE 22-03, STYLE 12
TO-18 (TO-206AA)

TMOS SWITCHING

N-CHANNEL — ENHANCEMENT

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	Vdc
Gate-Source Voltage	V_{GS}	± 20	Vdc
Drain Current Continuous (1) Pulsed (2)	I_D I_{DM}	400 800	mAdc
Total Device Dissipation (θ $T_C = 25^\circ\text{C}$ Derate above 25°C)	P_D	1.8 14.4	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 10 \mu\text{A}$)	$V_{(BR)DSX}$	200	—	—	Vdc
Gate Reverse Current ($V_{GS} = 15 \text{ Vdc}, V_{DS} = 0$)	I_{GSS}	—	0.01	50	nAdc

ON CHARACTERISTICS*

Zero-Gate-Voltage Drain Current* ($V_{DS} = 200 \text{ V}, V_{GS} = 0$)	I_{DSS}	—	0.1	10	μAdc
Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{ mA}$)	$V_{GS(Th)}$	1.0	—	4.0	Vdc
Drain-Source On-Voltage ($V_{GS} = 10 \text{ V}$) ($I_D = 100 \text{ mA}$) ($I_D = 250 \text{ mA}$) ($I_D = 500 \text{ mA}$)	$V_{DS(on)}$	— — —	0.45 1.20 3.0	0.6 1.60 —	Vdc
Static Drain-Source On Resistance ($V_{GS} = 10 \text{ Vdc}$) ($I_D = 100 \text{ mA}$) ($I_D = 250 \text{ mA}$) ($I_D = 500 \text{ mA}$)	$r_{DS(on)}$	— — —	4.5 4.8 6.0	6.0 6.4 —	Ohms
On-State Drain Current ($V_{DS} = 25 \text{ V}, V_{GS} = 10 \text{ V}$)	$I_{D(on)}$	400	700	—	mA

SMALL-SIGNAL CHARACTERISTICS

Input Capacitance ($V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{iss}	—	72	90	pF
Reverse Transfer Capacitance ($V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{rss}	—	2.8	3.5	pF
Output Capacitance ($V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{oss}	—	15	20	pF
Forward Transconductance ($V_{DS} = 25 \text{ V}, I_D = 250 \text{ mA}$)	g_{fs}	200	400	—	mmhos

SWITCHING CHARACTERISTICS

Turn-On Time See Figure 1	t_{on}	—	6.0	15	ns
Turn-Off Time See Figure 1	t_{off}	—	6.0	15	ns

* Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

RESISTIVE SWITCHING

FIGURE 1 — SWITCHING TEST CIRCUIT

FIGURE 2 — SWITCHING WAVEFORMS

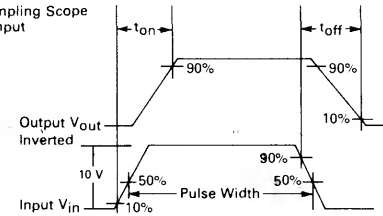
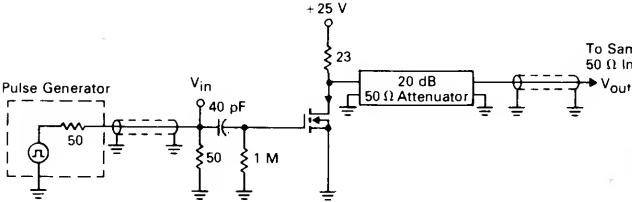


FIGURE 3 — ON VOLTAGE versus TEMPERATURE

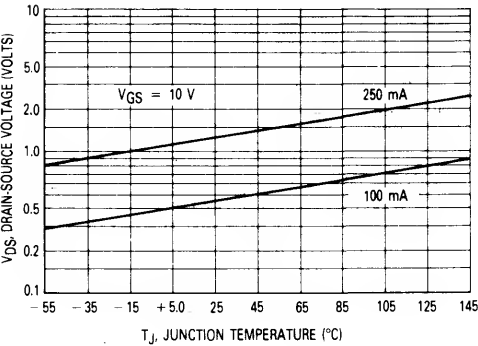


FIGURE 4 — CAPACITANCE VARIATION

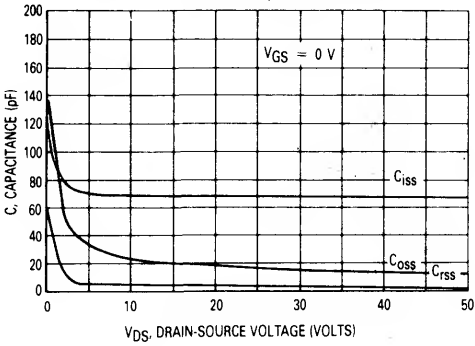


FIGURE 5 — TRANSFER CHARACTERISTIC

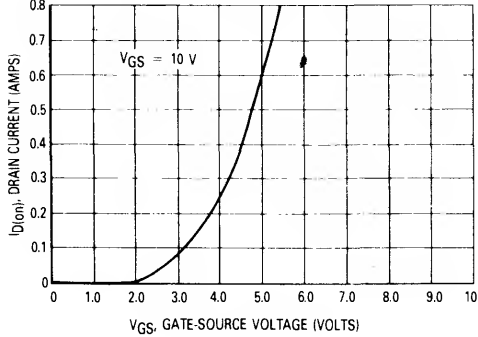


FIGURE 6 — OUTPUT CHARACTERISTIC

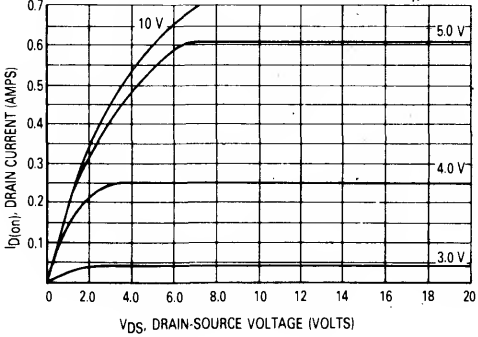


FIGURE 7 — SATURATION CHARACTERISTIC

