

MOTOROLA

MAXIMUM RATINGS

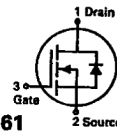
Rating	Symbol	2N6659 MPF6659	2N6660 MPF6660	2N6661 MPF6661	Unit
Drain-Source Voltage	V _{DS}	35	60	90	Vdc
Drain-Gate Voltage	V _{DG}	35	60	90	Vdc
Gate-Source Voltage	V _{GS}	± 30			Vdc
Drain Current — Continuous (1) Pulsed (2)	I _D	2.0			Adc
	I _{DM}	3.0			
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	2N6659 2N6660 2N6661	MPF6659 MPF6660 MPF6661		Watts mW/°C
		6.25 50	2.5 20		
		— —	1.0 8.0		
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	— —	1.0 8.0		Watts mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150			°C

(1) The Power Dissipation of the package may result in a lower continuous drain current.

(2) Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

2N6659 MPF6659 thru 2N6661 MPF6661

2N6659,60,61
CASE 79-04, STYLE 6
TO-39 (TO-205AD)



MPF6659,60,61
CASE 29-03, STYLE 22
TO-92 (TO-226AE)



**TMOS SWITCHING
FET TRANSISTORS**
N-CHANNEL — ENHANCEMENT

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Zero-Gate-Voltage Drain Current (V _{DS} = Maximum Rating, V _{GS} = 0)	I _{DSS}	—	—	10	μAdc
Gate-Body Leakage Current (V _{GS} = 15 V, V _{DS} = 0)	I _{GSS}	—	—	100	nAdc
Drain-Source Breakdown Voltage (V _{GS} = 0, I _D = 10 μA)	V _{(BR)DSX}	35 60 90	— — —	— — —	Vdc
		2N6659, MPF6659 2N6660, MPF6660 2N6661, MPF6661			

ON CHARACTERISTICS(1)

Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = 1.0 mA)	V _{GS(Th)}	0.8	1.4	2.0	Vdc
Drain-Source On-Voltage (V _{GS} = 10 V, I _D = 1.0 A)	V _{DS(on)}	2N6659, MPF6659	—	—	1.8
		2N6660, MPF6660	—	—	3.0
		2N6661, MPF6661	—	—	4.0
(V _{GS} = 5.0 V, I _D = 0.3 A)	V _{DS(on)}	2N6659, MPF6659	—	0.8	1.5
		2N6660, MPF6660	—	0.9	1.5
		2N6661, MPF6661	—	0.9	1.6
		—	—	—	—
Static Drain-Source On Resistance (V _{GS} = 10 Vdc, I _D = 1.0 Adc)	r _{DS(on)}	—	—	1.8 3.0 4.0	Ohms
		2N6659, MPF6659 2N6660, MPF6660 2N6661, MPF6661			
On-State Drain Current (V _{DS} = 25 V, V _{GS} = 10 V)	I _{D(on)}	1.0	2.0	—	Amps

SMALL-SIGNAL CHARACTERISTICS

Input Capacitance (V _{DS} = 25 V, V _{GS} = 0, f = 1.0 MHz)	C _{iss}	—	30	50	pF
Reverse Transfer Capacitance (V _{DS} = 25 V, V _{GS} = 0, f = 1.0 MHz)	C _{rss}	—	3.6	10	pF
Output Capacitance (V _{DS} = 25 V, V _{GS} = 0, f = 1.0 MHz)	C _{oss}	—	20	40	pF
Forward Transconductance (V _{DS} = 25 V, I _D = 0.5 A)	g _{fs}	170	—	—	mmhos

MOTOROLA SMALL-SIGNAL TRANSISTORS, FETs AND DIODES

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2N6659 thru 2N6661, MPF6659 thru MPF6661

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
SWITCHING CHARACTERISTICS(1)					
Rise Time	t _r	—	—	5.0	ns
Fall Time	t _f	—	—	5.0	ns
Turn-On Time	t _{on}	—	—	5.0	ns
Turn-Off Time	t _{off}	—	—	5.0	ns

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

RESISTIVE SWITCHING

FIGURE 1 — SWITCHING TEST CIRCUIT

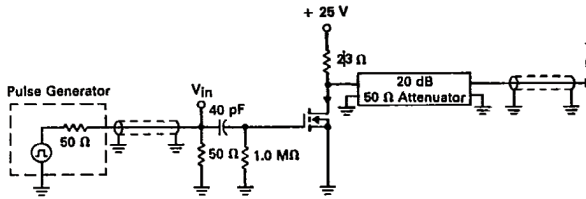


FIGURE 2 — SWITCHING WAVEFORMS

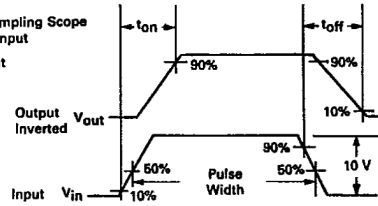


FIGURE 3 — V_{GS(th)} NORMALIZED versus TEMPERATURE

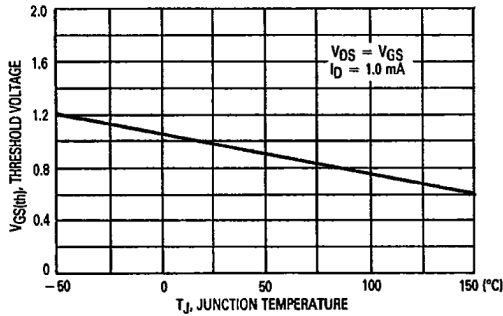


FIGURE 4 — ON-REGION CHARACTERISTICS

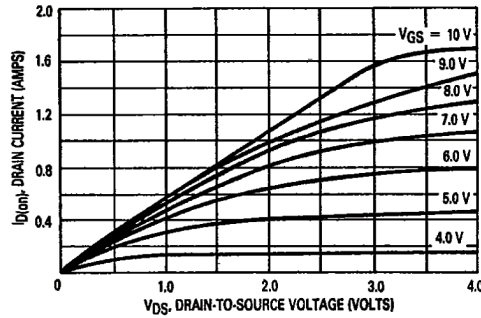


FIGURE 5 — OUTPUT CHARACTERISTICS

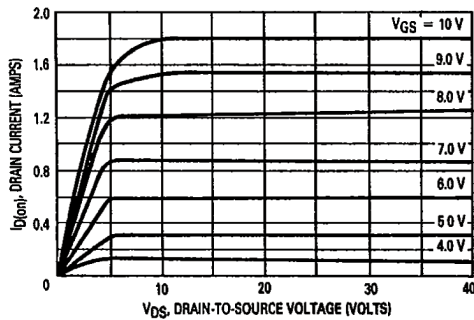


FIGURE 6 — CAPACITANCE versus DRAIN-TO-SOURCE VOLTAGE

