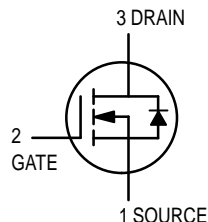
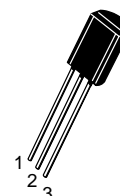


TMOS FET Transistors

N-Channel — Enhancement



MPF6659
MPF6660
MPF6661



CASE 29-05, STYLE 22
TO-92 (TO-226AE)

MAXIMUM RATINGS

Rating	Symbol	MPF6659	MPF6660	MPF6661	Unit
Drain-Source Voltage	V_{DS}	35	60	90	Vdc
Drain-Gate Voltage	V_{DG}	35	60	90	Vdc
Gate-Source Voltage — Continuous — Non-repetitive ($t_p \leq 50 \mu s$)	V_{GS} V_{GSM}	± 20 ± 40			Vdc Vpk
Drain Current Continuous(1) Pulsed(2)	I_D I_{DM}	2.0 3.0			Adc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	2.5 20			Watts mW/ $^\circ C$
Total Device Dissipation @ $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	1.0 8.0			Watts mW/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150			$^\circ C$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Zero-Gate-Voltage Drain Current ($V_{DS} = \text{Maximum Rating}, V_{GS} = 0$)	I_{DSS}	—	—	10	μA_{dc}
Gate-Body Leakage Current ($V_{GS} = 15 \text{ Vdc}, V_{DS} = 0$)	I_{GSS}	—	—	100	nAdc
Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 10 \mu A_{dc}$)	$V_{(BR)DSX}$	35 60 90	— — —	— — —	Vdc

ON CHARACTERISTICS(2)

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{ mAdc}$)	$V_{GS(Th)}$	0.8	1.4	2.0	Vdc
Drain-Source On-Voltage ($V_{GS} = 10 \text{ Vdc}, I_D = 1.0 \text{ Adc}$)	$V_{DS(on)}$	— — —	— — —	1.8 3.0 4.0	Vdc
($V_{GS} = 5.0 \text{ Vdc}, I_D = 0.3 \text{ Adc}$)		— — —	0.8 0.9 0.9	1.5 1.5 1.6	

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

MPF6659 MPF6660 MPF6661

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

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS(2) (Continued)					
Static Drain–Source On Resistance (V _{GS} = 10 Vdc, I _D = 1.0 Adc)	r _{DS(on)}	—	—	1.8	Ω
MPF6659		—	—	3.0	
MPF6660		—	—	4.0	
MPF6661					
On–State Drain Current (V _{DS} = 25 Vdc, V _{GS} = 10 Vdc)	I _{D(on)}	1.0	2.0	—	Amps

SMALL–SIGNAL CHARACTERISTICS

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

SWITCHING CHARACTERISTICS(2)

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

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

RESISTIVE SWITCHING

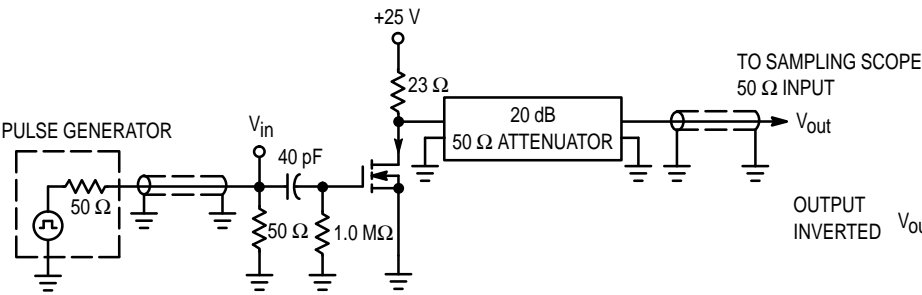


Figure 1. Switching Test Circuit

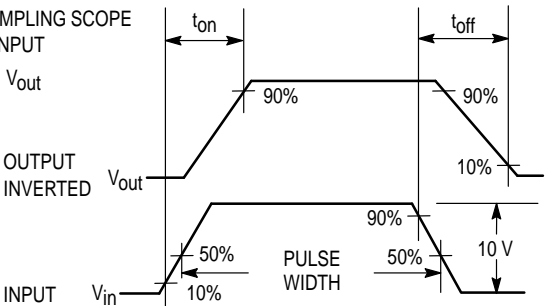


Figure 2. Switching Waveforms

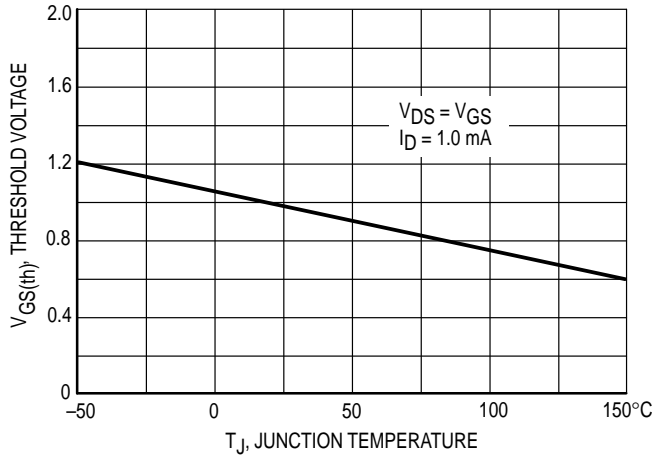


Figure 3. $V_{GS(th)}$ Normalized versus Temperature

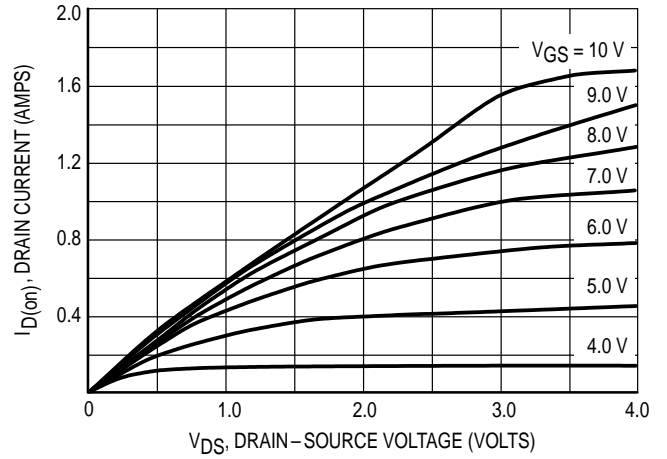


Figure 4. On-Region Characteristics

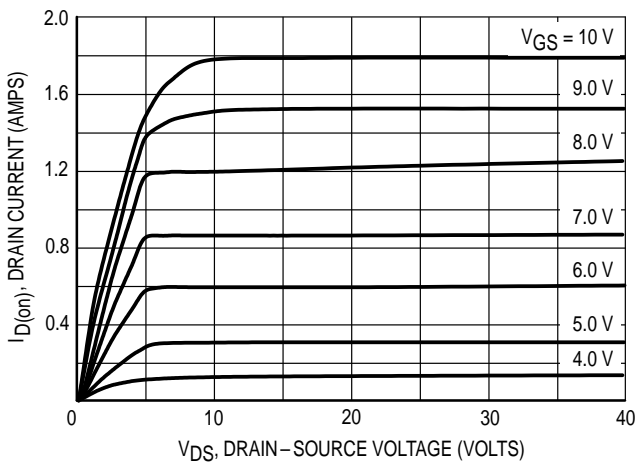


Figure 5. Output Characteristics

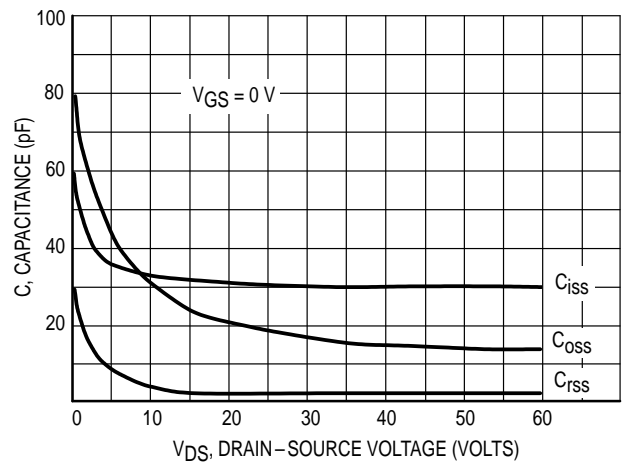


Figure 6. Capacitance versus Drain-To-Source Voltage

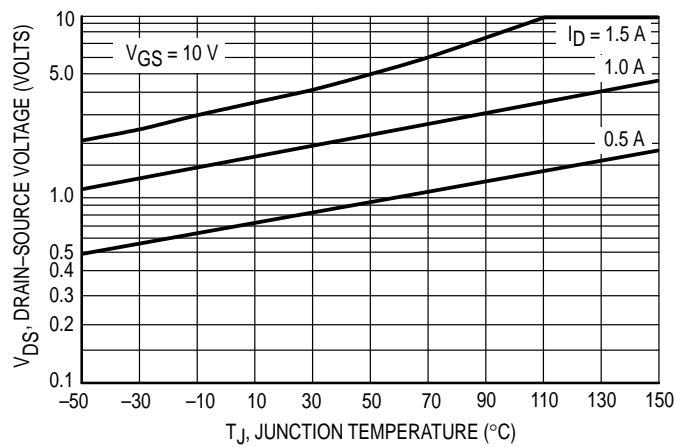
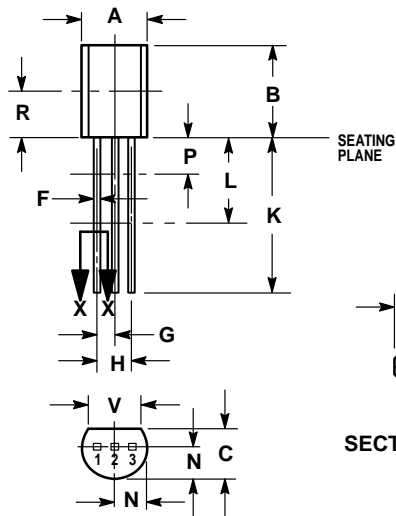


Figure 7. On-Voltage versus Temperature

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSIONS D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.022	0.46	0.56
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.135	—	3.43	—
V	0.135	—	3.43	—

SECTION X-X

**CASE 029-05
(TO-226AE)
ISSUE AD**

STYLE 22:

- PIN 1. SOURCE
2. GATE
3. DRAIN

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How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
INTERNET: <http://Design-NET.com>

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center,
3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 81-3-3521-8315

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

