MPF930, MPF960, MPF990

Preferred Device

Small Signal MOSFET 2 Amps, 35, 60, 90 Volts

N–Channel TO–92

MAXIMUM RATINGS

Rating	Symbol	MPF930	MPF960	MPF990	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 ($t_p \le 50$ μs)	V_{GS} V_{GSM}	±20 ±40			Vdc Vpk
Drain Current Continuous (Note 1.) Pulsed (Note 2.)	I_D I_{DM}	2.0 3.0			Adc
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
Thermal Resistance	θ_{JA}	125			°C/W

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

ON Semiconductor

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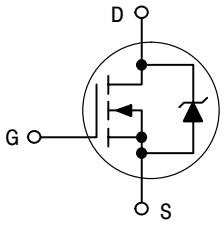
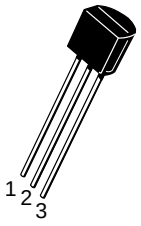
2 AMPERES
35, 60, 90 VOLTS
$R_{DS(on)}$ = 0.7 Ω (MPF930)
$R_{DS(on)}$ = 0.8 Ω (MPF960)
$R_{DS(on)}$ = 1.2 Ω (MPF990)

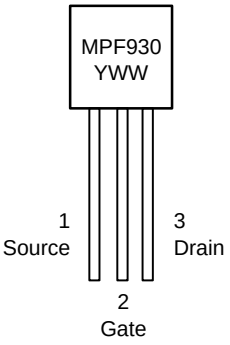
N–Channel





TO–92
CASE 29
Style 22

MARKING DIAGRAM & PIN ASSIGNMENT



Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–Source Breakdown Voltage (V_{GS} = 0, I_D = 10 μAdc)	MPF930	$V_{(BR)DSX}$	35	–	–	Vdc
	MPF960		60	–	–	
	MPF990		90	–	–	
Gate Reverse Current (V_{GS} = 15 Vdc, V_{DS} = 0)		I_{GSS}	–	–	50	nAdc
ON CHARACTERISTICS (Note 2.)						
Zero–Gate–Voltage Drain Current (V_{DS} = Maximum Rating, V_{GS} = 0)		I_{DSS}	–	–	10	μAdc
Gate Threshold Voltage (I_D = 1.0 mAdc, V_{DS} = V_{GS})		$V_{GS(Th)}$	1.0	–	3.5	Vdc
Drain–Source On–Voltage (V_{GS} = 10 Vdc)		$V_{DS(on)}$				Vdc
(I_D = 0.5 Adc)	MPF930		–	0.4	0.7	
	MPF960		–	0.6	0.8	
	MPF990		–	0.6	1.2	
(I_D = 1.0 Adc)	MPF930		–	0.9	1.4	
	MPF960		–	1.2	1.7	
	MPF990		–	1.2	2.4	
(I_D = 2.0 Adc)	MPF930		–	2.2	3.0	
	MPF960		–	2.8	3.5	
	MPF990		–	2.8	4.8	
Static Drain–Source On Resistance (V_{GS} = 10 Vdc, I_D = 1.0 Adc)	MPF930	$r_{DS(on)}$	–	0.9	1.4	Ω
	MPF960		–	1.2	1.7	
	MPF990		–	1.2	2.0	
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}	–	70	–	pF
Reverse Transfer Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	–	20	–	pF
Output Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{oss}	–	49	–	pF
Forward Transconductance (V_{DS} = 25 Vdc, I_D = 0.5 Adc)		g_{fs}	200	380	–	mmhos
SWITCHING CHARACTERISTICS						
Turn–On Time		t_{on}	–	7.0	15	ns
Turn–Off Time		t_{off}	–	7.0	15	ns

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

RESISTIVE SWITCHING

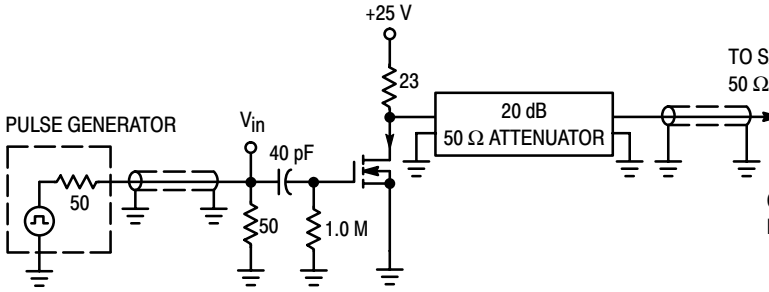


Figure 1. Switching Test Circuit

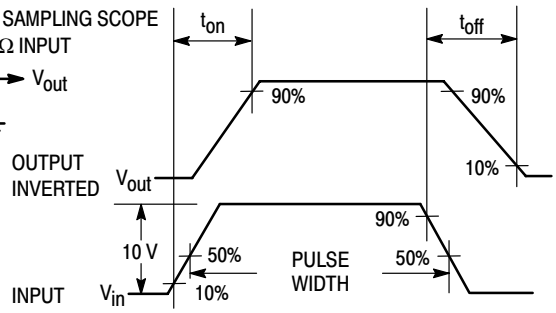


Figure 2. Switching Waveforms

ORDERING INFORMATION

Device	Package	Shipping
MPF930	TO–92	1000 Unit/Box
MPF930RLRE	TO–92	2000 Tape & Reel
MPF930A	TO–92	1000 Unit/Box
MPF930ARLRE	TO–92	2000 Tape & Reel
MPF960	TO–92	1000 Unit/Box
MPF960RLRA	TO–92	2000 Tape & Reel
MPF990	TO–92	1000 Unit/Box
MPF990RLRA	TO–92	2000 Tape & Reel
MPF990RLRP	TO–92	2000 Ammo Pack

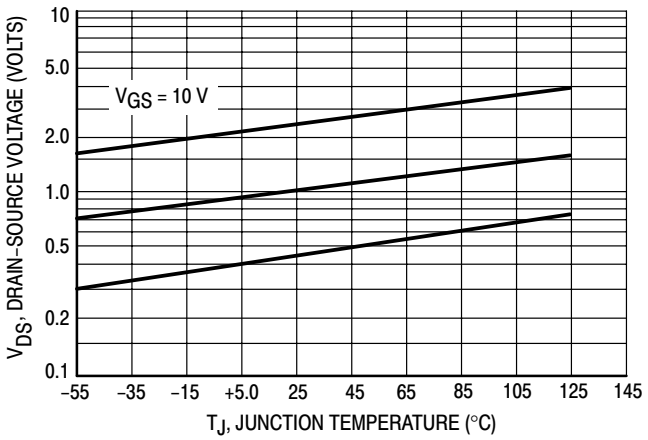


Figure 3. On Voltage versus Temperature

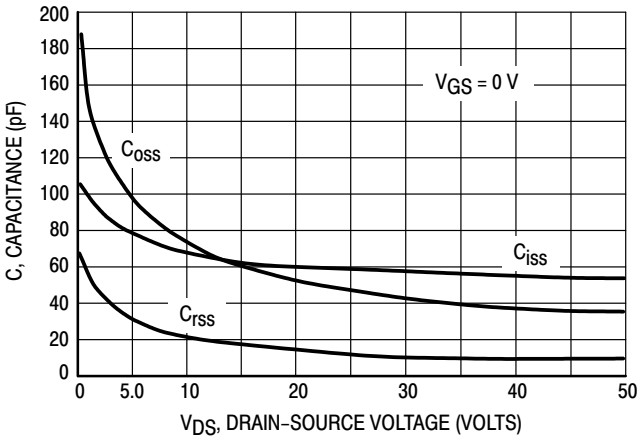


Figure 4. Capacitance Variation

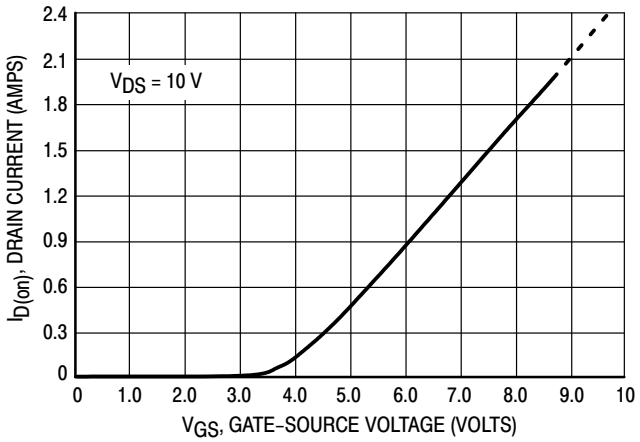


Figure 5. Transfer Characteristic

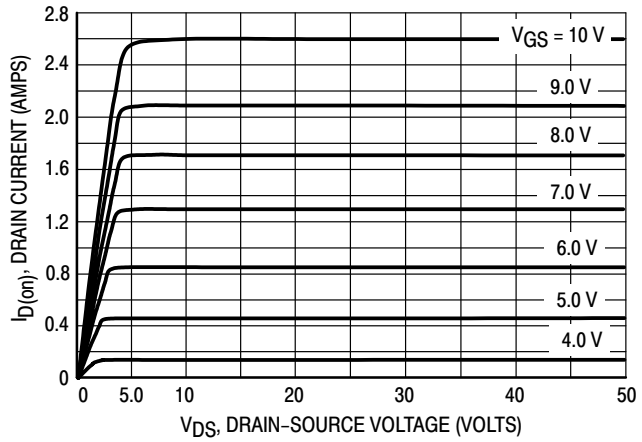


Figure 6. Output Characteristic

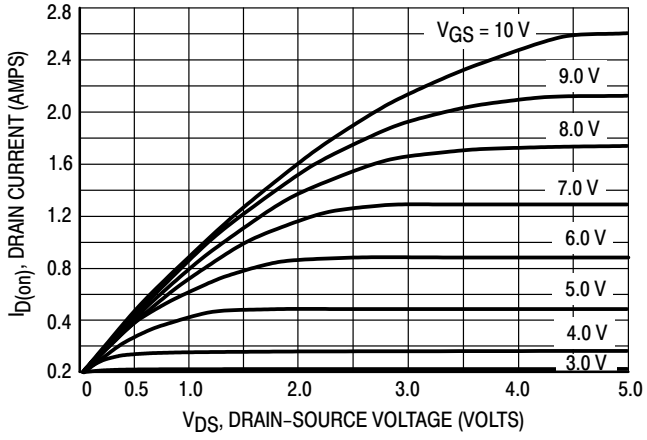
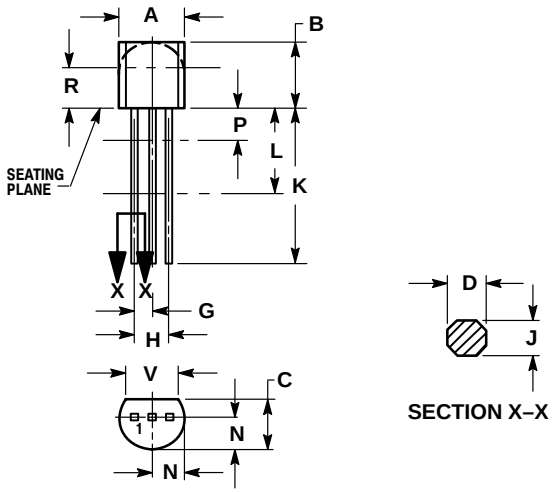


Figure 7. Saturation Characteristic

PACKAGE DIMENSIONS

TO–92
CASE 29–11
ISSUE AL



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
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	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 22:
PIN 1. SOURCE
2. GATE
3. DRAIN

Notes

Notes

PUBLICATION ORDERING INFORMATION

NORTH AMERICA Literature Fulfillment:
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