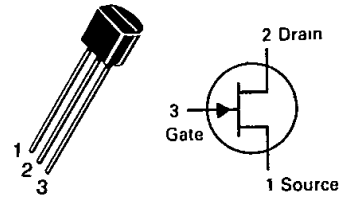


MPF256

CASE 29-04, STYLE 5
TO-92 (TO-226AA)



JFET AMPLIFIER

N-CHANNEL — DEPLETION

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	± 30	Vdc
Drain-Gate Voltage	V_{DG}	30	Vdc
Reverse Gate-Source Voltage	V_{GSR}	30	Vdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.73	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{Adc}, V_{DS} = 0$)	$V_{(BR)GSS}$	25	—	—	Vdc	
Gate Reverse Current ($V_{GS} = 15 \text{Vdc}, V_{DS} = 0$)	I_{GSS}	—	—	6.0	nAdc	
Gate Source Cutoff Voltage ($V_{DS} = 15 \text{Vdc}, I_D = 200 \mu\text{Adc}$)	$V_{GS(off)}$	0.5	—	7.5	Vdc	
ON CHARACTERISTICS						
Zero-Gate-Voltage Drain Current ($V_{DS} = 15 \text{Vdc}, V_{GS} = 0$)	I_{DSS}^*	3.0 6.0 11	— — —	7.0 13 18	mAdc	
SMALL-SIGNAL CHARACTERISTICS						
Forward Transfer Admittance ($V_{DS} = 15 \text{Vdc}, V_{GS} = 0, f = 1.0 \text{kHz}$)	$ y_{fs} $	6.0	—	—	mmhos	
Input Capacitance ($V_{DS} = 15 \text{Vdc}, I_D = 10 \text{mAdc}, f = 1.0 \text{MHz}$)	C_{iss}	—	3.0	—	pF	
Reverse Transfer Capacitance ($V_{DS} = 15 \text{Vdc}, I_D = 10 \text{mAdc}, f = 1.0 \text{MHz}$)	C_{rss}	—	1.2	—	pF	
Output Capacitance ($V_{DS} = 15 \text{Vdc}, I_D = 10 \text{mAdc}, f = 1.0 \text{kHz}$)	C_{oss}	—	2.0	—	pF	
FUNCTIONAL CHARACTERISTICS						
Noise Figure ($V_{DS} = 15 \text{Vdc}, R_S = 50 \text{Ohms}$)	NF	100 MHz 400 MHz	— —	— —	2.0 4.0	dB
Common Source Power Gain ($V_{DS} = 15 \text{Vdc}, R_S = 50 \text{Ohms}$)	G_{ps}	100 MHz 400 MHz	20 12	— —	— —	dB

*To characterize these devices to narrower limits, the entire production lot is tested and divided into color-coded groups, with each color dot representing an I_{DSS} range.

When packaged for shipment, the colors are randomly selected and no specific color distribution is implied or guaranteed.

ELECTRICAL CHARACTERISTICS — Continued ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
Gate Threshold Voltage ($I_D = 250 \mu\text{A}$, $V_{DS} = V_{GS}$)	$V_{GS(th)}$	2	—	4	Vdc
Static Drain-Source On-Resistance ⁽¹⁾ ($V_{GS} = 10 \text{ Vdc}$, $I_D = 0.4 \text{ A}$)	$r_{DS(on)}$	—	—	0.8 1.2	Ohms
On-State Drain Current ⁽¹⁾ ($V_{GS} = 10 \text{ V}$, $V_{DS} = 5 \text{ V}$)	$I_D(on)$	0.8 0.7	—	—	Adc
Forward Transconductance ⁽¹⁾ ($I_D = 0.4 \text{ A}$, $V_{DS} = 5 \text{ V}$)	g_{fs}	0.5	—	—	mhos

CAPACITANCE

Characteristic	Symbol	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	—	—	600	pF
Output Capacitance	C_{oss}	—	—	300	
Reverse Transfer Capacitance	C_{rss}	—	—	80	

$(V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz})$

SWITCHING CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	—	—	40	ns
Rise Time	t_r	—	—	60	
Turn-Off Delay Time	$t_{d(off)}$	—	—	100	
Fall Time	t_f	—	—	60	

$(V_{DS} = 0.5 V_{(BR)DSS}, I_D = 0.4 \text{ A}, Z_o = 50 \Omega)$

SOURCE-DRAIN DIODE CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Diode Forward Voltage ($V_{GS} = 0$) $I_S = 0.8 \text{ A}$ IRFD220, IRFD221 $I_S = 0.7 \text{ A}$ IRFD222, IRFD223	V_{SD}	—	—	2 1.8	Vdc
Continuous Source Current, Body Diode IRFD220, IRFD221 IRFD222, IRFD223	I_S	—	—	0.8 0.7	Adc
Pulsed Source Current, Body Diode IRFD220, IRFD221 IRFD222, IRFD223	I_{SM}	—	—	6.4 5.6	A
Forward Turn-On Time	t_{on}	negligible			ns
Reverse Recovery Time	t_{rr}	—	150	—	

$(I_S = \text{Rated } I_S, V_{GS} = 0)$

(1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

OUTLINE DIMENSIONS

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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.70	5.02	0.185	0.198
B	6.10	7.11	0.240	0.280
C	4.05	5.08	0.160	0.200
D	0.38	0.63	0.015	0.025
G	2.54 BSC		0.100 BSC	
J	0.30	0.43	0.012	0.017
K	2.79	3.81	0.110	0.150
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.51	1.27	0.020	0.070

CASE 370-01

NOTES:

- SURFACE "T" IS BOTH A DATUM AND SEATING PLANE.
- POSITIONAL TOLERANCE FOR LEADS, D.D.M 4 PL
 $\pm 0.27 (0.010) \text{ } \textcircled{A} \text{ } \textcircled{T}$
 LEADS, J DIM 4 PL
 $\pm 0.27 (0.010) \text{ } \textcircled{A} \text{ } \textcircled{B}$
- DIMENSIONING AND TOLERANCING PER Y14.5M, 1992
- CONTROLLING DIMENSION INCH
- DIMENSION "J" PRIOR TO SOLDER D.P PLATING