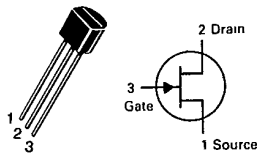
T-29-25

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°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°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate-Source Breakdown Voltage (I_G = 10 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	25	—	—	Vdc
Gate Reverse Current (V_{GS} = 15 Vdc, V_{DS} = 0)		I_{GSS}	—	—	5.0	nAdc
Gate Source Cutoff Voltage (V_{DS} = 15 Vdc, I_D = 200 μAdc)		$V_{GS(off)}$	0.5	—	7.5	Vdc
ON CHARACTERISTICS						
Zero-Gate-Voltage Drain Current (V_{DS} = 15 Vdc, V_{GS} = 0)	Red Green Violet	I_{DSS}*	3.0 6.0 11	— — —	7.0 13 18	mAdc
SMALL-SIGNAL CHARACTERISTICS						
Forward Transfer Admittance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)		$\|Y_{fs}\|$	6.0	—	—	mmhos
Input Capacitance (V_{DS} = 15 Vdc, I_D = 10 mAdc, f = 1.0 MHz)		C_{iss}	—	3.0	—	pF
Reverse Transfer Capacitance (V_{DS} = 15 Vdc, I_D = 10 mAdc, f = 1.0 MHz)		C_{rss}	—	1.2	—	pF
Output Capacitance (V_{DS} = 15 Vdc, I_D = 10 mAdc, f = 1.0 kHz)		C_{oss}	—	2.0	—	pF
FUNCTIONAL CHARACTERISTICS						
Noise Figure (V_{DS} = 15 Vdc, R_S = 50 Ohms)	100 MHz 400 MHz	NF	— —	— —	2.0 4.0	dB
Common Source Power Gain (V_{DS} = 15 Vdc, R_S = 50 Ohms)	100 MHz 400 MHz	G_{ps}	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.

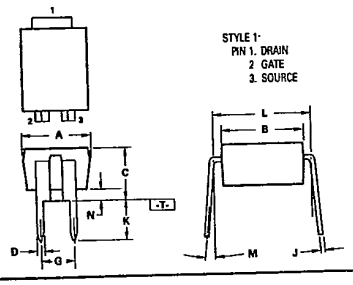
T-35-25

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS						
Gate Threshold Voltage (I_D = 250 μA, V_{DS} = V_{GS})		$V_{GS(th)}$	2	—	4	Vdc
Static Drain-Source On-Resistance(1) (V_{GS} = 10 Vdc, I_D = 0.4 A)	IRFD220, IRFD221 IRFD222, IRFD223	$r_{DS(on)}$	— —	— —	0.8 1.2	Ohms
On-State Drain Current(1) (V_{GS} = 10 V, V_{DS} = 5 V)	IRFD220, IRFD221 IRFD222, IRFD223	$I_{D(on)}$	0.8 0.7	— —	— —	Adc
Forward Transconductance(1) (I_D = 0.4 A, V_{DS} = 5 V)		g_{fs}	0.5	—	—	mhos
CAPACITANCE						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0 f = 1 MHz)	C_{iss}	—	—	600	pF
Output Capacitance		C_{oss}	—	—	300	
Reverse Transfer Capacitance		C_{rss}	—	—	80	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	(V_{DS} ≈ 0.5 $V_{(BR)DSS}$, I_D = 0.4 A, Z_o = 50 Ω)	$t_{d(on)}$	—	—	40	ns
Rise Time		t_r	—	—	60	
Turn-Off Delay Time		$t_{d(off)}$	—	—	100	
Fall Time		t_f	—	—	60	
SOURCE-DRAIN DIODE CHARACTERISTICS						
Diode Forward Voltage (V_{GS} = 0)	I_S = 0.8 A IRFD220, IRFD221 I_S = 0.7 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	(I_S = Rated I_S, V_{GS} = 0)	t_{on}	negligible			ns
Reverse Recovery Time		t_{rr}	—	150	—	

(1)Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

OUTLINE DIMENSIONS



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	4.70	5.02	0.185	0.198
B	6.10	7.11	0.240	0.280
C	4.06	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	1.77	0.020	0.070

CASE 370-01

NOTES:
1. SURFACE "T" IS BOTH A DATUM AND SEATING PLANE.
2. POSITIONAL TOLERANCE FOR LEADS, D DIM 4 PL
   ⌖ | 0.27 (0.010) Ⓜ | -T- | A Ⓜ |
   LEADS, J DIM 4 PL
   ⌖ | 0.27 (0.010) Ⓜ | -T- | B Ⓜ |
3. DIMENSIONING AND TOLERANCING PER Y14.5M, 1982
4. CONTROLLING DIMENSION: INCH
5. DIMENSION "J" PRIOR TO SOLDER DIP PLATING