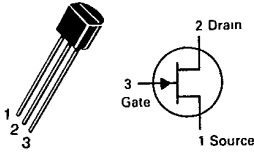


6367254 MOTOROLA SC (XSTRS/R F)

96D 82689 D  
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 <sub>DS</sub>	±30	Vdc
Drain-Gate Voltage	V <sub>DG</sub>	30	Vdc
Reverse Gate-Source Voltage	V <sub>GSR</sub>	30	Vdc
Forward Gate Current	I <sub>G(f)</sub>	10	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	350 2.73	mW mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)**

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Gate-Source Breakdown Voltage (I <sub>G</sub> = 10 μAdc, V <sub>DS</sub> = 0)	V(BR)GSS	25	—	—	Vdc
Gate Reverse Current (V <sub>GS</sub> = 15 Vdc, V <sub>DS</sub> = 0)	I <sub>GSS</sub>	—	—	5.0	nAdc
Gate Source Cutoff Voltage (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 200 μAdc)	V <sub>GS(off)</sub>	0.5	—	7.5	Vdc
<b>ON CHARACTERISTICS</b>					
Zero-Gate-Voltage Drain Current (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0)	I <sub>DSS</sub> *	3.0 6.0 11	—	7.0 13 18	mAdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Forward Transfer Admittance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 1.0 kHz)	y <sub>fs</sub>	6.0	—	—	mmhos
Input Capacitance (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 MHz)	C <sub>iss</sub>	—	3.0	—	pF
Reverse Transfer Capacitance (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 MHz)	C <sub>rss</sub>	—	1.2	—	pF
Output Capacitance (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 kHz)	C <sub>oss</sub>	—	2.0	—	pF
<b>FUNCTIONAL CHARACTERISTICS</b>					
Noise Figure (V <sub>DS</sub> = 15 Vdc, R <sub>S</sub> = 50 Ohms)	NF	—	—	2.0 4.0	dB
Common Source Power Gain (V <sub>DS</sub> = 15 Vdc, R <sub>S</sub> = 50 Ohms)	G <sub>ps</sub>	100 MHz	—	—	dB
		400 MHz	20	—	

\*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<sub>DSS</sub> range.

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



IRFD220-223

T-35-25

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

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

**CAPACITANCE**

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

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

**SWITCHING CHARACTERISTICS**

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

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

**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	$I_S$	—	—	0.8 0.7	Adc
Pulsed Source Current, Body Diode	$I_{SM}$	—	—	6.4 5.6	A
Forward Turn-On Time	$t_{on}$	negligible			ns
Reverse Recovery Time	$t_{rr}$	—	150	—	ns

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

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

**OUTLINE DIMENSIONS**

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	4.06	5.09	0.160	0.200
D	0.38	0.63	0.015	0.025
E	2.54	BSC	0.100	BSC
F	0.30	0.43	0.012	0.017
G	2.79	3.81	0.110	0.150
H	7.62	BSC	0.300	BSC
I	0°	15°	0°	15°
J	0.91	1.27	0.020	0.070

**CASE 370-01**

NOTES:  
 1. SURFACE "T" IS BOTH A DATUM AND SEATING PLANE.  
 2. POSITIONAL TOLERANCE FOR LEADS, D D.M.4 PL. (0.27 (0.010) -I, A (0.27 (0.010) -I, B (0.27 (0.010) -I, C (0.27 (0.010) -I, D (0.27 (0.010) -I, E (0.27 (0.010) -I, F (0.27 (0.010) -I, G (0.27 (0.010) -I, H (0.27 (0.010) -I, I (0.27 (0.010) -I, J (0.27 (0.010) -I, K (0.27 (0.010) -I, L (0.27 (0.010) -I, M (0.27 (0.010) -I, N (0.27 (0.010) -I).  
 3. DIMENSIONING AND TOLERANCING PER Y14.5M, 1992.  
 4. CONTROLLING DIMENSION INCH.  
 5. DIMENSION "J" PRIOR TO SOLDER D.P. PLATING.