

2N4416, 2N4416A

N-CHANNEL SILICON JUNCTION FIELD-EFFECT TRANSISTOR


- **MIXERS**
 - **VHF AMPLIFIERS**
- Absolute maximum ratings at $T_A = 25^\circ\text{C}$**
- | | | | | |
|--|---------------|-----------|----------------|-----------|
| Reverse Gate Source & Reverse Gate Drain Voltage | 2N4416 | - 30 V | 2N4416A | - 35 V |
| Gate Current | | 10 mA | | 10 mA |
| Continuous Device Dissipation | | 300 mW | | 300 mW |
| Power Derating | | 1.7 mW/°C | | 1.7 mW/°C |

At 25°C free air temperature:
Static Electrical Characteristics

		2N4416		2N4416A		Process NJ26	
		Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	- 30		- 35		V	$I_G = -1 \mu\text{A}, V_{DS} = 0 \text{ V}$
Gate Reverse Current	I_{GSS}		- 0.1		- 0.1	nA	$V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$
			- 0.1		- 0.1	μA	$V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$ $T_A = 150^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$		- 6	- 2.5	- 6	V	$V_{DS} = 15 \text{ V}, I_D = 1 \text{ nA}$
Drain Saturation Current (Pulsed)	I_{DSS}	5	15	5	15	mA	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	4500	7500	4500	7500	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 1 \text{ kHz}$
		4000		4000		μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 400 \text{ MHz}$
			50		50	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 1 \text{ kHz}$
Common Source Output Conductance	g_{os}		75		75	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 100 \text{ MHz}$
			100		100	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 400 \text{ MHz}$
Common Source Input Capacitance	C_{iss}		4		4	pF	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 1 \text{ MHz}$
Common Source Output Capacitance	C_{oss}		2		2	pF	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 1 \text{ MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		0.8		0.8	pF	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 1 \text{ MHz}$
Common Source Input Conductance	g_{is}		100		100	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 100 \text{ MHz}$
			1000		1000	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 400 \text{ MHz}$
Common Source Input Susceptance	b_{is}		2500		2500	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 100 \text{ MHz}$
			10000		10000	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 400 \text{ MHz}$
Common Source Output Susceptance	b_{os}		1000		1000	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 100 \text{ MHz}$
			4000		4000	μS	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}$	$f = 400 \text{ MHz}$
Common Source Power Gain	G_{ps}	18		18		dB	$V_{DS} = 15 \text{ V}, I_D = 5 \text{ mA}$	$f = 100 \text{ MHz}$
		10		10		dB	$V_{DS} = 15 \text{ V}, I_D = 5 \text{ mA}$	$f = 400 \text{ MHz}$
Noise Figure	NF		2		2	dB	$V_{DS} = 15 \text{ V}, I_D = 5 \text{ mA}$	$f = 100 \text{ MHz}$
			4		4	dB	$R_G = 1 \text{ K}\Omega$	$f = 400 \text{ MHz}$



InterFET
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T0-72 Package
See Section H for Outline Dimensions
Pin Configuration
1 Source, 2 Drain, 3 Gate, 4 Case

Surface Mount
SMP 4416, SMP 4416A