

## N-CHANNEL J-FET DEPLETION MODE

Equivalent to MIL-PRF-19500/375

### DEVICES

2N3821  
 2N3822  
 2N3823

### LEVELS

MQ = JAN Equivalent  
 MX = JANTX Equivalent  
 MV = JANTXV Equivalent

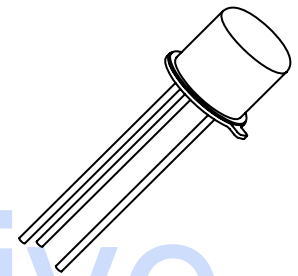
### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	2N3821 2N3822	2N3823	Unit
Gate-Source Voltage	$V_{GSR}$	50	30	V
Drain-Source Voltage	$V_{DS}$	50	30	V
Drain-Gate Voltage	$V_{DG}$	50	30	V
Gate Current	$I_{GF}$	10		mA
Power Dissipation $T_A = +25^\circ\text{C}^{(1)}$	$P_T$	300		mW
Operating Junction & Storage Temperature Range	$T_J, T_{stg}$	-55 to + 200		$^\circ\text{C}$

(1) Derate linearly 1.7mW/ $^\circ\text{C}$  for  $T_A > +25^\circ\text{C}$ .

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Gate-Source Breakdown Voltage $V_{DS} = 0, I_G = 1.0\mu\text{A dc}$ 2N3821, 2N3822 2N3823	$V_{(BR)GSSR}$	50 30		Vdc
Gate Reverse Current $V_{DS} = 0, V_{GS} = 30\text{V dc}$ $V_{DS} = 0, V_{GS} = 20\text{V dc}$ 2N3821, 2N3822 2N3823	$I_{GSSR}$		0.1 0.5	$\eta\text{A}$
Zero-Gate-Voltage Drain Current $V_{GS} = 0, V_{DS} = 15\text{V dc}$ 2N3821 2N3822 2N3823	$I_{DSS}$	0.5 2.0 4.0	2.5 10 20	mA
Gate-Source Voltage $V_{DS} = 15\text{V dc}, I_D = 50\mu\text{A dc}$ $V_{DS} = 15\text{V dc}, I_D = 200\mu\text{A dc}$ $V_{DS} = 15\text{V dc}, I_D = 400\mu\text{A dc}$ 2N3821 2N3822 2N3823	$V_{GS}$	0.5 1.0 1.0	2.0 4.0 7.5	Vdc
Gate-Source Cutoff Voltage $V_{DS} = 15\text{V dc}, I_D = 0.5\eta\text{A dc}$ 2N3821 2N3822 2N3823	$V_{GS(off)}$		4.0 6.0 8.0	Vdc



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### DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Small-Signal Common Source, Short-Circuit Forward Transfer Admittance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 1.0kHz$ 2N3821 2N3822 2N3823	$ y_{fs} ^1$	1500 3000 3500	4500 6500 6500	$\mu S$
Small-Signal, Common Source, Short-Circuit Output Admittance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 1.0kHz$ 2N3821 2N3822 2N3823	$ y_{os} $		10 20 35	$\mu S$
Small-Signal, Common-Source Short-Circuit Input Capacitance $V_{GS} = 0V$ dc, $V_{DS} = 15V$ dc, $100kHz \leq f \leq 1.0MHz$	$C_{iss}$		6.0	pF
Small-Signal, Common-Source Reverse Transfer Capacitance $V_{DS} = 15V$ dc, $V_{GS} = 0, 100kHz \leq f \leq 1.0MHz$ 2N3821, 2N3822 2N3823	$C_{rss}$		3.0 2.0	pF
Small-Signal, Common-Source, Short-Circuit Forward Transfer Admittance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 100MHz$ $f = 100MHz$ $f = 200MHz$ 2N3821 2N3822 2N3823	$ y_{fs} ^3$	1500 3000 3200		$\mu S$
Small-Signal, Common-Source Short-Circuit Input Conductance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 200MHz$ 2N3823 (only)	$g_{is}$		800	$\mu S$
Small-Signal, Common-Source Short-Circuit Output Conductance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 200MHz$ 2N3823 (only)	$g_{os}$		200	$\mu S$
Common Source Spot Noise Figure $V_{GS} = 0, V_{DS} = 15V$ dc, $R_G = 1M\Omega$ $f = 10Hz$ $f = 1.0kHz$ 2N3821, 2N3822 2N3821, 2N3822, 2N3823	$NF^1$		5.0 2.0	dB
Common Source Spot Noise Figure $V_{GS} = 0, V_{DS} = 15V$ dc, $R_G = 1k\Omega$ $f = 105MHz$ 2N3823 (only)	$NF^2$		2.5	dB