NEW ENGLAND SEMICONDUCTOR

Technical Data

2N3821 JAN, JTX, JTXV
2N3822 JAN, JTX, JTXV
2N3823 JAN, JTX, JTXV

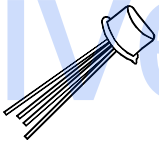
MIL-PRF QPL DEVICES

POWER MOSFET N CHANNEL DEPLETION MODE

Processed per MIL-PRF-19500/375

MAXIMUM RATINGS

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_G	10		mA
Power Dissipation $T_A = 25^0C$ (1)	P_T	300		mW
Operating Junction & Storage Temperature Range	T_j, T_{stg}	-55 to +200		^0C



TO-72 (TO-206AF)

(1) Derate linearly 1.7 mW/^{0}C for T_A +25 ^{0}C.

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

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

6 Lake Street, Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / Fax: (978) 689-0803

ELECTRICAL CHARACTERISTICS (T_A = 25^{0}C unless otherwise noted) (con't)

Parameters / Test Conditions	Symbol	Min.	Max.	Units
Small-Signal Common Source, Short-Circuit Forward Transadmittance				
V_{GS} = 0, V_{DS} = 15 Vdc, f = 1.0 kHz 2N3821	$\lvert y_{fs}\rvert^1$	1500	4500	µS
2N3822		3000	6500	
2N3823		3500	6500	
Small-Signal Common Source, Short-Circuit OutputAdmittance				
V_{GS} = 0, V_{DS} = 15 Vdc, f = 1.0 kHz 2N3821	$\lvert y_{os}\rvert$		10	µS
2N3822			20	
2N3823			35	
Small-Signal, Common-Source Short-Circuit Input Capacitance				
V_{GS} = 0, V_{DS} = 15 Vdc, 100 kHz ≤ f ≤ 1.0 MHz	C_{iss}		6.0	pF
Small-Signal, Common-Source Reverse Transfer Capacitance				
V_{DS} = 15 Vdc, V_{GS} = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{rss}			pF
2N3821, 2N3822			3.0	
2N3823			2.0	
Small-Signal Common Source, Short-Circuit Forward Transadmittance				
V_{GS} = 0, V_{DS} = 15 Vdc, f = 100 MHz 2N3821	$\lvert y_{fs}\rvert^2$	1500	4500	µS
f = 100 MHz 2N3822		3000	6500	
f = 200 MHz 2N3823		3500	6500	
Small-Signal, Common-Source Short-Circuit Input Conductance				
V_{GS} = 0, V_{DS} = 15 Vdc, f = 200 MHz 2N3823 (only)	g_{is}		800	µS
Small-Signal, Common-Source Short-Circuit Output Conductance				
V_{GS} = 0, V_{DS} = 15 Vdc, f = 200 MHz 2N3823 (only)	g_{os}		200	µS
Common Source Spot Noise Figure				
V_{GS} = 0, V_{DS} = 15 Vdc, R_G = 1MΩ				
f = 10 Hz 2N3821, 2N3822	NF^1	5.0		dB
f = 1.0 kHz 2N3821, 2N3822, 2N3823		2.0		
Common Source Spot Noise Figure				
V_{GS} = 0, V_{DS} = 15 Vdc, R_G = 1kΩ				
f = 105 MHz 2N3823 (only)	NF^2	2.5		dB