

N-CHANNEL J-FET DEPLETION MODE

Equivalent to MIL-PRF-19500/375

DEVICES

2N3821	2N3821UB
2N3822	2N3822UB
2N3823	2N3823UB

LEVELS

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

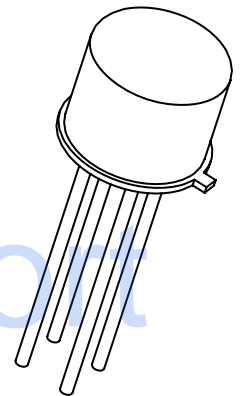
ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	2N3821, UB 2N3822, UB	2N3823, UB	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		$^\circ\text{C}$

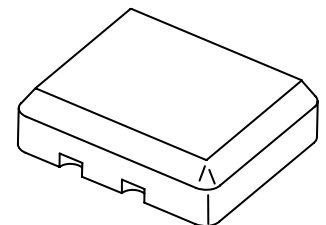
Note: (1) Derate linearly 1.7mW/ $^\circ\text{C}$ for $T_A > +25^\circ\text{C}$.

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Gate-Source Breakdown Voltage $V_{DS} = 0, I_G = 1.0\mu\text{A dc}$	2N3821 / UB 2N3822 / UB 2N3823 / UB	$V_{(BR)GSSR}$	50 50 30	Vdc
Gate Reverse Current $V_{DS} = 0, V_{GS} = 30\text{V dc}$ $V_{DS} = 0, V_{GS} = 30\text{V dc}$ $V_{DS} = 0, V_{GS} = 20\text{V dc}$	2N3821 / UB 2N3822 / UB 2N3823 / UB	I_{GSSR}	0.1 0.1 0.5	ηA
Zero-Gate-Voltage Drain Current $V_{GS} = 0, V_{DS} = 15\text{V dc}$	2N3821 / UB 2N3822 / UB 2N3823 / UB	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 / UB 2N3822 / UB 2N3823 / UB	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 / UB 2N3822 / UB 2N3823 / UB	$V_{GS(off)}$	4.0 6.0 8.0	Vdc



TO-72 (TO-206AF)

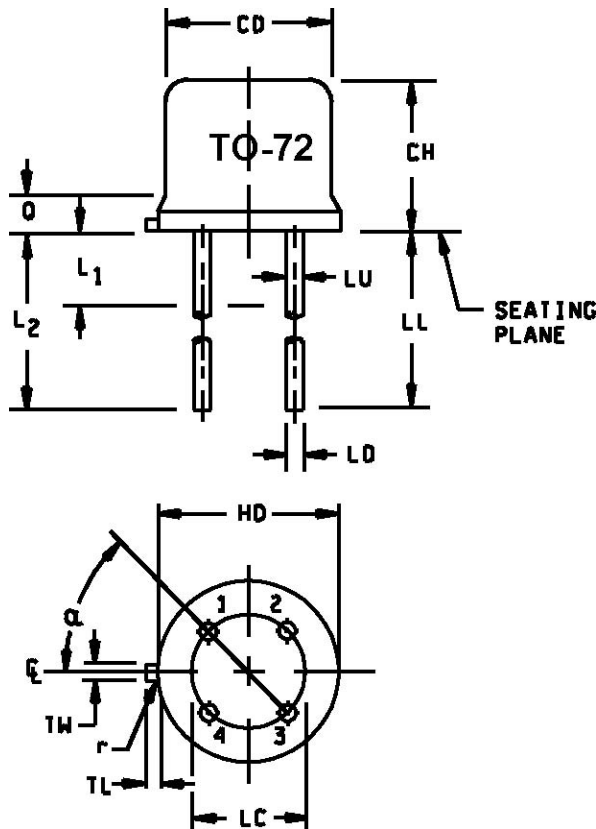


UB - Package

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 / UB 2N3822 / UB 2N3823 / UB	$ y_{fs} ^1$	1500 3000 3500	4500 6500 6500	μS
Small-Signal, Common Source, Short-Circuit Output Admittance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 1.0kHz$ 2N3821 / UB 2N3822 / UB 2N3823 / UB	$ y_{os} $		10 20 35	μS
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 / UB 2N3822 / UB 2N3823 / UB	C_{rss}		3.0 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 / UB 2N3822 / UB 2N3823 / UB	$ y_{fs} ^3$	1500 3000 3200		μS
Small-Signal, Common-Source Short-Circuit Input Conductance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 200MHz$ 2N3823 (only)	g_{is}		800	μS
Small-Signal, Common-Source Short-Circuit Output Conductance $V_{GS} = 0, V_{DS} = 15V$ dc, $f = 200MHz$ 2N3823 (only)	g_{os}		200	μS
Common Source Spot Noise Figure $V_{GS} = 0, V_{DS} = 15V$ dc, $R_G = 1M\Omega$ $f = 10Hz$ $f = 1.0kHz$ 2N382, 2N3822 / UB 2N3821, 2N3822, 2N3823 / UB	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 / UB (only)	NF ²		2.5	dB

PACKAGE DIMENSIONS

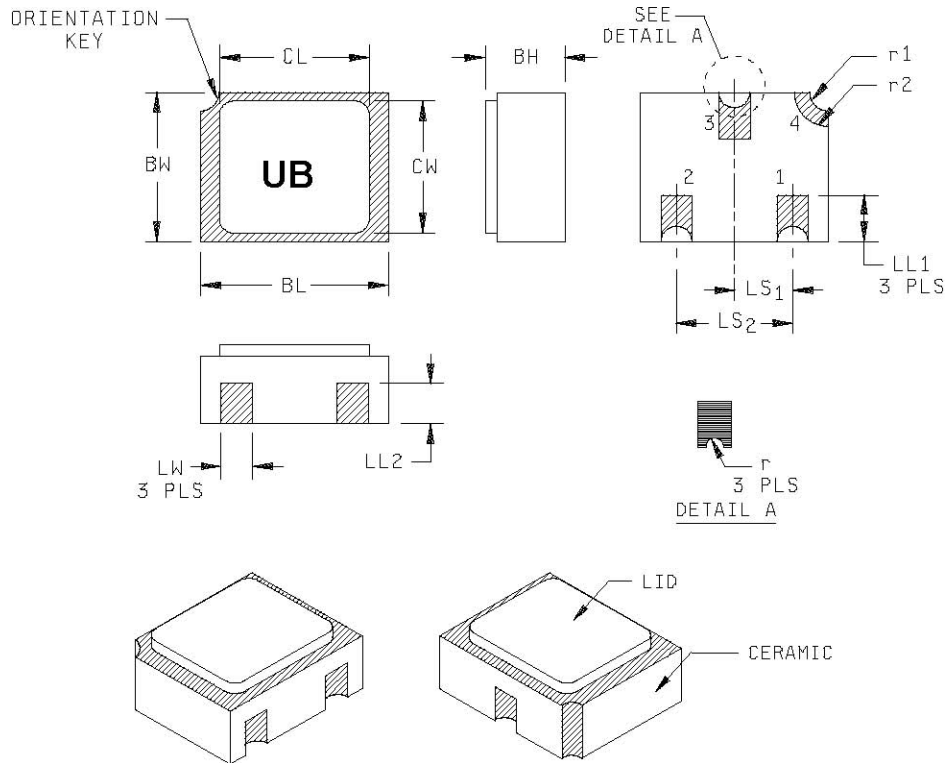


Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.178	.195	4.52	4.95	
CH	.170	.210	4.32	5.33	
HD	.209	.230	5.31	5.84	
L1		.050		1.27	
L2	.250		6.35		
LC	.100 TP		2.54 TP		
LD	.016	.021	0.41	0.53	2, 6
LL	.500	.750	12.70	19.05	6
LU	.016	.019	0.41	0.48	3, 6
Q		.040		1.02	
r		.007		0.18	
TL	.028	.048	0.71	1.22	8
TW	.036	.046	0.91	1.17	
α	45° TP				

NOTE:

- * 1 Dimensions are in inches. Millimeters are given for general information only.
- 2 Measured in the zone beyond .250 (6.35 mm) from the seating plane.
- 3 Measured in the zone .050 (1.27 mm) and .250 (6.35 mm) from the seating plane.
- 4 When measured in a gauging plane .054 +.001, -.000 (1.37 +.3, -.00 mm) before the seating plane of the transistor, maximum diameter leads shall be within .007 (.18 mm) of their true location relative to a maximum width tab. Smaller diameter leads shall fall within the outline of the maximum diameter lead tolerance.
- 5 The active elements are electrically insulated from the case.
- 6 All 4 leads.
- 7 Lead 1 is the source, lead 2 is the drain, lead 3 is the gate, and lead 4 is the case.
- 8 Symbol TL is measured from HD maximum.
- 9 In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

***FIGURE 1** Physical dimensions (similar to TO-72)



NOTES:

- 1. Dimensions are in inches.
- * 2. Millimeters are given for general information only.
- * 3. Hatched areas on package denote metallized areas.
- * 4. Lid material: Kovar.
- * 5. Pad 1 = Drain, Pad 2 = Source, Pad 3 = Gate, Pad 4 = Shielding connected to the lid.

Symbol	Dimensions				Note
	Inches		Millimeters		
	Min	Max	Min	Max	
BH	.046	.056	1.17	1.42	
BL	.115	.128	2.92	3.25	
BW	.085	.108	2.16	2.74	
CL		.128		3.25	
CW		.108		2.74	
LL ₁	.022	.038	0.56	0.96	
LL ₂	.017	.035	0.43	0.89	
LS ₁	.036	.040	0.91	1.02	
LS ₂	.071	.079	1.81	2.01	
LW	.016	.024	0.41	0.61	
r		.008		.203	
r1		.012		.305	
r2		.022		.559	

* **FIGURE 2.** Physical dimensions, surface mount (2N3821UB, 2N3822UB, AND 2N3823UB).