



## P-CHANNEL J-FET

Screening in reference to MIL-PRF-19500 available

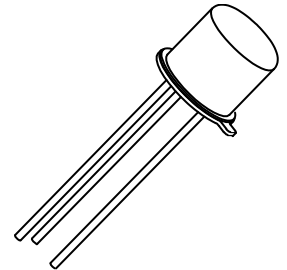
### DESCRIPTION

This leaded device is available in high-reliability equivalents for high-reliability applications. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

**Important:** For the latest information, visit our website <http://www.microsemi.com>.

### FEATURES


- Surface mount equivalent to JEDEC registered 2N5116.
- Screening in reference to MIL-PRF-19500 is available. (See [part nomenclature](#).)
- RoHS compliant versions available (commercial grade only).



**TO-18 (TO-206AA) Package**

Also available in:

**UB package**  
(surface mount)

 [2N5114UB – 2N5116UB](#)

### APPLICATIONS / BENEFITS

- Leaded TO-18 package.
- Lightweight.

### MAXIMUM RATINGS @ $T_C = +25^\circ\text{C}$ unless otherwise noted.

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	$T_J$ and $T_{STG}$	-65 to +200	$^\circ\text{C}$
Gate-Source Voltage <sup>(1)</sup>	$V_{GS}$	30	V
Drain-Source Voltage	$V_{DS}$	30	V
Drain-Gate Voltage <sup>(1)</sup>	$V_{DG}$	30	V
Gate Current	$I_G$	50	mA
Steady-State Power Dissipation @ $T_A = +25^\circ\text{C}$ <sup>(2)</sup>	$P_D$	0.500	W

- Notes:**
1. Symmetrical geometry allows operation of those units with source / drain leads interchanged.
  2. Derate linearly 3.0 mW/ $^\circ\text{C}$  for  $T_A > +25^\circ\text{C}$ .

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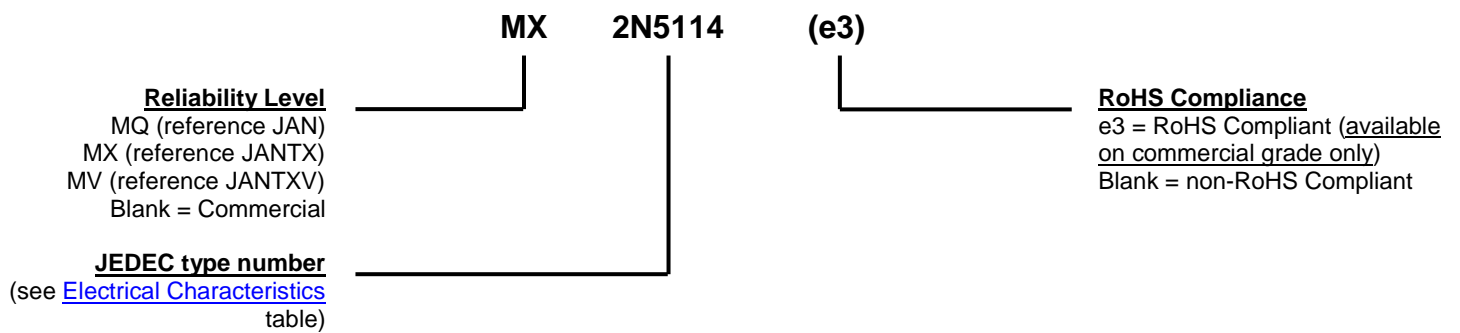
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**MECHANICAL and PACKAGING**

- CASE: Hermetically sealed, Nickel plated Kovar Base, Nickel Cap.
- TERMINALS: Gold plate over nickel, Kovar, Solder dipped. RoHS compliant Matte/Tin plating available on commercial grade only.
- MARKING: Part Number, Data Code, Manufacturer's ID.
- WEIGHT: Approximately 0.3 grams.
- See [Package Dimensions](#) on last page.

**PART NOMENCLATURE**


**ELECTRICAL CHARACTERISTICS @  $T_A = +25^\circ\text{C}$  unless otherwise noted.**

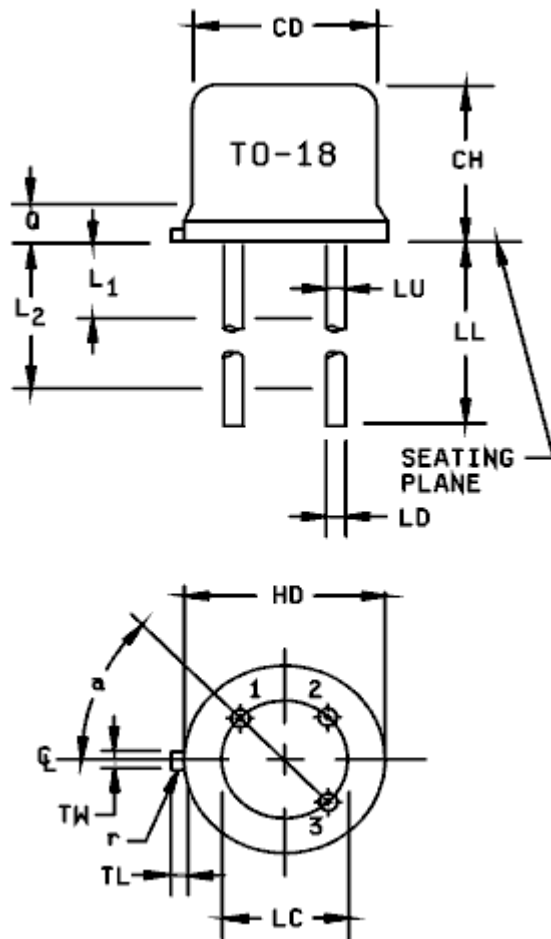
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Gate-Source Breakdown Voltage $V_{DS} = 0, I_G = 1.0 \mu\text{A}$	$V_{(BR)GSS}$	30		V
Drain-Source "On" State Voltage $V_{GS} = 0 \text{ V}, I_D = -15 \text{ mA}$ 2N5114 $V_{GS} = 0 \text{ V}, I_D = -7.0 \text{ mA}$ 2N5115 $V_{GS} = 0 \text{ V}, I_D = -3.0 \text{ mA}$ 2N5116	$V_{DS(on)}$		-1.3 -0.8 -0.6	V
Gate Reverse Current $V_{DS} = 0, V_{GS} = 20 \text{ V}$	$I_{GSS}$		500	pA
Drain Current Cutoff $V_{GS} = 12 \text{ V}, V_{DS} = -15 \text{ V}$ 2N5114 $V_{GS} = 7.0 \text{ V}, V_{DS} = -15 \text{ V}$ 2N5115 $V_{GS} = 5.0 \text{ V}, V_{DS} = -15 \text{ V}$ 2N5116	$I_{D(off)}$		-500 -500 -500	pA
Zero Gate Voltage Drain Current $V_{GS} = 0, V_{DS} = -18 \text{ V}$ 2N5114 $V_{GS} = 0, V_{DS} = -15 \text{ V}$ 2N5115 $V_{GS} = 0, V_{DS} = -15 \text{ V}$ 2N5116	$I_{DSS}$	-30 -15 -5.0	-90 -60 -25	mA
Gate-Source Cutoff $V_{DS} = -15, I_D = -1.0 \text{ nA}$ 2N5114 $V_{DS} = -15, I_D = -1.0 \text{ nA}$ 2N5115 $V_{DS} = -15, I_D = -1.0 \text{ nA}$ 2N5116	$V_{GS(off)}$	5.0 3.0 1.0	10 6.0 4.0	V

**DYNAMIC CHARACTERISTICS**

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Small-Signal Drain-Source "On" State Resistance $V_{GS} = 0, I_D = -1.0 \text{ mA}$ 2N5114 2N5115 2N5116	$r_{ds(on)1}$		75 100 175	$\Omega$
Small-Signal Drain-Source "On" State Resistance $V_{GS} = 0, I_D = 0; f = 1 \text{ kHz}$ 2N5114 2N5115 2N5116	$r_{ds(on)2}$		75 100 175	$\Omega$
Small-Signal, Common-Source Short-Circuit Reverse Transfer Capacitance $V_{GS} = 12 \text{ V dc}, V_{DS} = 0$ 2N5114 $V_{GS} = 7.0 \text{ V dc}, V_{DS} = 0$ 2N5115 $V_{GS} = 5.0 \text{ V dc}, V_{DS} = 0$ 2N5116	$C_{rss}$		7.0	pF
Small-Signal, Common-Source Short-Circuit Input Capacitance $V_{GS} = 0, V_{DS} = -15 \text{ V}, f = 1.0 \text{ MHz}$ 2N5114, 2N5115 2N5116	$C_{iss}$		25 27	pF

**ELECTRICAL CHARACTERISTICS @  $T_A = +25^\circ\text{C}$  unless otherwise noted. (continued)**
**SWITCHING CHARACTERISTICS**

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Turn-On Delay Time	2N5114	$T_{d(on)}$		6	$\eta\text{s}$
	2N5115			10	
	2N5116			25	
Rise Time	2N5114	$t_r$		10	$\eta\text{s}$
	2N5115			20	
	2N5116			35	
Turn-Off Delay Time	2N5114	$T_{d(off)}$		6	$\eta\text{s}$
	2N5115			8	
	2N5116			20	

**PACKAGE DIMENSIONS**


Symbol	Dimensions				Note
	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	
LC	.100 TP		2.54 TP		6
LD	.016	.021	0.41	0.53	7,8
LL	.500	.750	12.70	19.05	7,8
LU	.016	.019	0.41	0.48	7,8
L1		.050		1.27	7,8
L2	.250		6.35		7,8
Q		.030		0.76	5
TL	.028	.048	0.71	1.22	3,4
TW	.036	.046	0.91	1.17	
r		.010		0.25	10
$\alpha$	45° TP		45° TP		6
1, 2, 9, 11, 12					

**NOTES:**

1. Dimension are in inches.
2. Millimeters are given for general information only.
3. Beyond r (radius) maximum, TH shall be held for a minimum length of .011 inch (0.28 mm).
4. Dimension TL measured from maximum HD.
5. Body contour optional within zone defined by HD, CD, and Q.
6. Leads at gauge plane .054 +.001 -.000 inch (1.37 +0.03 -0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC. The device may be measured by direct methods or by the gauge and gauging procedure shown in figure 2.
7. Dimension LU applies between L<sub>1</sub> and L<sub>2</sub>. Dimension LD applies between L<sub>2</sub> and LL minimum. Diameter is uncontrolled in L<sub>1</sub> and beyond LL minimum.
8. All three leads.
9. The collector shall be internally connected to the case.
10. Dimension r (radius) applies to both inside corners of tab.
11. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.
12. Lead 1 = source, lead 2 = gate, lead 3 = drain.