



**THE DATASHEET OF  
JAN2N5662**



## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/454

### DEVICES

**2N5660      2N5661      2N5662**  
**2N5660U3    2N5661U3    2N5663**

**LEVELS**  
**JAN**  
**JANTX**  
**JANTXV**

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

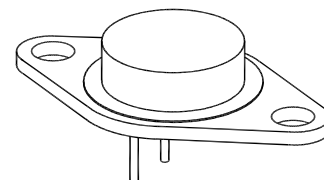
Parameters / Test Conditions	Symbol	2N5660 2N5662	2N5661 2N5663	Unit
Collector-Emitter Voltage	$V_{CEO}$	200	300	Vdc
Collector-Base Voltage	$V_{CBO}$	250	400	Vdc
Collector-Emitter Voltage	$V_{CER}$	250	400	Vdc
Emitter-Base Voltage	$V_{EBO}$	6		Vdc
Base Current	$I_B$	0.5		Adc
Collector Current	$I_C$	2.0		Adc
Operating & Storage Junction Temperature Range	$T_j, T_{stg}$	-65 to +200		$^\circ\text{C}$
		<b>2N5660 2N5661</b>	<b>2N5662 2N5663</b>	
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ <sup>(1)</sup> @ $T_C = +100^\circ\text{C}$	$P_T$	2.0 <sup>(1)</sup> 20 <sup>(3)</sup>	1.0 <sup>(2)</sup> 15 <sup>(4)</sup>	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	5.0	6.7	$^\circ\text{C}/\text{W}$
Junction-to-Ambient	$R_{\theta JA}$	87.5	175	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$			$^\circ\text{C}/\text{W}$
<b>2N5660U3</b>		4.5		
<b>2N5661U3</b>		4.0		

#### Note:

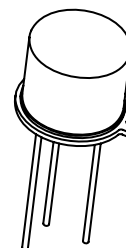
- Derate linearly 11.4mW/ $^\circ\text{C}$  for  $T_A > +25^\circ\text{C}$
- Derate linearly 5.7mW/ $^\circ\text{C}$  for  $T_A > +25^\circ\text{C}$
- Derate linearly 200mW/ $^\circ\text{C}$  for  $T_C > +100^\circ\text{C}$
- Derate linearly 150mW/ $^\circ\text{C}$  for  $T_C > +100^\circ\text{C}$

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

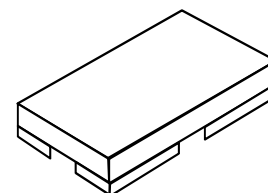
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage $I_C = 10\text{mAdc}$	$V_{(BR)CEO}$	200		Vdc
2N5660, U3, 2N5662				
2N5661, U3, 2N5663		300		
Collector-Base Breakdown Voltage $I_C = 10\text{mAdc}, R_{BE} = 100\Omega$	$V_{(BR)CER}$	250		Vdc
2N5660, U3, 2N5662				
2N5661, U3, 2N5663		400		



**TO-66**  
**2N5660, 2N5661**



**TO-5**  
**2N5662, 2N5663**



**U3**  
**2N5660U3, 2N5661U3**



**SAFE OPERATING AREA****DC Test**

$T_C = +100^\circ\text{C}$ , 1 cycle,  $t \geq 1.0\text{s}$

**Test 1**

$V_{CE} = 10\text{Vdc}$ ,  $I_C = 2.0\text{Adc}$                       2N5660, U3, 2N5661, U3

$V_{CE} = 7.5\text{Vdc}$ ,  $I_C = 2.0\text{Adc}$                       2N5662, 2N5663

**Test 2**

$V_{CE} = 40\text{Vdc}$ ,  $I_C = 500\text{mAdc}$                       2N5660, U3, 2N5661, U3

$V_{CE} = 25\text{Vdc}$ ,  $I_C = 600\text{mAdc}$                       2N5662, 2N5663

**Test 3**

$V_{CE} = 200\text{Vdc}$ ,  $I_C = 36\text{mAdc}$                       2N5660, U3

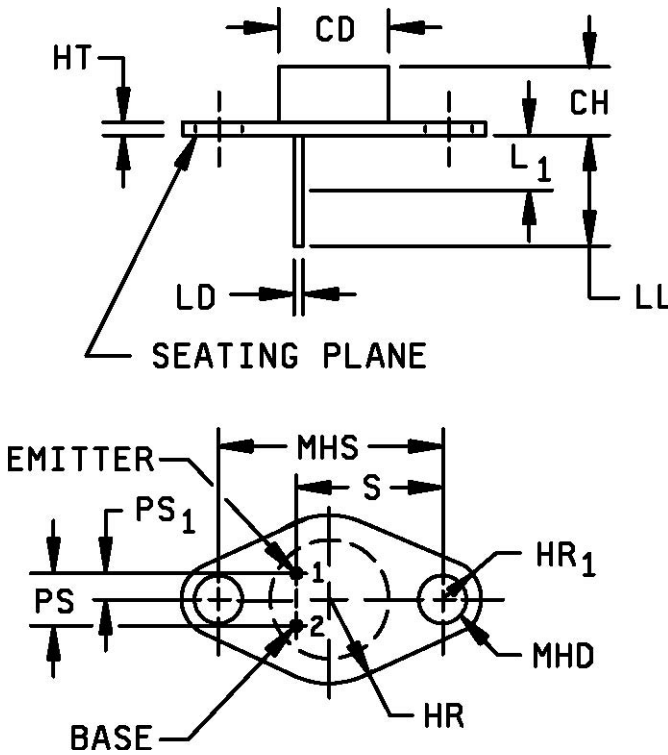
$V_{CE} = 200\text{Vdc}$ ,  $I_C = 27\text{mAdc}$                       2N5662

**Test 4**

$V_{CE} = 300\text{Vdc}$ ,  $I_C = 19\text{mAdc}$                       2N5661, U3

$V_{CE} = 300\text{Vdc}$ ,  $I_C = 14\text{mAdc}$                       2N5663

(5) Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

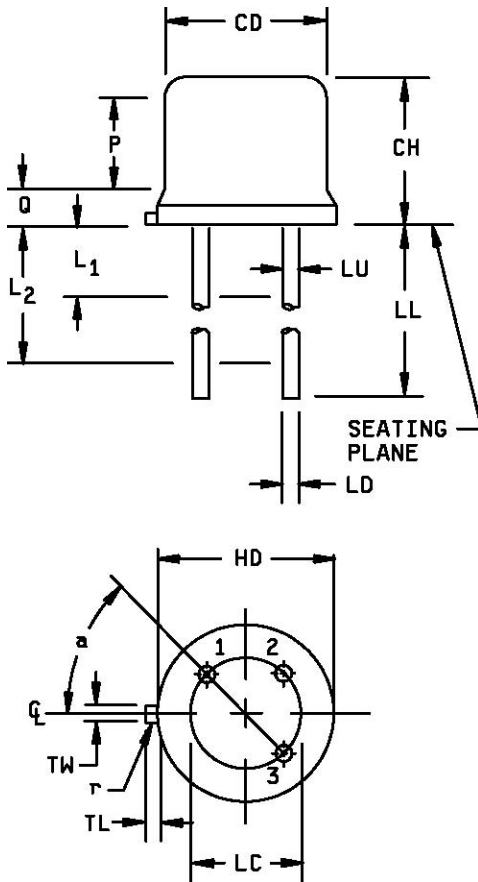
**PACKAGE DIMENSIONS**


Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.470	.500	11.94	12.70	7
CH	.250	.340	6.35	8.64	
HR		.350		8.89	
HR <sub>1</sub>	.115	.145	2.92	3.68	4
HT	.050	.075	1.27	1.91	
LD	.028	.034	0.71	0.86	4, 6
LL	.360	.500	9.14	12.70	4
L <sub>1</sub>		.050		1.27	4, 6
MHD	.142	.152	3.61	3.86	4
MHS	.958	.962	24.33	24.43	
PS	.190	.210	4.83	5.33	3
PS <sub>1</sub>	.093	.107	2.36	2.72	3
S	.570	.590	14.48	14.99	3

**NOTES:**

- 1 Dimensions are in inches.
- 2 Millimeters are given for general information only.
- 3 These dimensions should be measured at points .050 inch (1.27 mm) +.005 inch (0.13 mm) -.000 inch (0.00 mm) below seating plane. When gauge is not used, measurement will be made at the seating plane.
- 4 Two places.
- 5 The seating plane of the header shall be flat within .001 inch (0.03 mm) concave to .004 inch (0.10 mm) convex inside a .930 inch (23.62 mm) diameter circle on the center of the header and flat within .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.
- 6 Lead diameter shall not exceed twice LD within L<sub>1</sub>.
- 7 Body contour is optional within zone defined by CD.
- 8 In accordance with ASME Y14.5M, diameters are equivalent to  $\phi x$  symbology.
- 9 Lead 1 is emitter, lead 2 is base, and case is collector.

**FIGURE 1.** Physical dimensions, 2N5660 and 2N5661, (similar to TO-66).



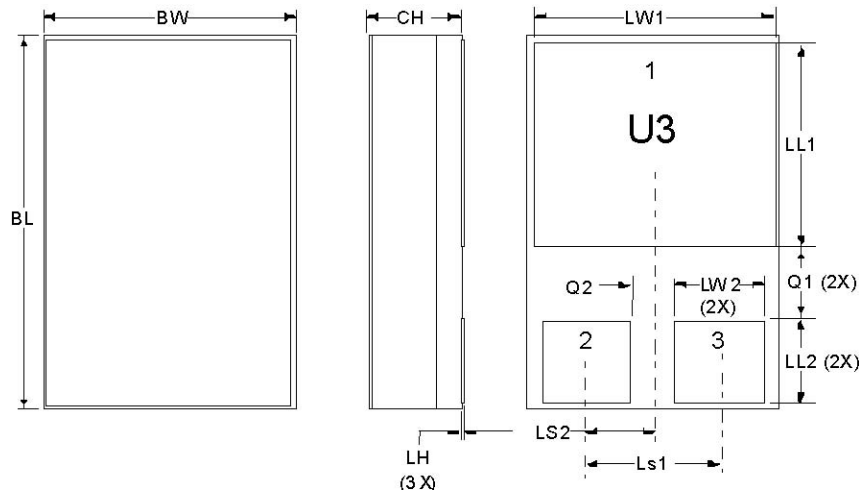
Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.355	7.75	9.02	
CH	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	
LC	.200 TP		5.08 TP		6
LD	.016	.021	0.41	0.53	7
LL	1.500	1.750	38.10	44.45	7
LU	.016	.019	0.407	0.482	7
L <sub>1</sub>		.050		1.27	7
L <sub>2</sub>	.250		6.35		7
TL	.029	.045	0.74	1.14	3
TW	.028	.034	0.712	0.863	9
P	.100		2.54		
Q		.050		1.27	4
r		.010		0.25	10
$\alpha$	45° TP		45° TP		6

**NOTES:**

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Symbol TL is measured from HD maximum.
4. Details of outline in this zone are optional.
5. Symbol CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
6. Leads at gauge plane .054 inch (1.37 mm) +.001 inch (0.03 mm) - .000 inch (0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of TP relative to tab. Device may be measured by direct methods or by gauge.
7. Symbol LU applies between L<sub>1</sub> and L<sub>2</sub>. Dimension LD applies between L<sub>2</sub> and LL minimum.
8. Lead number three is electrically connected to case.
9. Beyond r maximum, TW shall be held for a minimum length of .011 inch (0.28 mm).
10. Symbol r applied to both inside corners of tab.
11. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.
12. Lead 1 is emitter, lead 2 is base, and lead 3 is collector.

**FIGURE 2.** Physical dimensions, 2N5662 and 2N5663, (similar to TO-5)

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 Website: <http://www.microsemi.com>



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.395	.405	10.04	10.28
BW	.291	.301	7.40	7.64
CH	.1085	.1205	2.76	3.06
LH	.010	.020	0.25	0.51
LW <sub>1</sub>	.281	.291	7.14	7.39
LW <sub>2</sub>	.090	.100	2.29	2.54
LL <sub>1</sub>	.220	.230	5.59	5.84
LL <sub>2</sub>	.115	.125	2.93	3.17
LS <sub>1</sub>	.150 BSC		3.81 BSC	
LS <sub>2</sub>	.075 BSC		1.91 BSC	
Q <sub>1</sub>	.030		0.762	
Q <sub>2</sub>	.030		0.762	
Term 1	Collector			
Term 2	Base			
Term 3	Emitter			

**FIGURE 3.** Physical dimensions, 2N5660U3 and 2N5661U3(U3).

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