

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/454

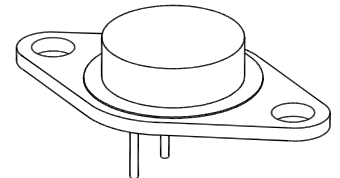
DEVICES

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

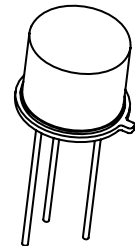
LEVELS
JAN
JANTX
JANTXV

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

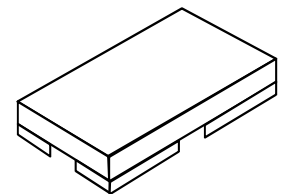
Parameters / Test Conditions	Symbol	2N5660 2N5662	2N5661 2N5663	Unit
Collector-Emitter Voltage	V_{CEO}	200	300	Vdc
Collector-Base Voltage	V_{CBO}	250	400	Vdc
Collector-Emitter Voltage	V_{CER}	250	400	Vdc
Emitter-Base Voltage	V_{EBO}	6		Vdc
Base Current	I_B	0.5		Adc
Collector Current	I_C	2.0		Adc
Operating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



TO-66
2N5660, 2N5661



TO-5
2N5662, 2N5663



U3
2N5660U3, 2N5661U3

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
OFF CHARACTERISTICS				
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		

SAFE OPERATING AREA**DC Test**

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

Test 1

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

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

Test 2

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

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

Test 3

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

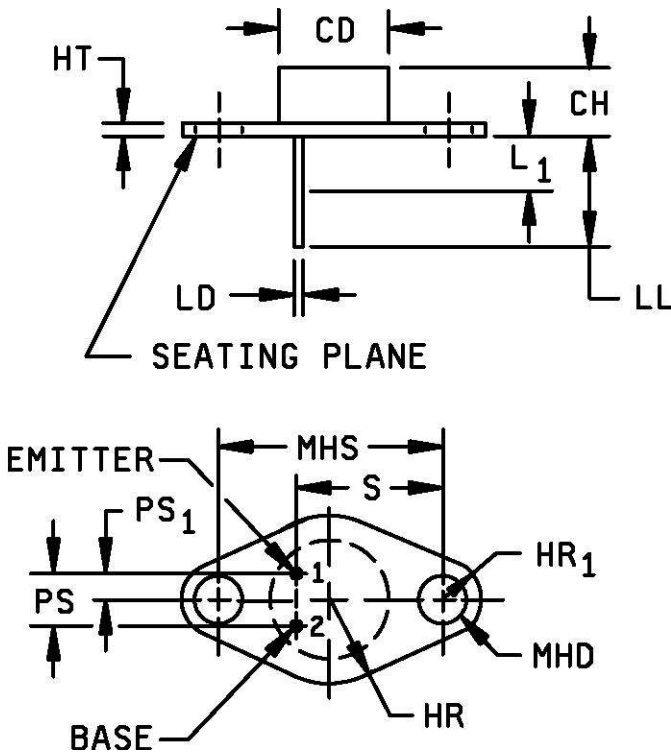
$V_{CE} = 200\text{Vdc}$, $I_C = 27\text{mA}$ dc 2N5662

Test 4

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

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

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

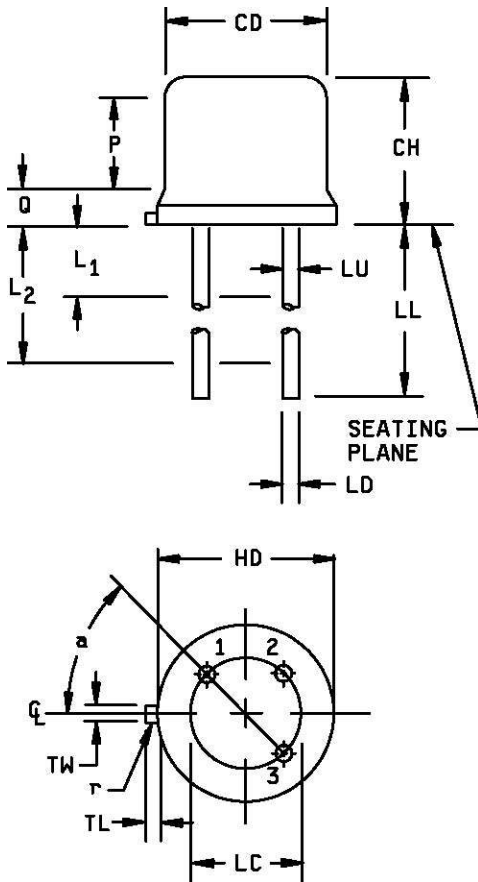
PACKAGE DIMENSIONS


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 ₁	.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 ₁		.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 ₁	.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 L₁.
- 7 Body contour is optional within zone defined by CD.
- 8 In accordance with ASME Y14.5M, diameters are equivalent to ϕx 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).

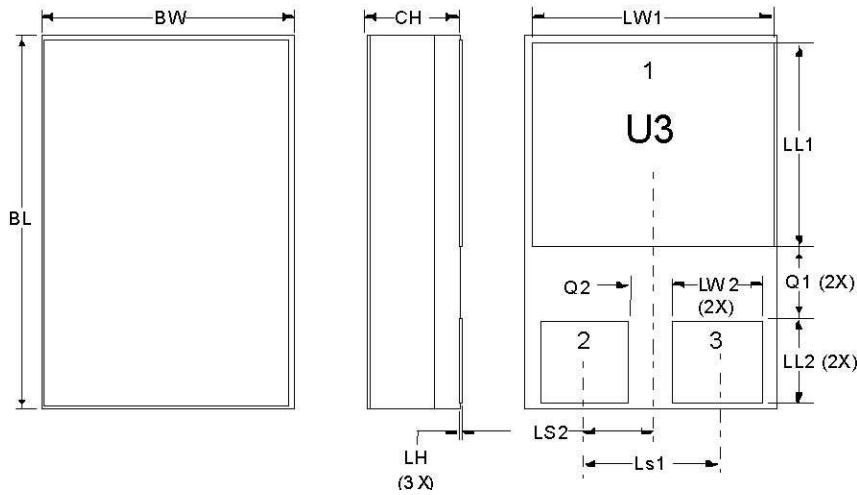


Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.355	7.75	9.02	
CH	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	
LC	.200 TP		5.08 TP		6
LD	.016	.021	0.41	0.53	7
LL	1.500	1.750	38.10	44.45	7
LU	.016	.019	0.407	0.482	7
L ₁		.050		1.27	7
L ₂	.250		6.35		7
TL	.029	.045	0.74	1.14	3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

NOTES:

- Dimensions are in inches.
- Millimeters are given for general information only.
- Symbol TL is measured from HD maximum.
- Details of outline in this zone are optional.
- Symbol CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
- 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.
- Symbol LU applies between L₁ and L₂. Dimension LD applies between L₂ and LL minimum.
- Lead number three is electrically connected to case.
- Beyond r maximum, TW shall be held for a minimum length of .011 inch (0.28 mm).
- Symbol r applied to both inside corners of tab.
- In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.
- Lead 1 is emitter, lead 2 is base, and lead 3 is collector.

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



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 ₁	.281	.291	7.14	7.39
LW ₂	.090	.100	2.29	2.54
LL ₁	.220	.230	5.59	5.84
LL ₂	.115	.125	2.93	3.17
LS ₁	.150 BSC		3.81 BSC	
LS ₂	.075 BSC		1.91 BSC	
Q ₁	.030		0.762	
Q ₂	.030		0.762	
Term 1	Collector			
Term 2	Base			
Term 3	Emitter			

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