

# 2N5795, 2N5795A, 2N5796 2N5796A, 2N5796AU, 2N5796U

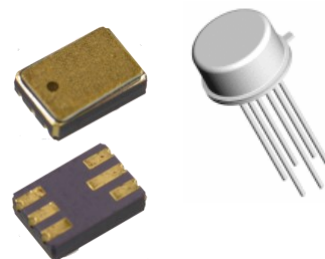


## PNP Dual Silicon Transistors

Rev. V3

### Features

- Available in JAN, JANTX, JANTXV, JANS and JANSR per MIL-PRF-19500/496
- TO-78 and U package types
- Radiation Tolerant Levels M, D, P, L, and R



### Electrical Characteristics (+25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Off Characteristics</b>					
Collector - Emitter Breakdown Voltage	$I_C = 10 \text{ mA dc}$	$V_{(BR)CEO}$	V dc	60	—
Collector - Base Cutoff Current	$V_{CB} = 60 \text{ V dc}$	$I_{CBO1}$	$\mu\text{A dc}$	—	10
	$V_{CB} = 50 \text{ V dc}$	$I_{CBO2}$	nA dc	—	10
Emitter - Base Cutoff Current	$V_{EB} = 5.0 \text{ V dc}$	$I_{EBO1}$	$\mu\text{A dc}$	—	10
	$V_{EB} = 3.0 \text{ V dc}$	$I_{EBO2}$	nA dc	—	100
<b>On Characteristics<sup>1</sup></b>					
Forward Current Transfer Ratio	2N5795, 2N5795A $V_{CE} = 10 \text{ V dc}; I_C = 0.1 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 1.0 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 10 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 150 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 300 \text{ mA dc}$ $V_{CE} = 1.0 \text{ V dc}; I_C = 150 \text{ mA dc}$	$h_{FE1}$	$h_{FE}$	40	150
		$h_{FE2}$		40	
		$h_{FE3}$		40	
		$h_{FE4}$		40	
		$h_{FE5}$		20	
		$h_{FE6}$		20	
	2N5796, 2N5796U 2N5796A $V_{CE} = 10 \text{ V dc}; I_C = 0.1 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 1.0 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 10 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 150 \text{ mA dc}$ $V_{CE} = 10 \text{ V dc}; I_C = 300 \text{ mA dc}$ $V_{CE} = 1.0 \text{ V dc}; I_C = 150 \text{ mA dc}$	$h_{FE1}$	$h_{FE}$	75	300
		$h_{FE2}$		100	
		$h_{FE3}$		100	
		$h_{FE4}$		100	
		$h_{FE5}$		50	
		$h_{FE6}$		50	
Collector - Emitter Saturation Voltage	$I_C = 150 \text{ mA dc}; I_B = 15 \text{ mA dc}$ $I_C = 500 \text{ mA dc}; I_B = 50 \text{ mA dc}$	$V_{CE(SAT)1}$	Vdc	—	0.4
		$V_{CE(SAT)2}$		—	1.6
Base - Emitter Saturation Voltage	$I_C = 150 \text{ mA dc}; I_B = 15 \text{ mA dc}$	$V_{BE(SAT)1}$	Vdc	—	1.3
Base - Emitter Saturation Voltage	$I_C = 500 \text{ mA dc}; I_B = 50 \text{ mA dc}$	$V_{BE(SAT)2}$	Vdc	—	2.6
Forward-Current Transfer Ratio (Gain Ratio) (2N5795A, 2N5796A)	$V_{CE} = 10 \text{ V dc}; I_C = 10 \text{ mA dc}$	$h_{FE2-1}$		0.9	1.1
		$h_{FE2-2}$			

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

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### Electrical Characteristics (+25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Forward-Current Transfer Ratio (Gain Ratio) (2N5795A, 2N5796A)	$V_{CE} = 10 \text{ V dc}; I_C = 10 \text{ mA dc}$	$\frac{h_{FE3-1}}{h_{FE3-2}}$		0.9	1.1
Absolute Value of Base Emitter-Voltage Differential (2N5795A, 2N5796A )	$V_{CE} = 10 \text{ V dc}; I_C = 1 \text{ mA dc}$	$ V_{BE1}-V_{BE2} $	mV dc	—	10
Collector-Base Cutoff Current	$T_A = +150^\circ\text{C}$ $V_{CB} = 50 \text{ V dc}$	$I_{CBO3}$	$\mu\text{A}$	—	10
Forward Current Transfer Ratio	$T_A = -55^\circ\text{C}$ 2N5795, 2N5795A 2N5796, 2N5796U, 2N5796UC 2N5796, 2N5796AUC	$h_{FE7}$		16 40 40	
Collector One to Collector Two Leakage Current	$V_{(1C-2C)} = \pm 50 \text{ V dc}$	$I_{(1C-2C)}$	nA dc		$\pm 1$

### Dynamic Characteristics

Magnitude of Common Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 20 \text{ mA dc}, V_{CE} = 20 \text{ V dc}, f = 100 \text{ MHz}$	$ h_{FE} $	-	2.0	10
Open Circuit Output Capacitance	$V_{CB} = 10 \text{ V dc}, I_E = 0 \text{ mA}, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{obo}$	pF	—	8.0
Input Capacitance (Output Open-Circuited)	$V_{EB} = 2.0 \text{ V dc}; I_C = 0 \text{ mA}; 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{ibo}$	pF	—	30

### Switching Characteristics

Turn-On Time (saturated)	$V_{CC} = 30 \text{ V dc}; I_C = 150 \text{ mA dc}; I_{B1} = 15 \text{ mA dc}$	$t_{on}$	ns	—	50
Turn-Off Time (saturated)	$V_{CC} = 30 \text{ Vdc}; I_C = 150 \text{ mA dc}; I_{B1} = I_{B2} = 15 \text{ mA dc}$	$t_{off}$	ns	—	140

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### Absolute Maximum Ratings

Ratings	Symbol	Value
Collector - Emitter Voltage	$V_{CEO}$	60 V dc
Collector - Base Voltage	$V_{CBO}$	60 V dc
Emitter - Base Voltage	$V_{EBO}$	5.0 V dc
Collector Current	$I_C$	-600 mA dc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ One Section Total Device	$P_T^{(1)(2)}$	0.5 W 0.6 W
Operating & Storage Temperature Range	$T_J, T_{STG}$	$-65^\circ\text{C}$ to $+175^\circ\text{C}$

### Thermal Characteristics

Types	$R_{\theta JA}$ One Section	$R_{\theta JA}$ Both Sections	$R_{\theta JSP}$ One Section	$R_{\theta JSP}$ Both Sections	$R_{\theta JPCB}$ One Section	$R_{\theta JPCB}$ Both Sections
	$^\circ\text{C/W}^{(2)(3)}$	$^\circ\text{C/W}^{(2)(3)}$	$^\circ\text{C/W}^{(2)(3)}$	$^\circ\text{C/W}^{(2)(3)}$	$^\circ\text{C/W}^{(2)(3)}$	$^\circ\text{C/W}^{(2)(3)}$
2N5795, 2N5796 2N5795A, 2N5796A	350 350	290 290				
2N5796U 2N5796AU			110 110	90 90	350 350	290 290

- (1) For  $T_A \geq 25^\circ\text{C}$ , derate linearly 2.86 mW/ $^\circ\text{C}$  one section, 3.43 mW/ $^\circ\text{C}$  total.  
 (2) For 2N5795, 2N5795A, 2N5796, 2N5796A, 2N5796U devices.  
 (3) For thermal impedance curves see figures 4, 5 and 6 of MIL-PRF-19500/496

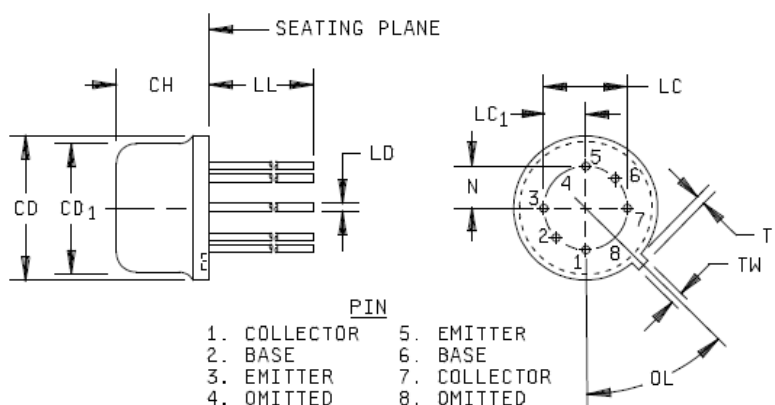
# 2N5795, 2N5795A, 2N5796 2N5796A, 2N5796AU, 2N5796U



## PNP Dual Silicon Transistors

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### Outline Drawing



Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.335	.370	8.51	9.40	
CD <sub>1</sub>	.305	.335	7.75	8.51	
CH	.150	.185	3.81	4.70	
LD	.016	.021	0.41	0.53	
LC	.200 BSC		5.08 BSC		4
LC <sub>1</sub>	.100 BSC		2.54 BSC		4
LL	.500		12.70		
TW	.028	.034	0.71	0.86	
TL	.029	.045	0.74	1.14	3
OL	45° BSC		45° BSC		6
N	.100 BSC		2.54 BSC		

#### NOTES:

1. Dimension are in inches.
2. Millimeters are given for general information only.
3. Measured from maximum diameter of the product.
4. Leads having maximum diameter .019 inch (0.483 mm) measured in gaging plan .054 inch (1.37 mm) + .001 inch (0.025 mm) - .000 inch (0.000 mm) below the seating plane of the product shall be within .007 inch (.178 mm) of their true position relative to a maximum width tab.
5. The product may be measured by direct methods or by gauge.
6. Tab centerline.
7. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.

FIGURE 1. Physical dimensions for 2N5795 and 2N5796 (TO-78).

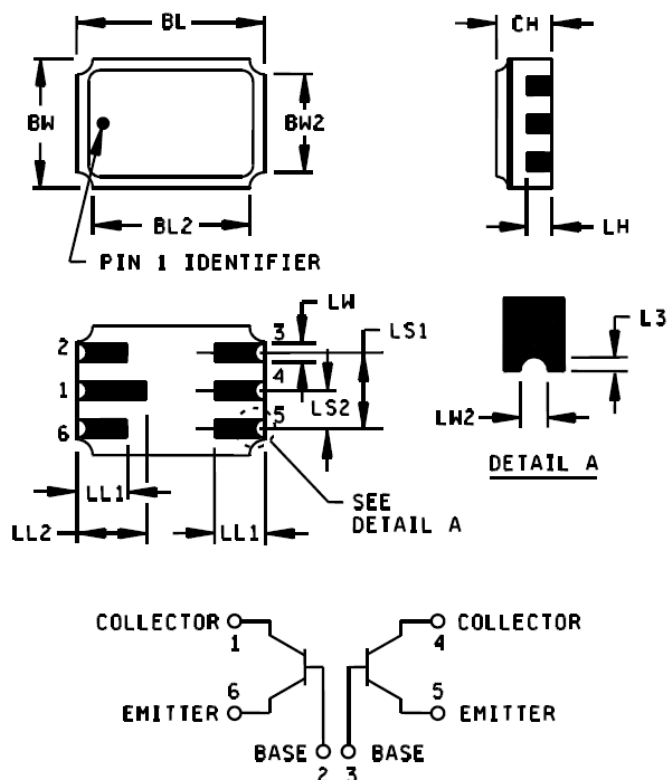
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### Outline Drawing



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.240	.250	6.10	6.35
BL <sub>2</sub>		.250		6.35
BW	.165	.175	4.19	4.45
BW <sub>2</sub>		.175		4.45
CH	.058	.100	1.47	2.54
L <sub>3</sub>	.003	.007	0.08	0.18
LH	.026	.039	0.66	0.99

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
LL <sub>1</sub>	.060	.070	1.52	1.78
LL <sub>2</sub>	.082	.098	2.08	2.49
LS <sub>1</sub>	.095	.105	2.41	2.67
LS <sub>2</sub>	.045	.055	1.14	1.40
LW	.022	.028	0.56	0.71
LW <sub>2</sub>	.006	.022	0.15	0.56

#### NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Dimension "CH" controls the overall package thickness.
4. The corner shape (square, notch, radius, etc.) may vary at the manufacturer's option from that shown on the drawing.
5. Dimensions "LW<sub>2</sub>" minimum and "L<sub>3</sub>" minimum and the appropriate castellation length define an unobstructed three-dimensional space traversing all of the ceramic layers in which a castellation was designed. (Castellations are required on bottom two layers, optional on top ceramic layer.) Dimension "LW<sub>2</sub>" maximum and "L<sub>3</sub>" maximum define the maximum width and depth of the castellation at any point on its surface. Measurement of these dimensions may be made prior to solder dipping.
6. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.

FIGURE 2. Physical dimensions, 2N5796U.

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