

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

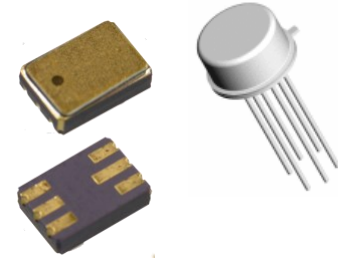


PNP Dual Silicon Transistors

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.
Off Characteristics					
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
On Characteristics¹					
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_{FE2} h_{FE3} h_{FE4} h_{FE5} h_{FE6}	h_{FE}	40 40 40 40 20 20	150
	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_{FE2} h_{FE3} h_{FE4} h_{FE5} h_{FE6}		75 100 100 100 50 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 1.6
		$V_{CE(SAT)2}$			
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} — h_{FE2-2}		0.9	1.1

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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



PNP Dual Silicon Transistors

Rev. V3

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}	μA	—	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		± 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

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



PNP Dual Silicon Transistors

Rev. V3

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°C to $+175^\circ\text{C}$

Thermal Characteristics

Types	$R_{\theta JA}$	$R_{\theta JA}$	$R_{\theta JSP}$	$R_{\theta JSP}$	$R_{\theta JPCB}$	$R_{\theta JPCB}$
	One Section	Both Sections	One Section	Both Sections	One Section	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

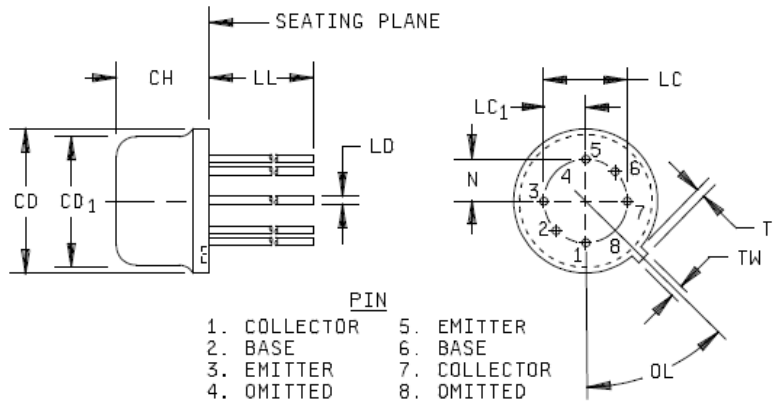
2N5795, 2N5795A, 2N5796 2N5796A, 2N5796AU, 2N5796U



PNP Dual Silicon Transistors

Rev. V3

Outline Drawing (TO-78)



Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.335	.370	8.51	9.40	
CD ₁	.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 ₁	.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 ϕx symbology.

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

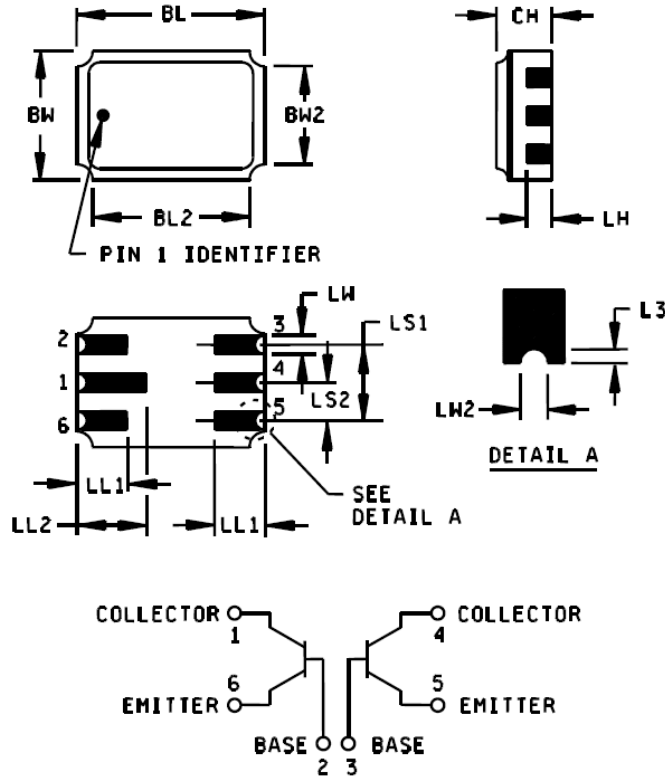
2N5795, 2N5795A, 2N5796 2N5796A, 2N5796AU, 2N5796U



PNP Dual Silicon Transistors

Rev. V3

Outline Drawing (U)



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

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

NOTES:

- Dimensions are in inches.
- Millimeters are given for general information only.
- Dimension "CH" controls the overall package thickness.
- The corner shape (square, notch, radius, etc.) may vary at the manufacturer's option from that shown on the drawing.
- Dimensions "LW₂" minimum and "L₃" 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 "LW₂" maximum and "L₃" 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.
- In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 2. Physical dimensions, 2N5796U.

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



PNP Dual Silicon Transistors

Rev. V3

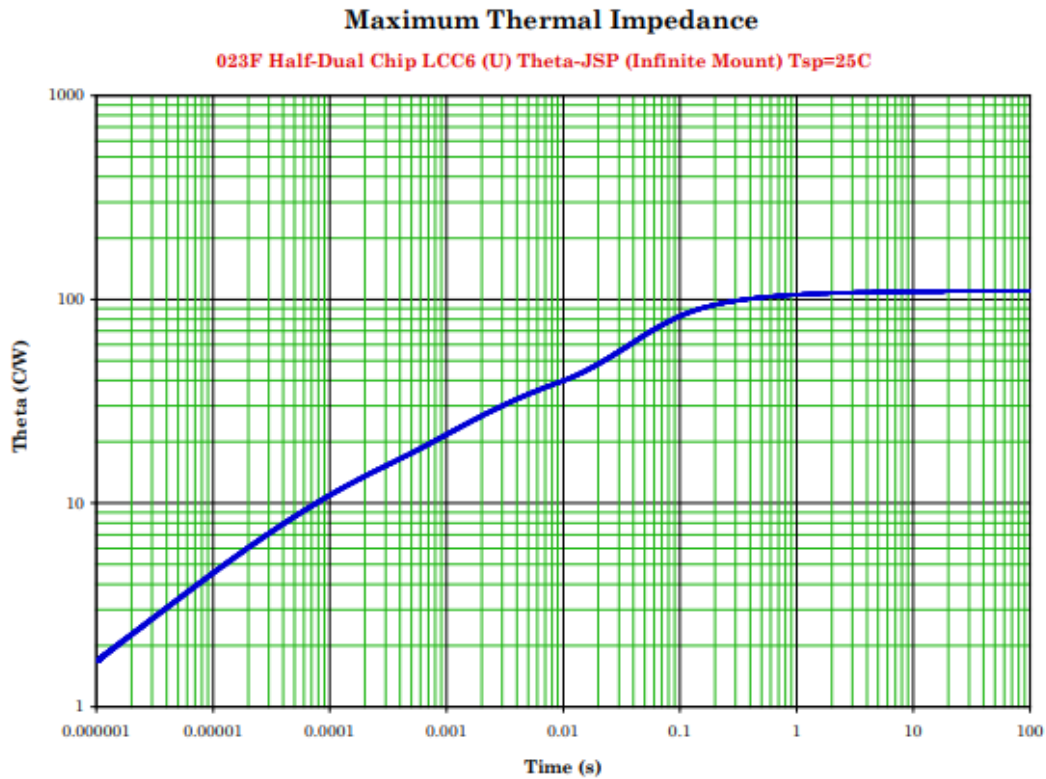


FIGURE 4. Thermal impedance graph ($R_{\theta JSP}$) for 2N5796U, 2N5796UC, 2N5796AU, and 2N5796AUC (U and UC).

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



PNP Dual Silicon Transistors

Rev. V3

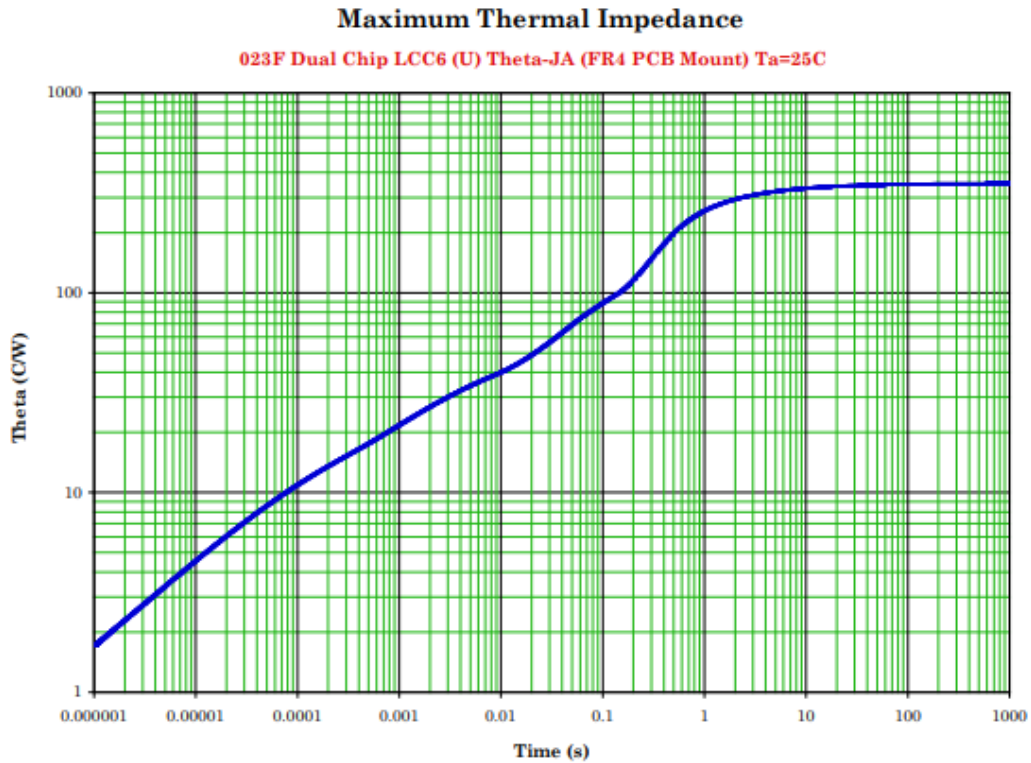


FIGURE 5. Thermal impedance graph ($R_{\theta JPCB}$) for 2N5796U, 2N5796UC, 2N5796AU, and 2N5796AUC (U and UC).

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



PNP Dual Silicon Transistors

Rev. V3

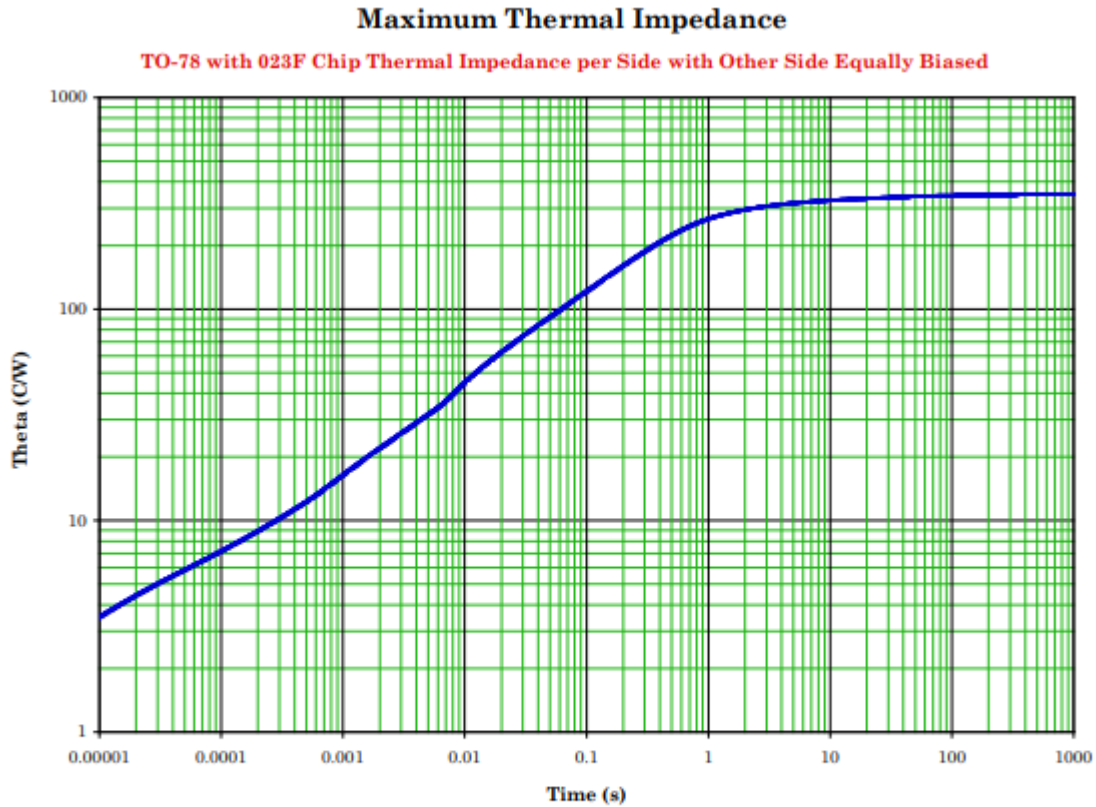


FIGURE 6. Thermal impedance graph ($R_{\theta JA}$) for 2N5796U, 2N5796UC, 2N5796AU, and 2N5796AUC (U and UC).

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



PNP Dual Silicon Transistors

Rev. V3

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