

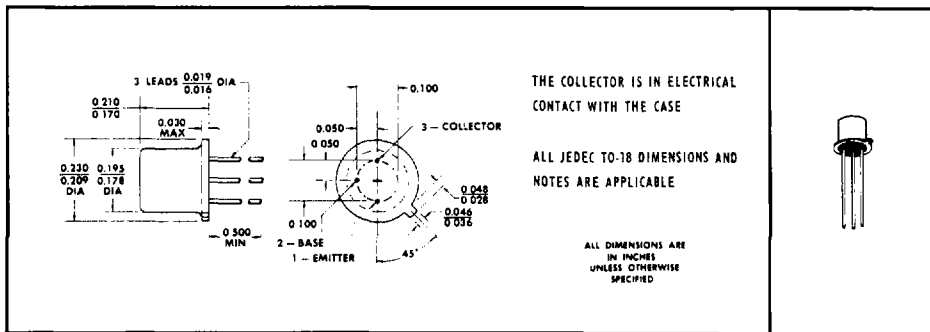
TYPES 2N3798, 2N3799 P-N-P SILICON TRANSISTORS

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FOR LOW-LEVEL, LOW-NOISE, HIGH-GAIN AMPLIFIER APPLICATIONS

- Recommended for Complementary Use with 2N2484 and 2N3117
- Guaranteed Low-Noise Characteristics
- Excellent h_{FE} Linearity from 10 μ A to 10 mA Collector Current

*mechanical data



*absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

Collector-Base Voltage	−60 V
Collector-Emitter Voltage (See Note 1)	−60 V
Emitter-Base Voltage	−5 V
Continuous Collector Current	−50 mA
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2)	360 mW
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 3)	1.2 W
Storage Temperature Range	−65°C to 200°C
Lead Temperature $\frac{1}{8}$ Inch from Case for 10 Seconds	230°C

NOTES: 1. This value applies between 0 and 50 mA collector current when the base-emitter diode is open-circuited.

2. Derate linearly to 200°C free-air temperature at the rate of 2.06 mW/deg.

3. Derate linearly to 200°C case temperature at the rate of 6.86 mW/deg.

*Indicates JEDEC registered data

USES CHIP P19

TYPES 2N3798, 2N3799

P-N-P SILICON TRANSISTORS

*electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	2N3798		2N3799		UNIT
		MIN	MAX	MIN	MAX	
$V_{(BR)CBO}$ Collector-Base Breakdown Voltage	$I_C = -10 \mu A, I_E = 0$	-60		-60		V
$V_{(BR)CEO}$ Collector-Emitter Breakdown Voltage	$I_C = -10 \text{ mA}, I_B = 0$, See Note 4	-60		-60		V
$V_{(BR)EBO}$ Emitter-Base Breakdown Voltage	$I_E = -10 \mu A, I_C = 0$	-5		-5		V
I_{CBO} Collector Cutoff Current	$V_{CB} = -50 \text{ V}, I_E = 0$		-10		-10	nA
I_{EBO} Emitter Cutoff Current	$V_{CB} = -50 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$		-10		-10	μA
h_{FE} Static Forward Current Transfer Ratio	$V_{EB} = -4 \text{ V}, I_C = 0$		-20		-20	nA
	$V_{CE} = -5 \text{ V}, I_C = -1 \mu A$			75		
	$V_{CE} = -5 \text{ V}, I_C = -10 \mu A$	100		225		
	$V_{CE} = -5 \text{ V}, I_C = -100 \mu A$	150		300		
	$V_{CE} = -5 \text{ V}, I_C = -500 \mu A$	150	450	300	900	
	$V_{CE} = -5 \text{ V}, I_C = -1 \text{ mA}$	150		300		
V_{BE} Base-Emitter Voltage	$V_{CE} = -5 \text{ V}, I_C = -10 \text{ mA}$	125		250		
	$V_{CE} = -5 \text{ V}, I_C = -100 \mu A, T_A = -55^\circ\text{C}$	75		150		
	$V_{CE} = -5 \text{ V}, I_C = -100 \mu A$	-0.7		-0.7		V
$V_{CE(sat)}$ Collector-Emitter Saturation Voltage	$I_B = -10 \mu A, I_C = -100 \mu A$	-0.7		-0.7		V
	$I_B = -100 \mu A, I_C = -1 \text{ mA}$	-0.8		-0.8		V
	$I_B = -10 \mu A, I_C = -100 \mu A$	-0.2		-0.2		V
h_{ie} Small-Signal Common-Emitter Input Impedance	$I_B = -100 \mu A, I_C = -1 \text{ mA}$	-0.25		-0.25		V
	$V_{CE} = -10 \text{ V}, I_C = -1 \text{ mA}, f = 1 \text{ kHz}$	3	30	10	40	k Ω
h_{fe} Small-Signal Common-Emitter Forward Current Transfer Ratio		150	600	300	900	
h_{re} Small-Signal Common-Emitter Reverse Voltage Transfer Ratio		25	$\times 10^{-4}$	25	$\times 10^{-4}$	
h_{oe} Small-Signal Common-Emitter Output Admittance		5	60	5	60	μmho
$ h_{fe} $ Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = -5 \text{ V}, I_C = -500 \mu A, f = 30 \text{ MHz}$	1		1		
	$V_{CE} = -5 \text{ V}, I_C = -1 \text{ mA}, f = 100 \text{ MHz}$	1	5	1	5	
C_{obo} Common-Base Open-Circuit Output Capacitance	$V_{CB} = -5 \text{ V}, I_E = 0, f = 100 \text{ kHz}$		4		4	pF

*operating characteristics at 25°C free-air temperature

PARAMETER	TEST CONDITIONS	2N3798	2N3799	UNIT
		MAX	MAX	
NF Spot Noise Figure	$V_{CE} = -10 \text{ V}, I_C = -100 \mu A, R_G = 3 \text{ k}\Omega, f = 100 \text{ Hz}, \text{ Noise Bandwidth} = 20 \text{ Hz}$	7	4	dB
	$V_{CE} = -10 \text{ V}, I_C = -100 \mu A, R_G = 3 \text{ k}\Omega, f = 1 \text{ kHz}, \text{ Noise Bandwidth} = 200 \text{ Hz}$	3	1.5	dB
	$V_{CE} = -10 \text{ V}, I_C = -100 \mu A, R_G = 3 \text{ k}\Omega, f = 10 \text{ kHz}, \text{ Noise Bandwidth} = 2 \text{ kHz}$	2.5	1.5	dB
$\overline{\text{NF}}$ Average Noise Figure	$V_{CE} = -10 \text{ V}, I_C = -100 \mu A, R_G = 3 \text{ k}\Omega, \text{ Noise Bandwidth} = 15.7 \text{ kHz}, \text{ See Note 5}$	3.5	2.5	dB

NOTES: 4. These parameters must be measured using pulse techniques. $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

5. Average Noise Figure is measured in an amplifier with low-frequency response down 3 dB at 10 Hz

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