

New Jersey Semi-Conductor Products, Inc.

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U.S.A.

2N3798, 2N3798A
2N3799, 2N3799A

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PNP SILICON ANNULAR TRANSISTORS

... designed for low-level, low-noise amplifier applications.

- High Collector-Emitter Breakdown Voltages –
BV_{CEO} = 60 Vdc (Min) – 2N3798, 2N3799
90 Vdc (Min) – 2N3798A, 2N3799A
- DC Current Gain – @ I_C = 500 μ Adc
h_{FE} = 150-450 – 2N3798, 2N3798A
300-900 – 2N3799, 2N3799A
- Low Noise Figure –
NF = 1.5 dB (Max) @ 1.0 kHz and 10 kHz

PNP SILICON AMPLIFIER TRANSISTORS



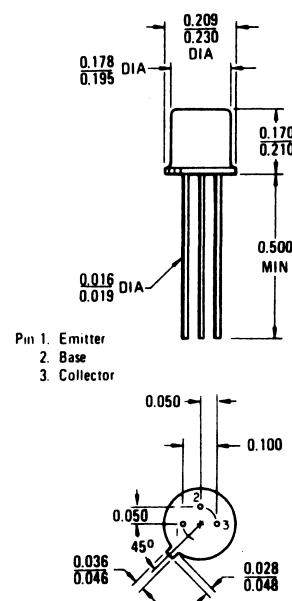
*MAXIMUM RATINGS

Rating	Symbol	2N3798 2N3799	2N3798A 2N3799A	Unit
Collector-Emitter Voltage	V _{CEO}	60	90	Vdc
Collector-Base Voltage	V _{CB}	60	90	Vdc
Emitter-Base Voltage	V _{EB}	5.0		Vdc
Collector Current – Continuous	I _C	50		mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	0.36 2.06		Watt W/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.2 6.9		Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	0.15	°C/mW
Thermal Resistance, Junction to Ambient	θ_{JA}	0.49	°C/mW

*Indicates JEDEC Registered Data.



Collector Connected to Case
CASE 22 (1)
(TO-18)

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$, $I_B = 0$)	BV_{CEO}	60 90	— —	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$, $I_E = 0$)	BV_{CBO}	60 90	— —	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{A}$, $I_C = 0$)	BV_{EBO}	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$)	I_{CBO}	— —	— —	0.01 10	μA
Emitter Cutoff Current ($V_{BE} = 4.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	—	20	nA

ON CHARACTERISTICS

DC Current Gain(1) ($I_C = 1.0\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 10\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$, $T_A = -55^\circ\text{C}$) ($I_C = 500\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 1.0\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$)	2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A	h_{FE}	75 100 225 150 300 75 150 150 300 150 300 125 250	— — — — — — — — — — — — —	— — — — — — — — 450 900 — — — —	—
Collector-Emitter Saturation Voltage(1) ($I_C = 100\text{ }\mu\text{A}$, $I_B = 10\text{ }\mu\text{A}$) ($I_C = 1.0\text{ mA}$, $I_B = 100\text{ }\mu\text{A}$)		$V_{CE(sat)}$	— —	— —	0.2 0.25	Vdc
Base-Emitter Saturation Voltage(1) ($I_C = 100\text{ }\mu\text{A}$, $I_B = 10\text{ }\mu\text{A}$) ($I_C = 1.0\text{ mA}$, $I_B = 100\text{ }\mu\text{A}$)		$V_{BE(sat)}$	— —	— —	0.7 0.8	Vdc
Base-Emitter On Voltage ($I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$)		$V_{BE(on)}$	—	—	0.7	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product(2) ($I_C = 500\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ Vdc}$, $f = 30\text{ MHz}$) ($I_C = 1.0\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$, $f = 100\text{ MHz}$)		f_T	30 100	— —	— 500	MHz
Output Capacitance ($V_{CB} = 5.0\text{ Vdc}$, $I_E = 0$, $f = 100\text{ kHz}$)		C_{ob}	—	—	4.0	pF
Input Capacitance ($V_{BE} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 100\text{ kHz}$)		C_{ib}	—	—	8.0	pF
Input Impedance ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	2N3798, 2N3798A 2N3799, 2N3799A	h_{ie}	3.0 10	— —	15 40	k ohms
Voltage Feedback Ratio ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)		h_{re}	—	—	25	$\times 10^{-4}$
Small-Signal Current Gain ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	2N3798, 2N3798A 2N3799, 2N3799A	h_{fe}	150 300	— —	600 900	—
Output Admittance ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)		h_{oe}	5.0	—	60	μmhos
Noise Figure ($I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ Vdc}$, $R_G = 3.0\text{ k ohms}$) Spot Noise $f = 100\text{ Hz}$, B.W. = 20 Hz $f = 1.0\text{ kHz}$, B.W. = 200 Hz $f = 10\text{ kHz}$, B.W. = 2.0 kHz Broadband Noise-Bandwidth 10 Hz to 15.7 kHz	2N3798, 2N3798A 2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A 2N3798, 2N3798A 2N3799, 2N3799A	NF	— — — — — —	4.0 2.5 1.5 0.8 1.0 0.8	7.0 4.0 3.0 1.5 2.5 1.5	dB