



Dielectrically Isolated Dual PNP General Purpose Amplifier

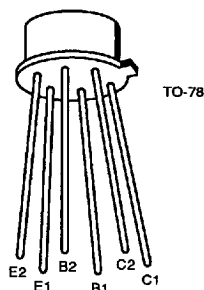
T-27-27

2N5117 - 2N5119

FEATURES

- High Gain at Low Current
- Low Output Capacitance
- Good h_{FE} Match
- Tight V_{BE} Tracking
- Dielectrically Isolated Matched Pairs for Differential Amplifiers

PIN CONFIGURATION



4503

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

Collector-Base or Collector-Emitter

Voltage (Note 1) -45V

Emitter-Base Voltage (Notes 1 and 2) -7V

Collector-Collector Voltage 100V

Collector Current (Note 1) 10mA

Storage Temperature Range -65°C to +200°C

Operating Temperature Range -55°C to +175°C

Lead Temperature (Soldering, 10sec) +300°C

	One Side	Both Sides
Power Dissipation	250mW	500mW
Derate above 25°C	1.67mW/°C	3.33mW/°C

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ORDERING INFORMATION

Part	Package	Temperature Range
2N5117	Hermetic TO-78	-55°C to +175°C
X2N5117	Sorted Chips in Carriers	-55°C to +175°C
2N5118	Hermetic TO-78	-55°C to +175°C
X2N5118	Sorted Chips in Carriers	-55°C to +175°C
2N5119	Hermetic TO-78	-55°C to +175°C
X2N5119	Sorted Chips in Carriers	-55°C to +175°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

SYMBOL	PARAMETER	2N5117/2N5118		2N5119		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
h_{FE}	DC Current Gain	100	300	50			I _C = 10μA, V _{CE} = 5.0V
		100		50			I _C = 500μA, V _{CE} = 5.0V
		30		20			I _C = 10μA, V _{CE} = 5.0V, T _A = -55°C
I _{CBO}	Collector Cutoff Current		0.1		0.1	nA	I _E = 0, V _{CB} = 30V
			0.1		0.1	μA	T _A = 150°C
I _{EBO}	Emitter Cutoff Current		0.1		0.1	nA	I _C = 0, V _{EB} = 5.0V
I _{C1 - C2}	Collector-Collector Leakage		5.0		5.0	pA	V _{CC} = 100V
GBW	Current Gain Bandwidth Product (Note 4)	100		100		MHz	I _C = 500μA, V _{CE} = 10V
C _{ob}	Output Capacitance (Note 4)		0.8		0.8		I _E = 0, V _{CB} = 5.0V, f = 1MHz
C _{te}	Emitter Transition Capacitance (Note 4)		1.0		1.0	pF	I _C = 0, V _{EB} = 0.5V, f = 1MHz
C _{C1 - C2}	Collector-Collector Capacitance (Note 4)		0.8		0.8		V _{CC} = 0, f = 1MHz
V _{CEO(sust)}	Collector-Emitter Sustaining Voltage	45		45		V	I _C = 1.0mA, I _B = 0
NF	Narrow Band Noise Figure (Note 4)		4.0		4.0	dB	I _C = 10μA, V _{CE} = 5.0V, f = 1kHz, BW = 200Hz, R _G = 10kΩ
BV _{CBO}	Collector Base Breakdown Voltage	45		45		V	I _C = 10μA, I _E = 0
BV _{EBO}	Emitter Base Breakdown Voltage	7.0		7.0		V	I _E = 10μA, I _C = 0

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MATCHING CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

SYMBOL	PARAMETER	2N5117		2N5118		2N5119		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX	MIN	MAX		
h_{FE1}/h_{FE2}	DC Current Gain Ratio (Note 3)	0.9	1.0						$I_C = 10\mu\text{A}$ to $500\mu\text{A}$, $V_{CE} = 5\text{V}$
				0.85	1.0	0.8	1.0		$I_C = 10\mu\text{A}$, $V_{CE} = 5.0\text{V}$
$V_{BE1} - V_{BE2}$	Base-Emitter Voltage Differential		3.0					mV	$I_C = 10\mu\text{A}$ to $500\mu\text{A}$, $V_{CE} = 5\text{V}$
					5.0		5.0		$I_C = 10\mu\text{A}$, $V_{CE} = 5.0\text{V}$
$I_{B1} - I_{B2}$	Base Current Differential		10		15		40	nA	
$\Delta(h_{BE1}/h_{BE2})/\Delta T$	Base Voltage Differential Change with Temperature		3.0		5.0		10	$\mu\text{V}/^\circ\text{C}$	$T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$
$\Delta(I_{B1}/I_{B2})/\Delta T$	Base-Current Differential Change with Temperature		0.3		0.5		1.0	$\text{nA}/^\circ\text{C}$	$T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$

NOTES: 1. Per transistor

2. The reverse base-to-emitter voltage must never exceed 7.0 volts and the reverse base-to-emitter current must never exceed $10\mu\text{A}$.3. Lower of two h_{FE} readings is defined as h_{FE1} .

4. For design reference only, not 100% tested.