

2N5117-2N5119

Dielectrically Isolated Dual PNP General Purpose Amplifier

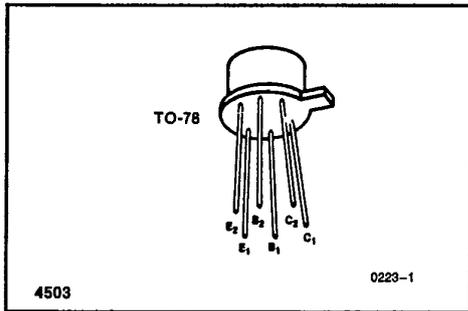


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FEATURES

- 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



ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ\text{C}$ 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 $+200^\circ\text{C}$
 Operating Temperature Range -55°C to $+175^\circ\text{C}$
 Lead Temperature (Soldering, 10sec) $+300^\circ\text{C}$

	ONE SIDE	BOTH SIDES
Power Dissipation	250mW	500mW
Derate above 25°C	1.67mW/ $^\circ\text{C}$	3.33mW/ $^\circ\text{C}$

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

TO-78
2N5117
2N5118
2N5119

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

Symbol		Test Conditions	2N5117		2N5119		Units
			2N5117	2N5118	Min	Max	
h_{FE}	DC Current Gain	$I_C = 10\mu\text{A}, V_{CE} = 5.0\text{V}$	100	300	50		
		$I_C = 500\mu\text{A}, V_{CE} = 5.0\text{V}$	100		50		
		$I_C = 10\mu\text{A}, V_{CE} = 5.0\text{V}, T_A = -55^\circ\text{C}$	30		20		
I_{CBO}	Collector Cutoff Current	$I_E = 0, V_{CB} = 30\text{V}$			0.1		0.1 nA
		$T_A = 150^\circ\text{C}$			0.1		0.1 μA
I_{EBO}	Emitter Cutoff Current	$I_C = 0, V_{EB} = 5.0\text{V}$			0.1		0.1 nA
I_{C1-C2}	Collector-Collector Leakage	$V_{CC} = 100\text{V}$			5.0		5.0 pA
GBW	Current Gain Bandwidth Product (Note 4)	$I_C = 500\mu\text{A}, V_{CE} = 10\text{V}$	100		100		MHz
C_{ob}	Output Capacitance (Note 4)	$I_E = 0, V_{CB} = 5.0\text{V}, f = 1\text{MHz}$			0.8		0.8 pF
C_{te}	Emitter Transition Capacitance (Note 4)	$I_C = 0, V_{EB} = 0.5\text{V}, f = 1\text{MHz}$			1.0		1.0 pF
C_{C1-C2}	Collector-Collector Capacitance (Note 4)	$V_{CC} = 0, f = 1\text{MHz}$			0.8		0.8 pF
$V_{CEO(sust)}$	Collector-Emitter Sustaining Voltage	$I_C = 1.0\text{mA}, I_B = 0$	45		45		V
NF	Narrow Band Noise Figure (Note 4)	$I_C = 10\mu\text{A}, V_{CE} = 5.0\text{V}$ $BW = 200\text{Hz}$		4.0		4.0	dB
BV_{CBO}	Collector Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	45		45		V
BV_{EBO}	Emitter Base Breakdown Voltage	$I_E = 10\mu\text{A}, I_C = 0$	7.0		7.0		V

10

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NOTE: All typical values have been characterized but are not tested.

2N5117-2N5119

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T-29-27

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

Symbol	Parameter	Test Conditions	2N5117		2N5118		2N5119		Units
			Min	Max	Min	Max	Min	Max	
h_{FE1}/h_{FE2}	DC Current Gain Ratio (Note 3)	$I_C = 10\mu\text{A}$ to $500\mu\text{A}$, $V_{CE} = 5\text{V}$	0.9	1.0					
		$I_C = 10\mu\text{A}$, $V_{CE} = 5.0\text{V}$			0.85	1.0	0.8	1.0	
$V_{BE1} - V_{BE2}$	Base-Emitter Voltage Differential	$I_C = 10\mu\text{A}$ to $500\mu\text{A}$, $V_{CE} = 5\text{V}$		3.0					mV
		$I_C = 10\mu\text{A}$, $V_{CE} = 5.0\text{V}$				5.0		5.0	
$I_{B1} - I_{B2}$	Base Current Differential			10.0		15		40	nA
$\Delta(V_{BE1} - V_{BE2})/\Delta T$	Base Voltage Differential Change with Temperature	$T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$		3.0		5.0		10	$\mu\text{V}/^\circ\text{C}$
$\Delta(I_{B1} - I_{B2})/\Delta T$	Base-Current Differential Change with Temperature	$T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$		0.3		0.5		1.0	$\text{nA}/^\circ\text{C}$

- 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.

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NOTE: All typical values have been characterized but are not tested.