

T-27-27

## 2N5117-2N5119

### Dielectrically Isolated Dual PNP General Purpose Amplifier

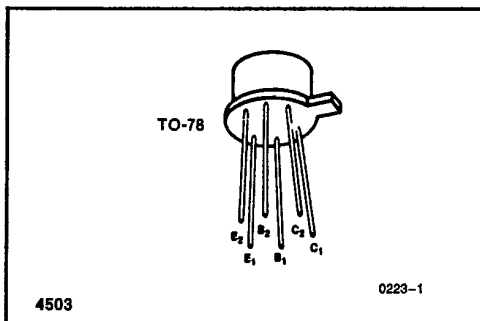


2N5117-2N5119

#### 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



#### ABSOLUTE MAXIMUM RATINGS

(T<sub>A</sub> = 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

TO-78
2N5117
2N5118
2N5119

#### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise specified)

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

INTERMIL'S SOLE AND EXCLUSIVE WARRANTY OBLIGATION WITH RESPECT TO THIS PRODUCT SHALL BE THAT STATED IN THE WARRANTY ARTICLE OF THE CONDITION OF SALE. THE WARRANTY SHALL BE EXCLUSIVE AND SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE.

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

2N5117-2N5119

**2N5117-2N5119****INTERSIL**

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.