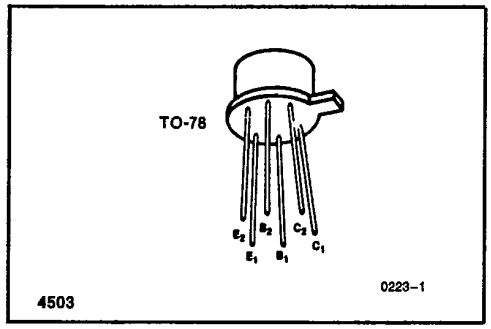
2N5117-2N5119
Dielectrically Isolated Dual PNP General Purpose Amplifier

INTERSIL

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°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_A = 25°C unless otherwise specified)

Symbol		Test Conditions	2N5117 2N5118		2N5119		Units
			Min	Max	Min	Max	
h_{FE}	DC Current Gain	I_C = 10μA, V_{CE} = 5.0V	100	300	50		
		I_C = 500μA, V_{CE} = 5.0V	100		50		
		I_C = 10μA, V_{CE} = 5.0V, T_A = −55°C	30		20		
I_{CBO}	Collector Cutoff-Current	I_E = 0, V_{CB} = 30V		0.1		0.1	nA
		T_A = 150°C		0.1		0.1	μA
I_{EBO}	Emitter Cutoff Current	I_C = 0, V_{EB} = 5.0V		0.1		0.1	nA
$I_{C_1-C_2}$	Collector-Collector Leakage	V_{CC} = 100V		5.0		5.0	pA
GBW	Current Gain Bandwith Product (Note 4)	I_C = 500μA, 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_{te}	Emitter Transition Capacitance (Note 4)	I_C = 0, V_{EB} = 0.5V, f = 1MHz		1.0		1.0	
$C_{C_1-C_2}$	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 = 10μA, V_{CE} = 5.0V, BW = 200Hz; f = 1kHz, R_G = 10kΩ		4.0		4.0	dB
BV_{CBO}	Collector Base Breakdown Voltage	I_C = 10μA, I_E = 0	45		45		V
BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 10μA, I_C = 0	7.0		7.0		V

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

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INTERSIL

T-29-27

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

Symbol	Parameter	Test Conditions		2N5117		2N5118		2N5119		Units
				Min	Max	Min	Max	Min	Max	
h_{FE_1}/h_{FE_2}	DC Current Gain Ratio	I_C = 10μA to 500μA, V_{CE} = 5V		0.9	1.0					
	(Note 3)	I_C = 10μA, V_{CE} = 5.0V				0.85	1.0	0.8	1.0	
V_{BE_1}-V_{BE_2}	Base-Emitter Voltage Differential	I_C = 10μA to 500μA, V_{CE} = 5V			3.0					mV
		I_C = 10μA, V_{CE} = 5.0V					5.0		5.0	
I_{B_1}-I_{B_2}	Base Current Differential				10.0		15		40	nA
$\Delta(V_{BE_1}-V_{BE_2})/\Delta T$	Base Voltage Differential Change with Temperature		T_A = −55°C to +125°C		3.0		5.0		10	μV/°C
$\Delta(I_{B_1}-I_{B_2})/\Delta T$	Base-Current Differential Change with Temperature		T_A = −55°C to +125°C		0.3		0.5		1.0	nA/°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 10μA.
3. Lower of two h_{FE} readings is defined as h_{FE_1}.
4. For design reference only, not 100% tested.

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