

T-29-27



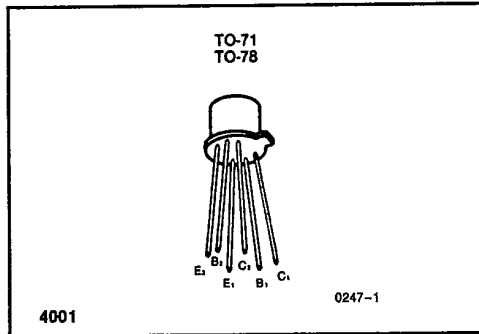
IT126-IT129

IT126-IT129 Monolithic Dual NPN General Purpose Amplifier

FEATURES

- High Gain at Low Current
- Low Output Capacitance
- Tight I_B 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 specified)

Collector-Base Voltage (Note 1)	60V
IT126, IT127	60V
IT128	55V
IT129	45V
Collector-Emitter Voltage (Note 1)	60V
IT126, IT127	60V
IT128	55V
IT129	45V
Emitter-Base Voltage (Notes 1 and 2)	7.0V
Collector Current (Note 1)	100mA
Collector-Collector Voltage	70V
Storage Temperature Range	-65°C to $+175^\circ\text{C}$
Operating Temperature Range	-55°C to $+175^\circ\text{C}$
Lead Temperature (Soldering, 10sec)	$+300^\circ\text{C}$

	TO71		TO78	
	One Side	Both Sides	One Side	Both Sides
Power Dissipation				
Total Dissipation at 25°C	200mW	400mW	250mW	500mW
	1.3	2.7	1.7	3.3
Derating Factor	mW/ $^\circ\text{C}$	mW/ $^\circ\text{C}$	mW/ $^\circ\text{C}$	mW/ $^\circ\text{C}$

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

TO78	TO71
IT126	IT126-TO71
IT127	IT127-TO71
IT128	IT128-TO71
IT129	IT129-TO71

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

Symbol	Parameter	Test Conditions	IT126		IT127		IT128		IT129		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
h_{FE}	DC Current Gain	$I_C = 10\mu\text{A}, V_{CE} = 5\text{V}$	150		150		100		70		
		$I_C = 1.0\text{mA}, V_{CE} = 5\text{V}$	200	800	200	800	150	800	100		
		$I_C = 10\text{mA}, V_{CE} = 5\text{V}$	230		230		170		115		
		$I_C = 50\text{mA}, V_{CE} = 5\text{V}$	100		100		75		50		
		$I_C = 1\text{mA}, V_{CE} = 5\text{V}, T_A = -55^\circ\text{C}$	75		75		60		40		
$V_{BE(on)}$	Emitter-Base On Voltage	$I_C = 10\text{mA}, V_{CE} = 5\text{V}$		0.9		0.9		0.9		0.9	V
		$I_C = 50\text{mA}, V_{CE} = 5\text{V}$		1.0		1.0		1.0		1.0	
$V_{CE(sat)}$	Collector Saturation Voltage	$I_C = 10\text{mA}, I_B = 1\text{mA}$		0.3		0.3		0.3		0.3	
		$I_C = 50\text{mA}, I_B = 5\text{mA}$		1.0		1.0		1.0		1.0	
I_{CBO}	Collector Cutoff Current	$I_E = 0, V_{CB} = 45\text{V}$		0.1		0.1		0.1		0.1*	nA
		$V_{CB} = 30\text{V}^* \text{ (IT129)}, T_A = +150^\circ\text{C}$		0.1		0.1		0.1		0.1*	μA

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

IT126-IT129



T-29-27

IT126-IT129

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

Symbol	Parameter	Test Conditions	IT126		IT127		IT128		IT129		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
I_{EBO}	Emitter Cutoff Current	$I_C = 0, V_{EB} = 5V$		0.1		0.1		0.1		0.1	nA
C_{obo}	Output Capacitance (Note 3)	$I_E = 0, V_{CB} = 20V$		3		3		3		3	pF
$BV_{C_1C_2}$	Collector to Collector Breakdown Voltage	$I_C = \pm 1\mu A$	± 100		± 100		± 100		± 100		V
$V_{CEO(sust)}$	Collector to Emitter Sustaining Voltage	$I_C = 1mA, I_B = 0$	60		60		55		45		
BV_{CBO}	Collector Base Breakdown Voltage	$I_C = 10\mu A, I_E = 0$	60		60		55		45		
BV_{EBO}	Emitter Base Breakdown Voltage	$I_E = 10\mu A, I_C = 0$	7		7		7		7		

MATCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions	IT126		IT127		IT128		IT129		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
$ V_{BE_1} - V_{BE_2} $	Base Emitter Voltage Differential	$I_C = 1mA, V_{CE} = 5V$		1		2		3		5	mV
$\Delta(V_{BE_1} - V_{BE_2})$ ΔT	Base Emitter Voltage Differential Change with Temperature (Note 3)	$I_C = 1mA, V_{CE} = 5V$ $T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$		3		5		10		20	$\mu V/^\circ\text{C}$
$ I_{B_1} - I_{B_2} $	Base Current Differential	$I_C = 10\mu A, V_{CE} = 5V$		2.5		5		10		20	nA
		$I_C = 1mA, V_{CE} = 5V$		0.25		0.5		1.0		2.0	μA

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 $10\mu A$.

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

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