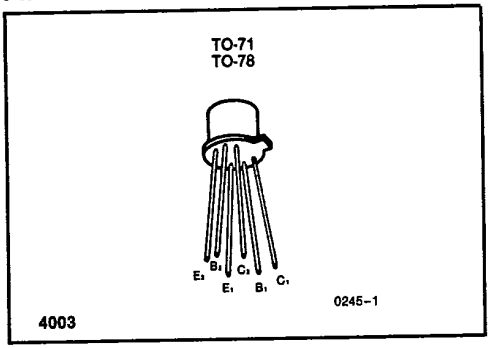
IT120, IT122
Dual NPN General Purpose Amplifier

INTERSIL

FEATURES
- High h_{FE} at Low Current
- Low Output Capacitance
- Good Matching
- Tight V_{BE} Tracking

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

Collector-Base Voltage (Note 1) 45V
Collector-Emitter Voltage (Note 1) 45V
Emitter Base Voltage (Notes 1 and 2) 7V
Collector Current (Note 1) 50mA
Collector-Collector Voltage 60V
Storage Temperature Range ..... −65°C to +200°C
Operating Temperature Range ..... −55°C to +150°C
Lead Temperature (Soldering, 10sec) ..... +300°C

	TO-78		TO-71	
	One Side	Both Sides	One Side	Both Sides
Power Dissipation	250mW	500mW	200mW	400mW
Derate Above 25°C	1.7mW/°C	3.3mW/°C	1.3mW/°C	2.7mW/°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	TO-71
IT120	IT120-TO71
IT121	IT121-TO71
IT122	IT122-TO71

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

Symbol	Parameter	Test Conditions		IT120A		IT120		IT121		IT122		Units
				Min	Max	Min	Max	Min	Max	Min	Max	
h_{FE}	DC Current Gain	I_C = 10μA, V_{CE} = 5.0V		200		200		80		80		
		I_C = 1.0mA, V_{CE} = 5.0V		225		225		100		100		
		I_C = 10μA, V_{CE} = 5.0V	T_A = −55°C	75		75		30		30		
V_{BE}(ON)	Emitter-Base On Voltage				0.7		0.7		0.7		0.7	V
V_{CE}(SAT)	Collector Saturation Voltage	I_C = 0.5mA, I_B = 0.05mA			0.5		0.5		0.5		0.5	
I_{CBO}	Collector Cutoff Current	I_E = 0, V_{CB} = 45V			1.0		1.0		1.0		1.0	nA
			T_A = +150°C		10		10		10		10	μA
I_{EBO}	Emitter Cutoff Current	I_C = 0, V_{EB} = 5.0V			1.0		1.0		1.0		1.0	nA
C_{obo}	Output Capacitance	I_E = 0, V_{CB} = 5.0V	f = 1MHz (Note 3)		2.0		2.0		2.0		2.0	pF
C_{te}	Emitter Transition Capacitance	I_C = 0, V_{EB} = 0.5V			2.5		2.5		2.5		2.5	
$C_{C_1C_2}$	Collector to Collector Capacitance	V_{CC} = 0			4.0		4.0		4.0		4.0	

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

INTERSIL

T-29-27

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

Symbol	Parameter	Test Conditions	IT120A		IT120		IT121		IT122		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
I_{C_1,C_2}	Collector to Collector Leakage Current	V_{CC} = ±60V (Note 3)		10		10		10		10	nA
$V_{CEO(SUST)}$	Collector to Emitter Sustaining Voltage	I_C = 1.0mA, I_B = 0	45		45		45		45		V
GBW	Current Gain Bandwidth Product (Note 3)	I_C = 10μA, V_{CE} = 5V	10		10		7		7		MHz
		I_C = 1mA, V_{CE} = 5V	220		220		180		180		
$\lvert V_{BE_1} - V_{BE_2} \rvert$	Base Emitter Voltage Differential	I_C = 10μA, V_{CE} = 5.0V		1		2		3		5	mV
$\lvert I_{B_1} - I_{B_2} \rvert$	Base Current Differential			2.5		5		25		25	nA
$\frac{\Delta(V_{BE_1} - V_{BE_2})}{\Delta T}$	Base-Emitter Voltage Differential Change with Temperature	(Note 3) T_A = −55°C to +125°C I_C = 10μA, V_{CE} = 5.0V		3		5		10		20	μV/°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. For design reference only, not 100% tested.