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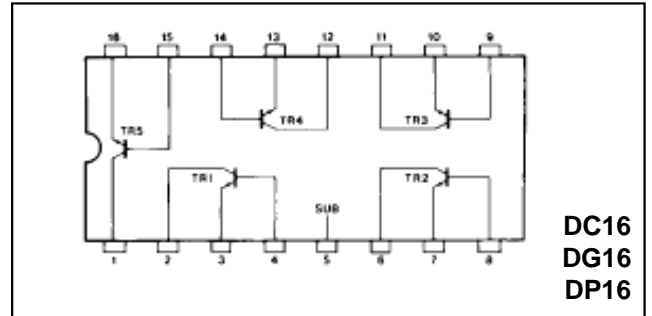
SL3127

HIGH FREQUENCY NPN TRANSISTOR ARRAY

The SL3127C is a monolithic array of five high frequency low current NPN transistors in a 16 lead DIL package. The transistors exhibit typical f_{T_s} of 1.6GHz and wideband noise figures of 3.6dB. The SL3127C is pin compatible with the CA3127.

FEATURES

- f_T Typically 1.6GHz
- Wideband Noise Figure 3.6dB
- V_{BE} Matching Better Than 5mV



DC16
DG16
DP16

Fig.1 Pin connections SL3127

APPLICATIONS

- Wide Band Amplifiers
- PCM Regenerators
- High Speed Interface Circuits
- High Performance Instrumentation Amplifiers
- High Speed Modems

ORDERING INFORMATION

- SL3127 C DC
- SL3127 C DP
- SL3127 CB DC
- SL3127 NA MP

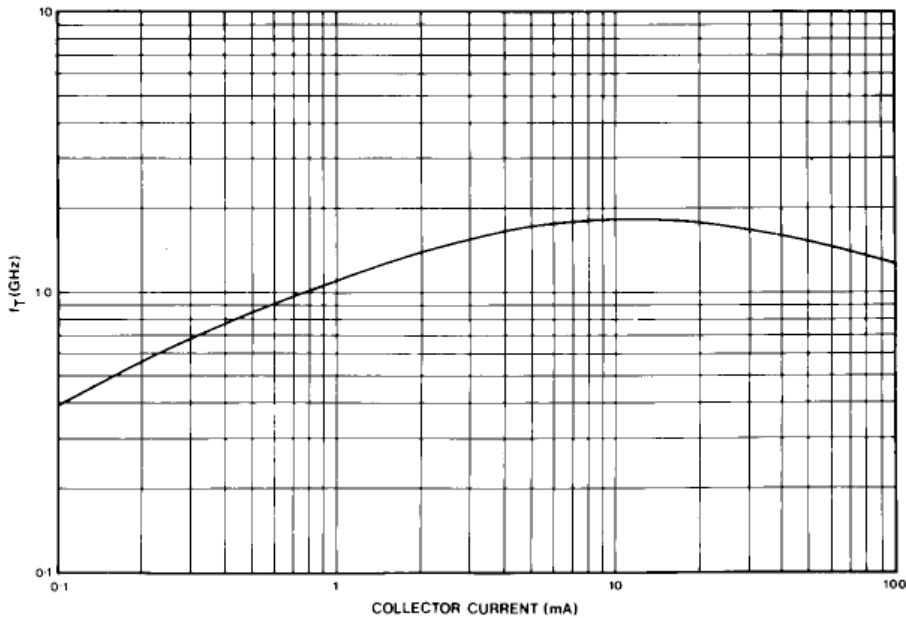


Fig.2 Transition frequency (f_T) v. collector current ($V_{CB} = 2V$, $f = 200MHz$)

SL127

ELECTRICAL CHARACTERISTICS

These characteristics are guaranteed over the following test conditions (unless otherwise stated)

$$T_{amb} = 22^{\circ}\text{C} \pm 2^{\circ}\text{C}$$

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Static characterisitc						
Collector base breakdown	BV_{CBO}	20	30		V	$I_C = 10\mu\text{A}, I_E = 0$
Collector emitter breakdown	LV_{CEO}	15	18		V	$I_C = 1\text{mA}, I_B = 0$
Collector substrate breakdown (isolation)	BV_{CIO}	20	55		V	$I_C = 10\mu\text{A}, I_R = I_E = 0$
Base to isolation breakdown	BV_{BIO}	10	20		V	$I_B = 10\mu\text{A}, I_C = I_E = 0$
Base emitter voltage	V_{BE}	0.64	0.74	0.84	V	$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Collector emitter saturation voltage	$V_{CE(SAT)}$		0.26	0.5	V	$I_E = 10\text{mA}, I_B = 1\text{mA}$
Emitter base leakage current	I_{EBO}		0.1	1	μA	$V_{CE} = 4\text{V}$
Base emitter saturation voltage	$V_{CE(SAT)}$		0.95		V	$I_E = 10\text{mA}, I_B = 1\text{mA}$
Base emitter voltage difference, all transistors	ΔV_{BE}		0.45	5	mV	$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Input offset current	ΔI_B		0.2	3	μA	$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Temperature coefficient of ΔV_{BE}	$\frac{\partial \Delta V_{BE}}{\partial T}$		2.0		$\mu\text{V}/^{\circ}\text{C}$	$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Temperature coefficiient of V_{BE}	$\frac{\partial V_{BE}}{\partial T}$		-1.6		mV/ $^{\circ}\text{C}$	$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Static forward current ratio	H_{FE}	35	95			$V_{CE} = 6\text{V}, I_C = 5\text{mA}$
		35	100			$V_{CE} = 6\text{V}, I_C = 0.1\text{mA}$
		40	100			$V_{CE} = 6\text{V}, I_C = 1\text{mA}$
Collector base leakage	I_{CBO}		0.3		nA	$V_{CB} = 6\text{V}$
Collector isolation leakage	I_{CIO}		0.6		nA	$V_{CI} = 20\text{V}$
Base isolation leakage	I_{BIO}		100		nA	$V_{BI} = 5\text{V}$
Emitter base capacitance	C_{EB}		0.4		pF	$V_{EB} = 0\text{V}$
Collector base capacitance	C_{CB}		0.4		pF	$V_{CB} = 0\text{V}$
Collector isolation capacitance	C_{CI}		0.8		pF	$V_{CI} = 0\text{V}$
Dynamic characteristics						
Transition frequency	f_T		1.6		GHz	$V_{CE} = 6\text{V}, I_C = 5\text{mA}$
Wideband noise figure	NF		3.6		dB	$f = 60\text{MHz}$
Knee of 1/f noise curve			1		KHz	$V_{CC} = 6\text{V}$ $I_C = 2\text{mA}$ $R_s = 200\Omega$

ABSOLUTE MAXIMUM RATINGS

The absolute maximum ratings are limiting values above which operating life may be shortened or specified parameters may be degraded.

All electrical ratings apply to individual transistors. Thermal ratings apply to the total package.

The isolation pin (substrate) must be connected to the most negative voltage applied to the package to maintain electrical isolation.

$$V_{CB} = 20 \text{ volt}$$

$$V_{EB} = 4.0 \text{ volt}$$

$$V_{CE} = 15 \text{ volt}$$

$$V_{CI} = 20 \text{ volt}$$

$$I_C = 20 \text{ mA}$$

Maximum individual transistor dissipation 200 mWatt

Storage temperature -55°C to 150°C

Max junction temperature 150°C

Package thermal resistance ($^{\circ}\text{C}/\text{watt}$):-

Package Type	DC16	DP16
Chip to case	40	
Chip to ambient	120	180

NOTE:

If all the power is being dissipated in one transistor, these thermal resistance figures should be increased by $100^{\circ}\text{C}/\text{watt}$

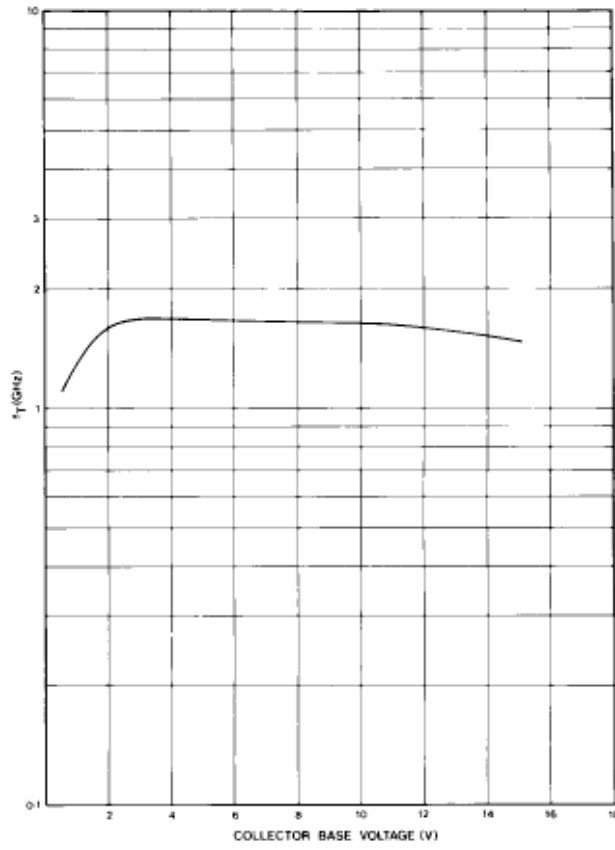


Fig.3 Transition frequency (f_T) v. collector base voltage
($I_C = 5\text{mA}$, Frequency = 200MHz)

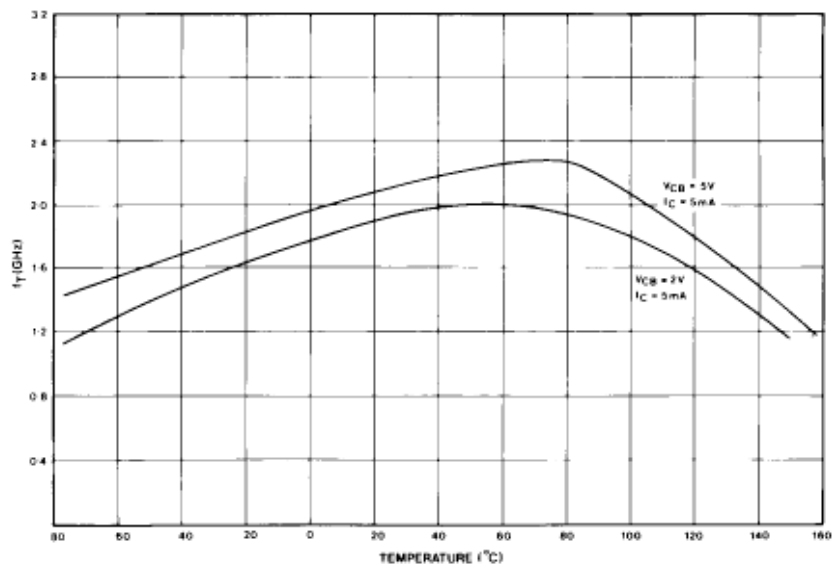


Fig.4 Variation of transition frequency (f_T) with temperature

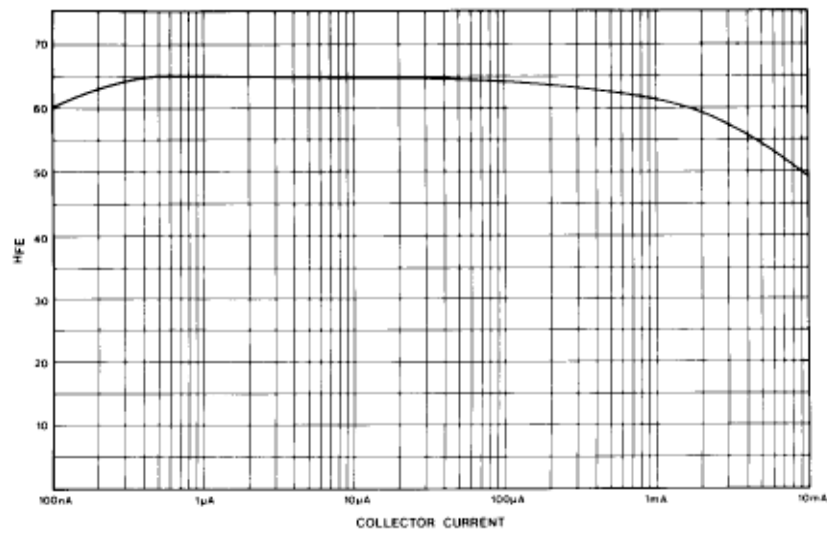


Fig.5 DC current gain v. collector current

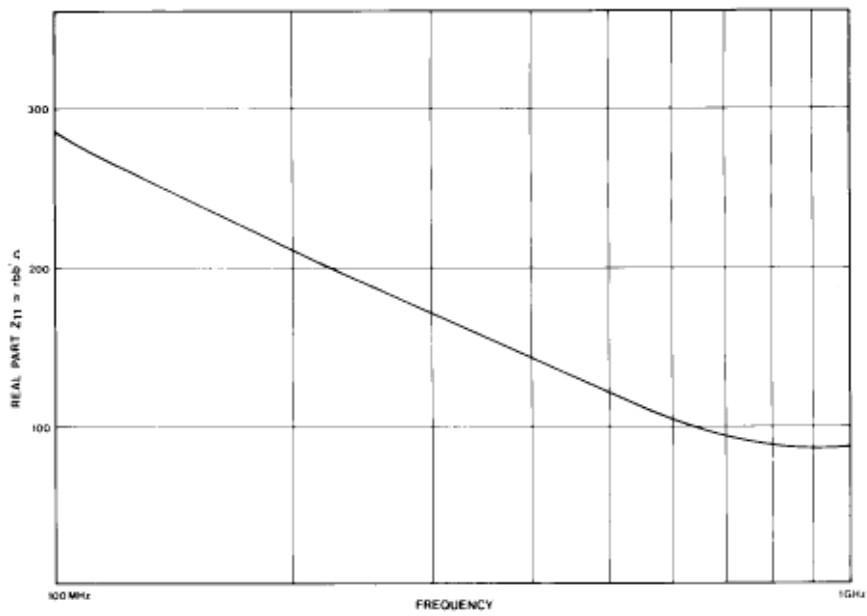


Fig.6 Z₁₁ (derived from scattering parameters) v. frequency ($Z_{11} \approx r_{bb}$)



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