



This product is obsolete.

This information is available for your convenience only.

For more information on Zarlink's obsolete products and replacement product lists, please visit http://products.zarlink.com/obsolete_products/

SL3145

1.6GHz NPN TRANSISTOR ARRAYS

The SL3145 is a monolithic array of five high frequency low current NPN transistors. The SL3145 consists of 3 isolated transistors and a differential pair in a 14 lead SO package. The transistors exhibit typical f_{TS} of 1.6GHz and wideband noise figures of 3.0dB. The device is pin compatible with the CA3046.

FEATURES

- f_T Typically 1.6GHz
- Wideband Noise Figure 3.0dB
- V_{BE} Matching Better Than 5mV

APPLICATIONS

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

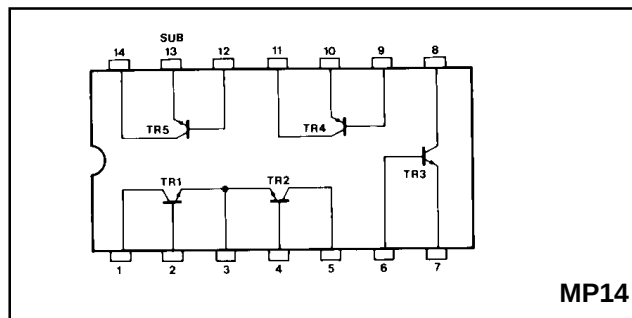


Fig.1 Pin connections SL3145

ORDERING INFORMATION

SL3145 C MP

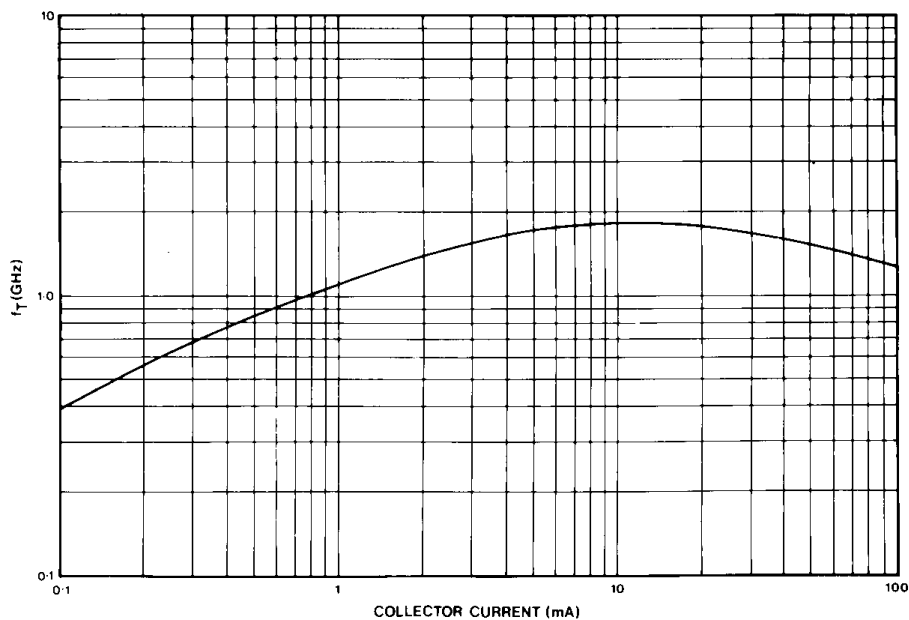


Fig.2 Transition frequency (f_T) v. collector current ($V_{CE} = 2V$, $f = 200MHz$)

SL3145

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 characteristic						
Collector base breakdown	BV _{CBO}	20	30		V	I _C = 10μA, I _E = 0
Collector emitter breakdown	LV _{CEO}	15	18		V	I _C = 1mA, I _B = 0
Collector substrate breakdown (isolation)	BV _{CIO}	20	55		V	I _C = 10μA, I _R = I _E = 0
Base to isolation breakdown	BV _{BIO}	10	20		V	I _B = 10μA, I _C = I _E = 0
Base emitter voltage	V _{BE}	0.64	0.74	0.84	V	V _{CE} = 6V, I _C = 1mA
Collector emitter saturation voltage	V _{CE} (SAT)		0.26	0.5	V	I _C = 10mA, I _B = 1mA
Emitter base leakage current	I _{EBO}		0.1	1	μA	V _{EB} = 4V
Base emitter saturation voltage	V _{BE} (SAT)		0.95		V	I _C = 10mA, I _B = 1mA
Base emitter voltage difference, all transistors expect TR1, TR2	ΔV _{BE}		0.45	5	mV	V _{CE} = 6V, I _C = 1mA
Base emitter voltage difference TR1, TR2	ΔV _{BE}		0.35	5	mV	V _{CE} = 6V, I _C = 1mA
Input offset current (except for TR1, TR2)	ΔI _B		0.2	3	μA	V _{CE} = 6V, I _C = 1mA
Input offset current TR1, TR2	ΔI _B		0.2	2	μA	V _{CE} = 6V, I _C = 1mA
Temperature coefficient of ΔV _{BE}	∂ΔV _{BE} / ∂T		2.0		μV/°C	
Temperature coefficiient of V _{BE}	∂V _{BE} / ∂T		-1.6		mV/°C	V _{CE} = 6V, I _C = 1mA
Static forward current ratio	H _{FE}	40	100			V _{CE} = 6V, I _C = 1mA
Collector base leakage	I _{CBO}		0.3		nA	V _{CB} = 16V
Collector isolation leakage	I _{CIO}		0.6		nA	V _{CI} = 20V
Base isolation leakage	I _{BIO}		100		nA	V _{BI} = 5V
Emitter base capacitance	C _{EB}		0.4		pF	V _{EB} = 0V
Collector base capacitance						
SL3145	C _{CB}		0.4		pF	V _{CB} = 0V
Collector isolation capacitance	C _{CI}		0.8		pF	V _{CI} = 0V
Dynamic characteristics						
Transition frequency						
SL3145	f _T		1.6		GHz	V _{CE} = 6V, I _C = 5mA
Wideband noise figure	NF		3.0		dB	V _{CE} = 2V, R _s = 1kΩ I _C = 100μA, f = 60MHz
Knee of 1/f noise curve			1		KHz	V _{CE} = 6V, R _s = 200Ω I _C = 2mA

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 **MP14**

Chip to case $45^{\circ}\text{C}/\text{W}$

Chip to ambient $123^{\circ}\text{C}/\text{W}$

NOTE:

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

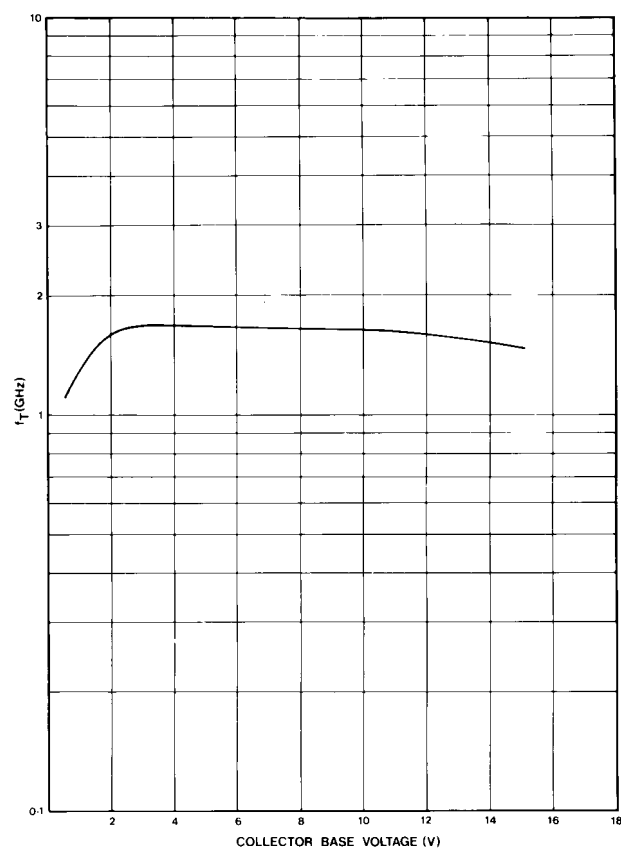


Fig.3 Transition frequency (f_T) v. collector base voltage
($I_C = 5\text{mA}$, Frequency = 200MHz)

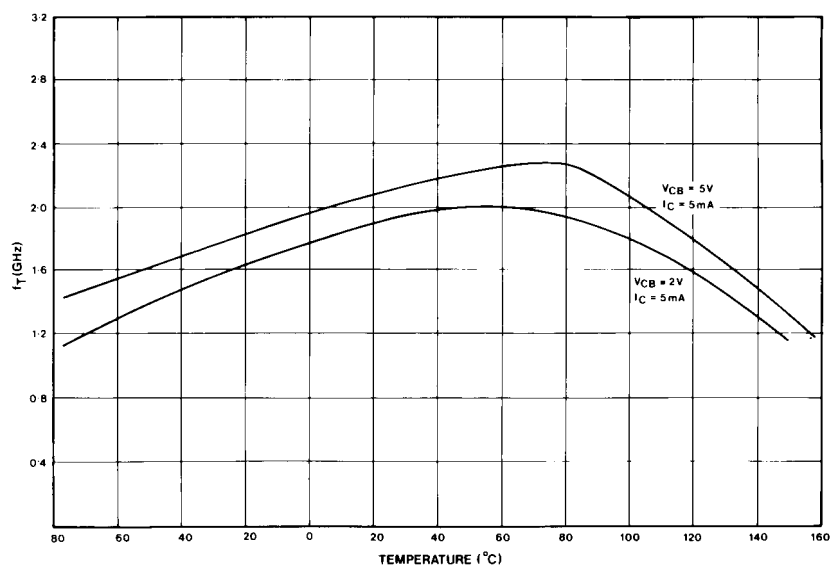


Fig.4 Variation of transition frequency (f_T) with temperature

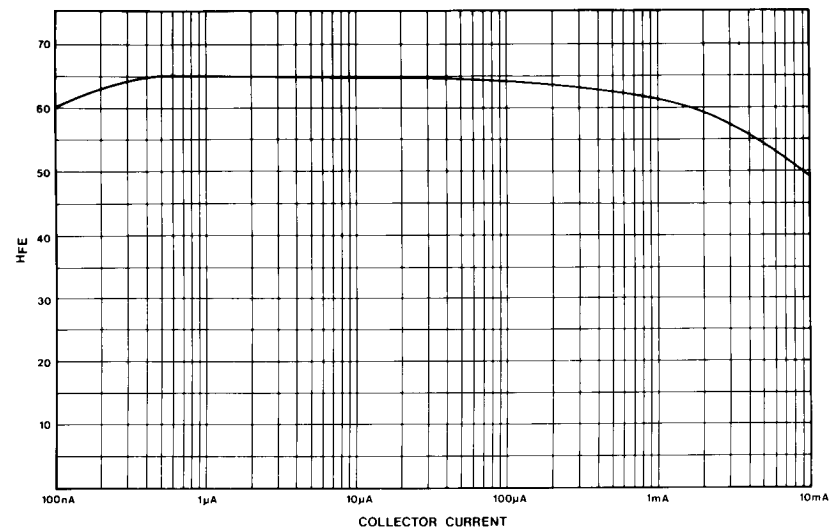


Fig.5 DC current gain v. collector current

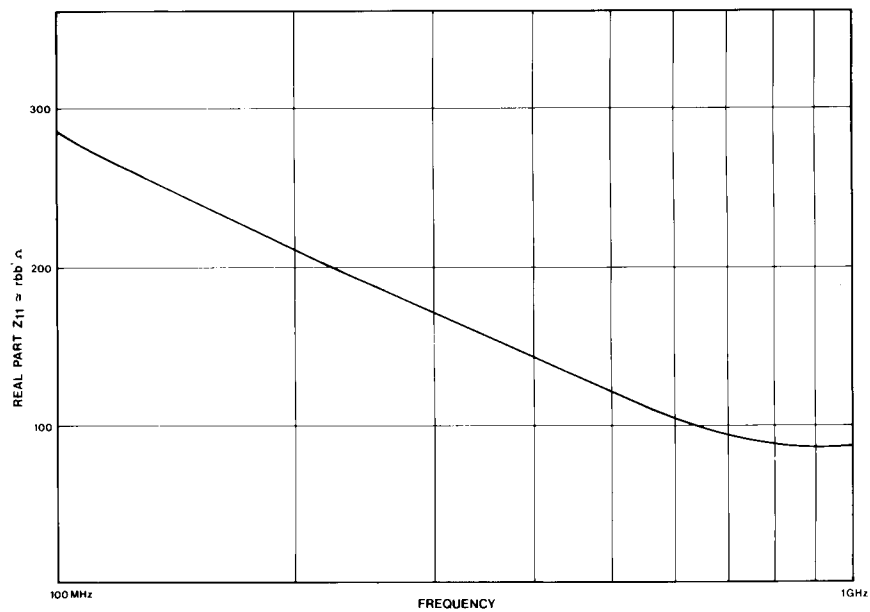


Fig.6 Z₁₁ (derived from scattering parameters) v. frequency (Z₁₁ ≈ r_{bb})



HEADQUARTERS OPERATIONS
GEC PLESSEY SEMICONDUCTORS
Cheney Manor, Swindon,
Wiltshire SN2 2QW, United Kingdom.
Tel: (0793) 518000
Fax: (0793) 518411

GEC PLESSEY SEMICONDUCTORS
P.O. Box 660017
1500 Green Hills Road,
Scotts Valley, California 95067-0017,
United States of America.
Tel: (408) 438 2900
Fax: (408) 438 5576

CUSTOMER SERVICE CENTRES

- **FRANCE & BENELUX** Les Ulis Cedex Tel: (1) 64 46 23 45 Fax : (1) 64 46 06 07
- **GERMANY** Munich Tel: (089) 3609 06-0 Fax : (089) 3609 06-55
- **ITALY** Milan Tel: (02) 66040867 Fax: (02) 66040993
- **JAPAN** Tokyo Tel: (03) 5276-5501 Fax: (03) 5276-5510
- **NORTH AMERICA** Scotts Valley, USA Tel (408) 438 2900 Fax: (408) 438 7023.
- **SOUTH EAST ASIA** Singapore Tel: (65) 3827708 Fax: (65) 3828872
- **SWEDEN** Stockholm, Tel: 46 8 702 97 70 Fax: 46 8 640 47 36
- **UK, EIRE, DENMARK, FINLAND & NORWAY**
Swindon Tel: (0793) 518510 Fax : (0793) 518582

These are supported by Agents and Distributors in major countries world-wide.

© GEC Plessey Semiconductors 1994

This publication is issued to provide information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. The Company reserves the right to alter without prior knowledge the specification, design or price of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to the Company's conditions of sale, which are available on request.