PLESSEY
Semiconductors

SL3245

3GHz NPN TRANSISTOR ARRAY

The SL3245 is a monolithic array of five high frequency low current NPN transistors. The SL3245 consists of 3 isolated transistors and a differential pair in a 14 lead DIL package. The transistors exhibit typical f_T of 3GHz and wideband noise figures of 2dB. The device is pin compatible with the SL3045C and SL3145.

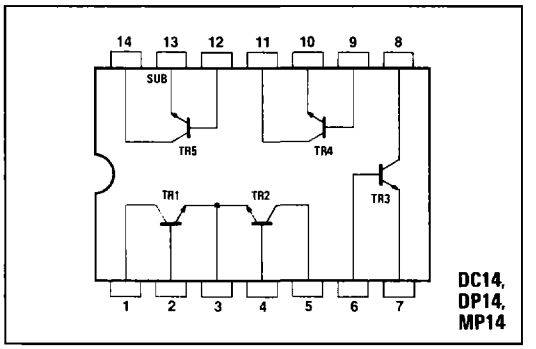

Fig.1 Pin connections - SL3245

FEATURES

- f_T Typically 3GHz
- Wideband Noise Figure 2.0dB
- V_{BE} Matching better than 5mV

APPLICATIONS

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

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} = 10V
V_{EB} = 2.5V
V_{CE} = 6V
V_{CI} = 15V
I_C = 20mA
Maximum individual transistor dissipation 200mW
Storage temperature -55°C to +150°C
Max. junction temperature +150°C

Package thermal resistance (°C/watt)

Package Type	DC14	DP14	MP14
Chip to Case	40		
Chip to Ambient	120	180	200

NOTE: If all the power is being dissipated in one transistor these thermal resistance figures should be increased by 100°C/watt.

ORDERING INFORMATION

SL3245 DC Ceramic/Metal
SL3245 DP Plastic
SL3245 MP Miniature Plastic

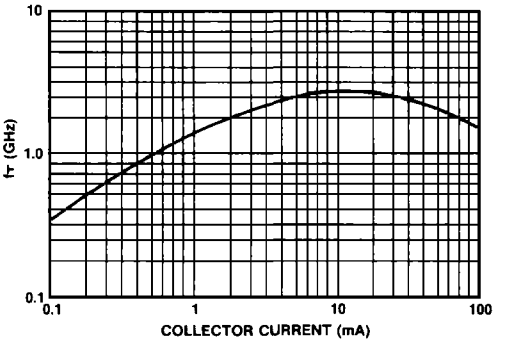

Fig.2 Transition frequency (f_T) v. collector current (V_{CB} = 2V, f = 200MHz)

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):
T_{amb} = 22°C ± 2°C

Static Characteristics

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Collector base breakdown	BV_{CBO}	10	20		V	I_C = 10μA
Collector isolation breakdown	BV_{CIO}	16	40		V	I_C = 10μA
Base emitter breakdown	BV_{EBO}	2.5	5.0		V	I_E = 10μA
Collector emitter breakdown	LV_{CEO}	6	9		V	I_C = 5mA
Collector emitter saturation voltage	$V_{CE(SAT)}$		0.22	0.5	V	I_C = 10mA, I_B = 1mA
Base emitter voltage	V_{BE}	0.73	0.78	0.81	V	V_{CE} = 2V, I_C = 1mA
Base emitter voltage difference (except TR1, TR2)	ΔV_{BE}		0.45	5.0	mV	V_{CE} = 2V, I_C = 1mA
Base emitter voltage difference TR1, TR2	ΔV_{BE}		0.33	5.0	mV	V_{CE} = 2V, I_C = 1mA
Input offset current (except TR1,TR2)	ΔI_B		0.2	3	μA	V_{CE} = 2V, I_C = 1mA
Input offset current TR1,TR2	ΔI_B		0.2	2	μA	V_{CE} = 2V, I_C = 1mA
Temperature coefficient of V_{BE}	$\frac{\Delta V_{BE}}{T}$		-1.69		mV/°C	V_{CE} = 2V, I_C = 1mA
Static forward current ratio	H_{fe}	35	80			V_{CE} = 2V, I_C = 5mA
		35	90			V_{CE} = 2V, I_C = 0.1mA
		40	85			V_{CE} = 2V, I_C = 1mA
Emitter base leakage	I_{EBO}		10		nA	V_{EB} = 2V
Collector base leakage	I_{CBO}		5		pA	V_{CB} = 10V
Collector isolation leakage (TR1-TR4)	I_{CIO}		10		pA	V_{CI} = 16V
Collector isolation leakage (TR5)	I_{CIO}		10		pA	V_{CI} = 5V
Emitter base capacitance	C_{EB}		0.4		pF	V_{EB} = 0V
Collector base capacitance	C_{CB}		0.4		pF	V_{CI} = 0V
Collector isolation capacitance	C_{CI}		1.4	2.0	pF	V_{CI} = 0V

Dynamic Characteristics

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Transition frequency	f_T		3		GHz	V_{CE} = 2V, I_C = 5mA
Wideband noise figure	NF		2.0		dB	f = 60MHz V_{CC} = 6V I_C = 1mA
Knee of NF noise curve			1		kHz	R_S = 1kΩ