PLESSEY
Semiconductors

SL3045C SL3046C SL3086C

GENERAL PURPOSE NPN TRANSISTOR ARRAY

The SL3045C, SL3046C and SL3086C are monolithic arrays of five general purpose transistors arranged as a differential pair and three isolated transistors. The arrays are available in ceramic (SL3045C) or plastic (SL3046C, SL3086C) 14 lead DIL packages.

FEATURES

- 5 General Purpose Monolithic Transistors
- Good Thermal Tracking
- Wide Operating Current Range
- Suitable for Operation from DC to VHF
- Low Noise Performance 3.5dB at 1kHz.

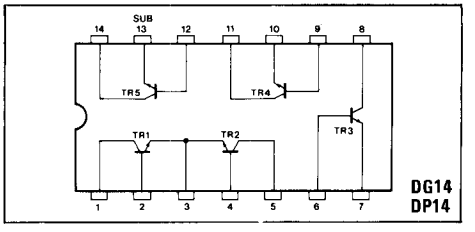


Fig. 1 Pin connections

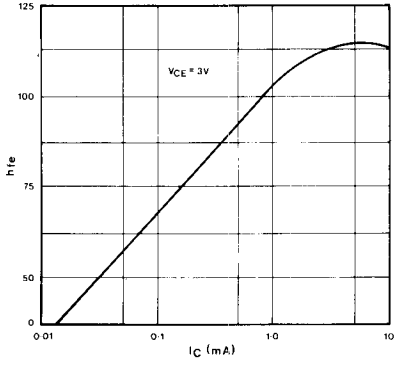


Fig. 2 Typical small signal current gain (common emitter vs. collector current)

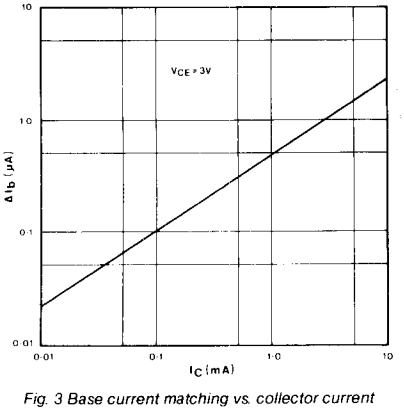


Fig. 3 Base current matching vs. collector current

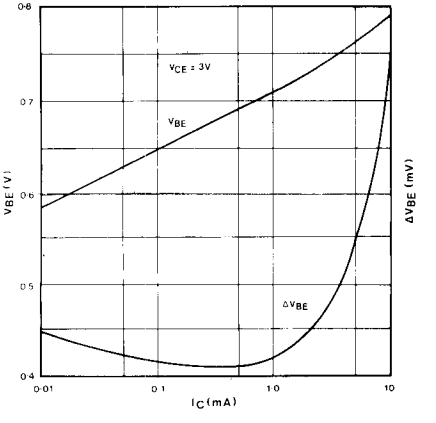


Fig. 4 Typical base emitter voltage and base emitter volt matching vs. collector current

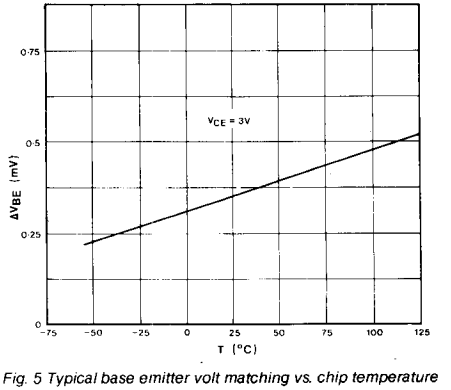


Fig. 5 Typical base emitter volt matching vs. chip temperature

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):
Temperature = 22°C ±2°C

Characteristic	Symbol	Type	Value			Units	Conditions
			Min.	Typ.	Max.		
Static characteristics							
Emitter-base breakdown	BV_{EBO}	All	5	7.2		V	I_E = 10μA
Collector emitter breakdown	BV_{CEO}	All	15	20		V	I_C = 1mA
Collector-base breakdown	BV_{CBO}	All	20	50		V	I_C = 10μA
Collector-substrate breakdown	BV_{CIO}	All	20	70		V	I_C = 10μA
Collector cut off current	I_{CEO}	3045/46			0.5	μA	V_{CE} = 10V, I_B = 0
	I_{CEO}	3086			5	μA	V_{CE} = 10V, I_B = 0
	I_{CBO}	3045/46			40	nA	V_{CB} = 10V, I_B = 0
	I_{CBO}	3086			100	nA	V_{CB} = 10V, I_B = 0
Base emitter voltage	$V_{BE}(ON)$	All		0.71		V	V_{CB} = 3V, I_C = 1mA
Collector-emitter saturation	$V_{CE}(SAT)$	All		0.23		V	I_B = 1mA, I_C = 10mA
Static forward current-transistor ratio	H_{fe}	All		120			V_{CE} = 3V, I_C = 10mA
			40	100			V_{CE} = 3V, I_C = 1mA
				50			V_{CE} = 3V, I_C = 10μA
Input offset current differential pair	I_{IO}	3045/46		0.2	2	μA	V_{CE} = 3V, I_C = 1mA
Input offset voltage differential pair	ΔV_{BE1}	3045/46		0.35	5	mV	V_{CE} = 3V, I_C = 1mA
Input offset voltage isolated transistors	ΔV_{BE2}	3045/46		0.45	5	mV	V_{CE} = 3V, I_C = 1mA
Temperature coefficient of input offset voltage	$\frac{\partial \Delta V_{BE}}{\partial T}$	3045/6		2		μV/°C	V_{CE} = 3V, I_C = 1mA
Temperature coefficient of base emitter voltage	$\frac{\partial V_{BE}(ON)}{\partial T}$	3045/6		−1.8		mV/°C	V_{CE} = 3V, I_C = 1mA
Dynamic characteristics							
Wideband noise figure	NF	All		3.25		dB	f = 10Hz to 10kHz V_{CE} = 3V, I_C = 100μA Source resistance = 1kΩ
Forward transfer admittance	Y_{fe}	All		31-j1.5		mmho	f = 1MHz V_{CE} = 3V, I_C = 1mA
Input admittance	Y_{ie}	All		0.3-j0.04		mmho	
Output admittance	Y_{oe}	All		0.001+j0.03		mmho	
Reverse transfer admittance	Y_{re}	All		0.000-j0.003		mmho	
Forward current transfer ratio	h_{fe}	All		110			f = 1kHz V_{CE} = 3V, I_C = 1mA
Short circuit input impedance	h_{ie}	All		3.5		kΩ	
Open circuit output admittance	h_{oe}	All		15.6		μmho	
Open circuit reverse voltage transfer ratio	h_{re}	All		1.8×10^{-4}			
Gain bandwidth product	f_T	3045/46	300	500		MHz	V_{CE} = 3V, I_C = 3mA
		3086		500		MHz	V_{CE} = 3V, I_E = 3mA
Emitter base capacitance	C_{EB}	All		1.2		pF	V_{EB} = 3V, I_E = 0
Collector base capacitance	C_{OB}	All		0.65		pF	V_{CB} = 3V, I_C = 0
Collector substrate capacitance	C_{CI}	All		2.55		pF	V_{CS} = 3V, I_C = 0

NOTE 1. Typical values are for design guidance only

ABSOLUTE MAXIMUM RATINGS

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

All electrical ratings apply to individual transistors; thermal ratings apply to total package dissipation.

The isolation pin must always be negative with respect to the collectors.

Chip-to-case thermal resistance	40°C/W (DG14)
Chip-to-ambient thermal resistance	125°C/W (DG14)
	175°C/W (DP14)
Storage temperature	−55°C to +175°C (DG14)
	−55°C to +125°C (DP14)
Junction operating temperature	+175°C (DG14)
	+125°C (DP14)

V_{CBO} = 20V V_{EBO} = 5V I_C = 50mA I_B = 25mA
V_{CEO} = 15V V_{CIO} = 20V I_E = 50mA