Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

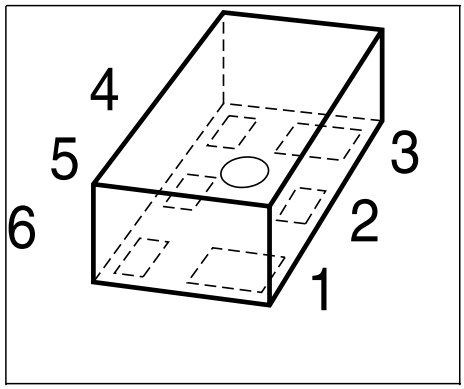
With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

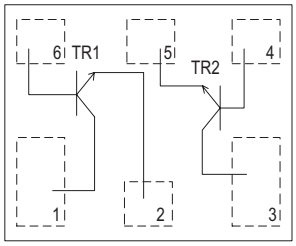
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

NPN Silicon RF TWIN Transistor



- High f_T of 22 GHz
- For low voltage / low current applications
- Ideal for VCO modules and low noise amplifiers
- Low noise figure: 1.1 dB at 1.8 GHz
- World's smallest SMD 6-pin leadless package
- Excellent ESD performance
- Built in 2 transistors (TR1, TR2: die as BFR460L3)

* Short-term description



ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precaution!

Type	Marking	Pin Configuration						Package
BFS460L6	AB	1=C1	2=E1	3=C2	4=B2	5=E2	6=B1	TSLP-6-1

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
$T_A > 0$ °C		4.5	
$T_A \leq 0$ °C		4.2	
Collector-emitter voltage	V_{CES}	15	
Collector-base voltage	V_{CBO}	15	
Emitter-base voltage	V_{EBO}	1.5	
Collector current	I_C	50	mA
Base current	I_B	5	
Total power dissipation[1)] $T_S \leq 104$°C	P_{tot}	200	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

[1] T_S is measured on the collector lead at the soldering point to the pcb

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}	≤ 230	K/W

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	4.5	5.8	-	V
Collector-emitter cutoff current V_{CE} = 15 V, V_{BE} = 0	I_{CES}	-	-	10	µA
Collector-base cutoff current V_{CB} = 5 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 0.5 V, I_C = 0	I_{EBO}	-	-	1	µA
DC current gain I_C = 20 mA, V_{CE} = 3 V, pulse measured	h_{FE}	90	120	160	-

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency I_C = 30 mA, V_{CE} = 3 V, f = 1 GHz	f_T	16	22	-	GHz
Collector-base capacitance V_{CB} = 3 V, f = 1 MHz, emitter grounded	C_{cb}	-	0.33	0.5	pF
Collector emitter capacitance V_{CE} = 3 V, f = 1 MHz, base grounded	C_{ce}	-	0.17	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz, collector grounded	C_{eb}	-	0.57	-	
Noise figure	F				dB
I_C = 5 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, f = 1.8 GHz		-	1.1	-	
I_C = 5 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, f = 3 GHz		-	1.4	-	
Power gain, maximum stable[1)] I_C = 20 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt}, f = 1.8 GHz I_C = 20 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt} , f = 3 GHz	G_{ms}	- -	14.5 10	- -	dB
Transducer gain I_C = 20 mA, V_{CE} = 3 V, Z_S = Z_L = 50Ω, f = 1.8 GHz I_C = 20 mA, V_{CE} = 3 V, Z_S = Z_L = 50Ω, f = 3 GHz	$\lvert S_{21e}\rvert^2$	- -	12.5 9	- -	
Third order intercept point at output[2)] V_{CE} = 3 V, I_C = 20 mA, Z_S = Z_L = 50Ω, f = 1,8 GHz	IP_3	-	28	-	dBm
1dB Compression point at output I_C = 20 mA, V_{CE} = 3 V, Z_S = Z_L = 50Ω , f = 1.8 GHz	P_{-1dB}	-	12	-	

[1] $G_{ma} = |S_{21e} / S_{12e}| (k-(k^2-1)^{1/2})$, $G_{ms} = |S_{21e} / S_{12e}|$

[2] IP3 value depends on termination of all intermodulation frequency components.
Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz