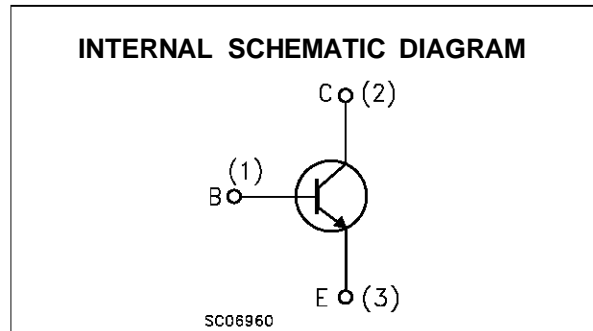


SMALL SIGNAL NPN TRANSISTOR

Type	Marking
BFS19	F2

- SILICON EPITAXIAL PLANAR NPN TRANSISTOR
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- RF APPLICATION UP TO 100 MHz



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	30	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	20	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5	V
I_C	Collector Current	30	mA
P_{tot}	Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$	200	mW
T_{stg}	Storage Temperature	-65 to 150	$^\circ\text{C}$

BFS19

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	620	$^{\circ}\text{C}/\text{W}$
R_{thj-SR} •	Thermal Resistance Junction-Substrate	Max	400	$^{\circ}\text{C}/\text{W}$

• Mounted on a ceramic substrate area = 15 x 15 x 0.6 mm

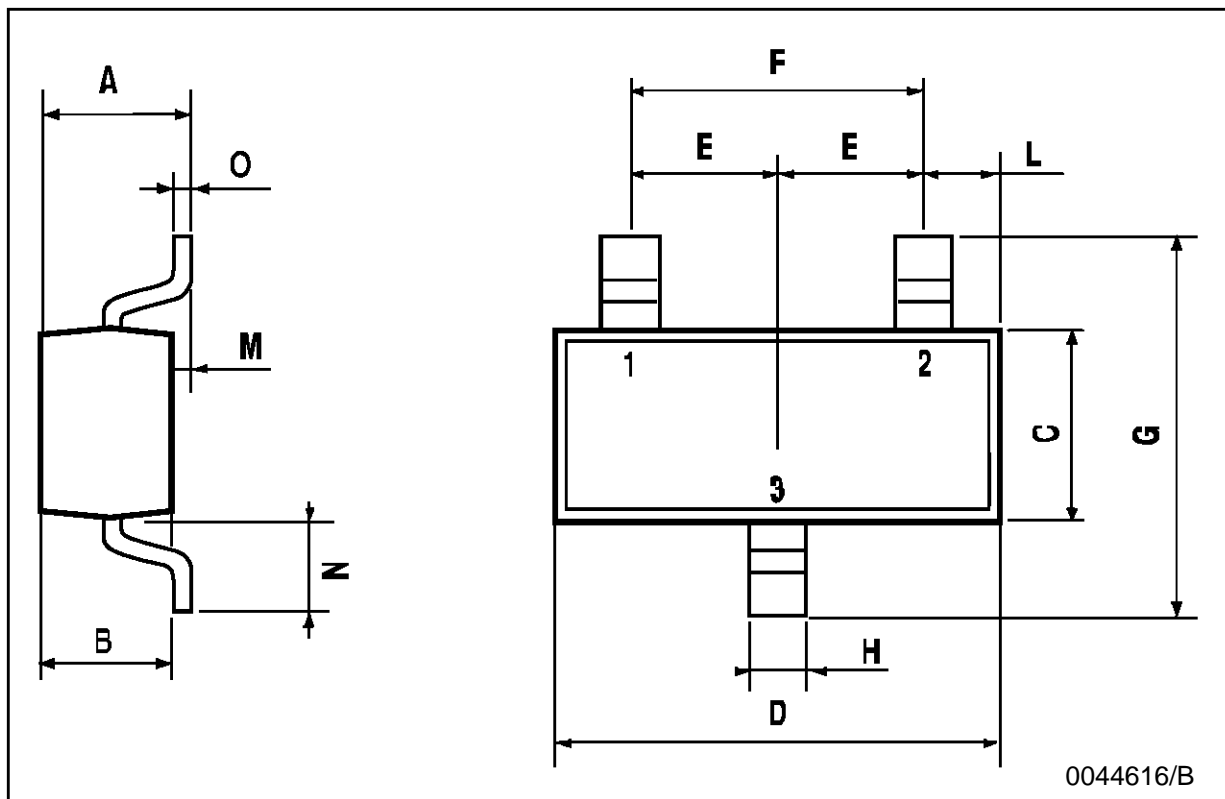
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 20\text{ V}$ $V_{CB} = 20\text{ V}$ $T_j = 100^{\circ}\text{C}$			100 10	nA μA
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 10\ \mu\text{A}$	30			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 2\ \text{mA}$	20			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = 10\ \mu\text{A}$	5			V
$V_{BE(on)}^*$	Base-Emitter On Voltage	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$	0.65		0.74	V
h_{FE}^*	DC Current Gain	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$	65		225	
f_T	Transition Frequency	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 100\ \text{MHz}$		300		MHz
C_{CB}	Collector Base Capacitance	$I_E = 0\ \text{mA}$ $V_{CB} = 10\ \text{V}$ $f = 1\ \text{MHz}$ (emitter grounded)		0.7		pF
C_{CB}	Collector Base Capacitance	$I_E = 0\ \text{mA}$ $V_{CB} = 10\ \text{V}$ $f = 1\ \text{MHz}$ (emitter open)		1		pF
NF	Noise Figure	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 0.2\ \text{MHz}$ $G_g = 2\ \text{mS}$		1.5		dB
NF	Noise Figure	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 1\ \text{MHz}$ $G_g = 1.6\ \text{mS}$		1.2		dB
NF	Noise Figure	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 100\ \text{MHz}$ $G_g = 10\ \text{mS}$		4		dB
NFC	Mixer Noise Figure	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 0.2\ \text{MHz}$ $G_g = 0.6\ \text{mS}$		3		dB
NFC	Mixer Noise Figure	$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 0.2\ \text{MHz}$ $G_g = 1.2\ \text{mS}$		2		dB
G_{ce}		$I_C = 1\ \text{mA}$ $V_{CE} = 10\ \text{V}$ $f = 10\ \text{MHz}$		6		μS

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 2\%$

SOT-23 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7



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