**NPN Silicon RF Transistor***

- For low noise, high-gain amplifiers up to 2 GHz
- For linear broadband amplifiers
- f_T = 8 GHz, F = 1 dB at 900 MHz
- Pb-free (RoHS compliant) package[1]
- Qualified according AEC Q101

* Short term description

AEC Qualified **RoHS**
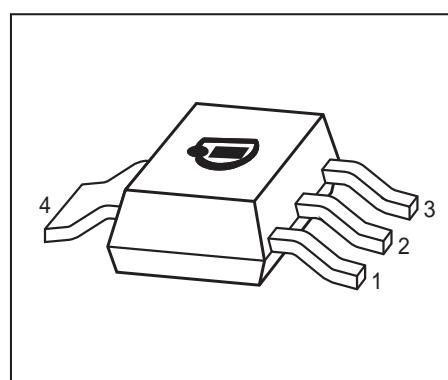
ESD (**E**lectro**s**tatic **d**ischarge) sensitive device, observe handling precaution!

Type	Marking	Pin Configuration					Package
BFG193	BFG193	1 = E	2 = B	3 = E	4 = C	-	-	SOT223

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	80	mA
Base current	I_B	10	
Total power dissipation[2] $T_S \leq 87°C$	P_{tot}	600	mW
Junction temperature	T_i	150	°C
Ambient temperature	T_A	-55 ... 150	
Storage temperature	T_{stg}	-55 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[3]	R_{thJS}	≤ 105	K/W

[1]Pb-containing package may be available upon special request
[2]T_S is measured on the collector lead at the soldering point to the pcb
[3]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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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	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current V_{CE} = 20 V, V_{BE} = 0	I_{CES}	-	-	100	µA
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 1 V, I_C = 0	I_{EBO}	-	-	1	µA
DC current gain- I_C = 30 mA, V_{CE} = 8 V, pulse measured	h_{FE}	70	100	140	-

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 = 50 mA, V_{CE} = 8 V, f = 500 MHz	f_T	6	8	-	GHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz, V_{BE} = 0 , emitter grounded	C_{cb}	-	0.59	0.9	pF
Collector emitter capacitance V_{CE} = 10 V, f = 1 MHz, V_{BE} = 0 , base grounded	C_{ce}	-	0.4	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz, V_{CB} = 0 , collector grounded	C_{eb}	-	2.5	-	
Noise figure I_C = 10 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, f = 900 MHz	F	-	1	-	dB
I_C = 10 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, f = 1.8 GHz		-	1.6	-	
Power gain, maximum available[1] I_C = 30 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, f = 900 MHz	G_{ma}	-	16	-	
I_C = 30 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, f = 1.8 GHz		-	10.5	-	
Transducer gain I_C = 30 mA, V_{CE} = 8 V, $Z_S = Z_L = 50\Omega$, f = 900 MHz	$|S_{21e}|^2$	-	13.5	-	dB
I_C = 30 mA, V_{CE} = 8 V, $Z_S = Z_L = 50\Omega$, f = 1.8 GHz		-	8	-	

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

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Total power dissipation $P_{tot} = f(T_S)$
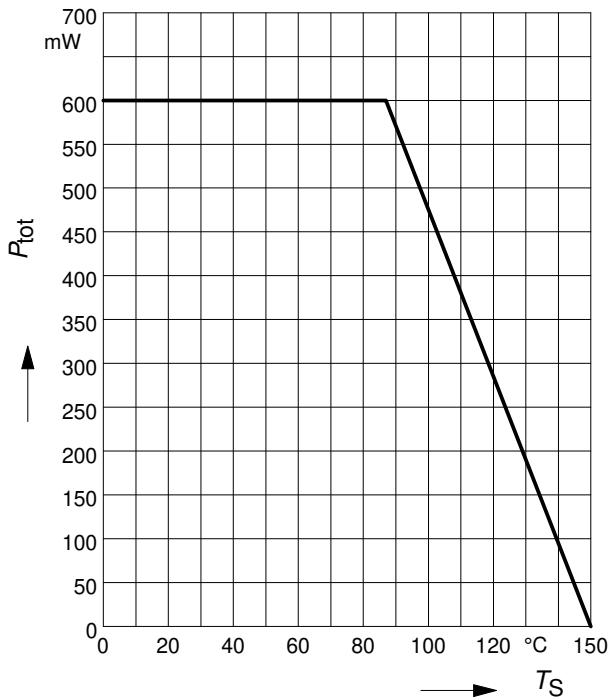
Permissible Pulse Load $R_{thJS} = f(t_p)$
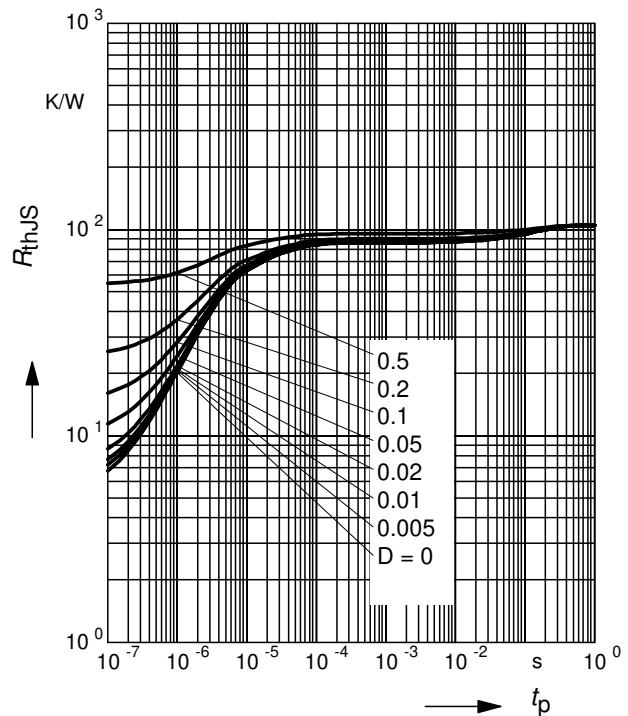

**Permissible Pulse Load**

$P_{totmax}/P_{totDC} = f(t_p)$

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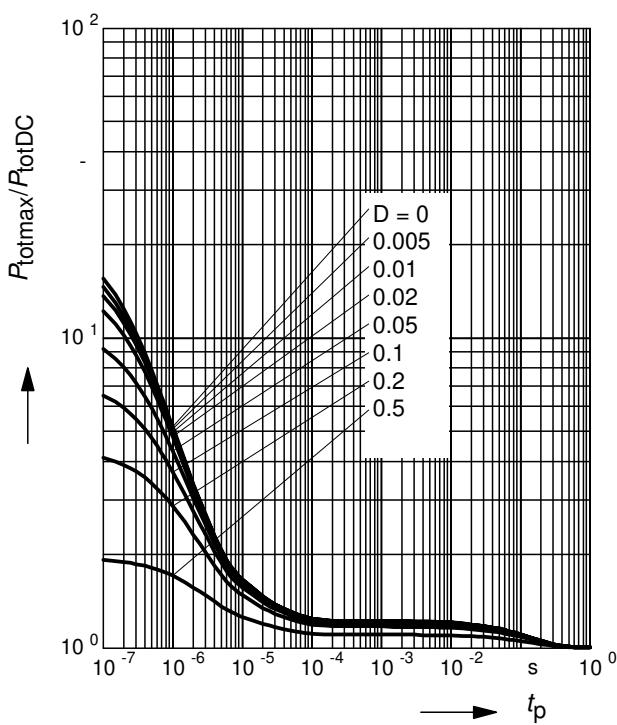
Package Outline
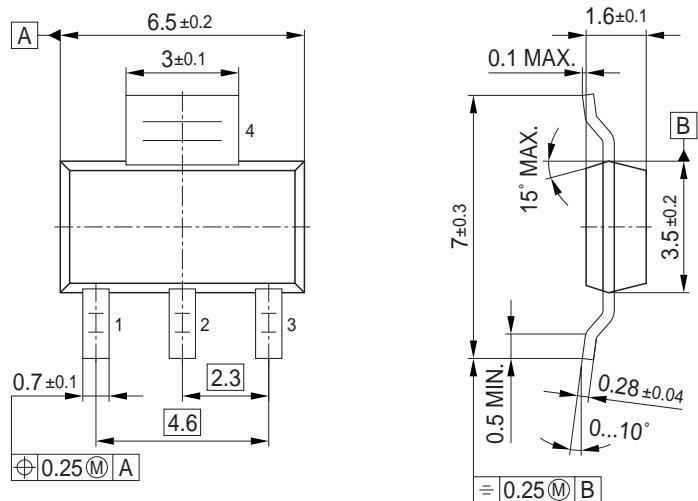
Foot Print

Marking Layout (Example)

Infineon
Manufacturer

2005, 24 CW
Date code (YYWW)

BCP52-16
Type code

S 0524 16
BCP 52

Pin 1
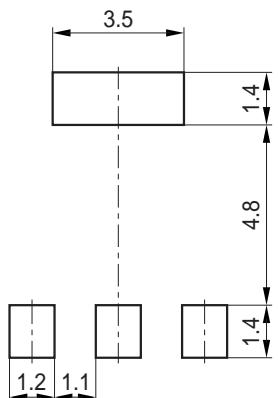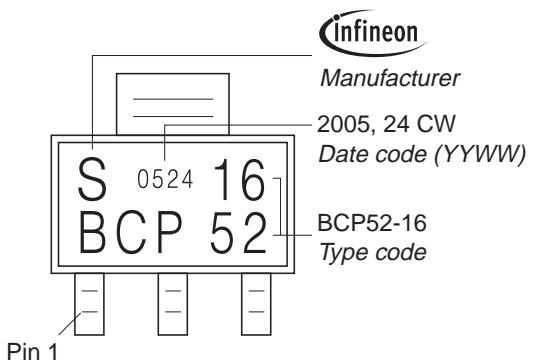
Packing

Reel ø180 mm = 1.000 Pieces/Reel
Reel ø330 mm = 4.000 Pieces/Reel
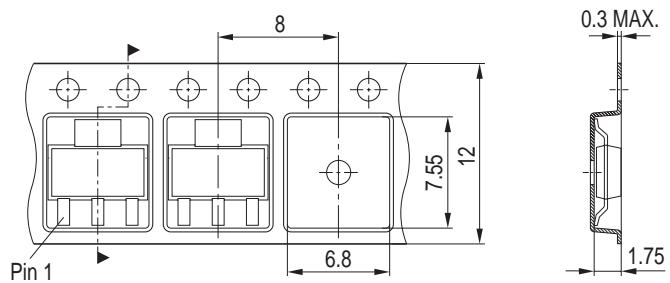
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Attention please!

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