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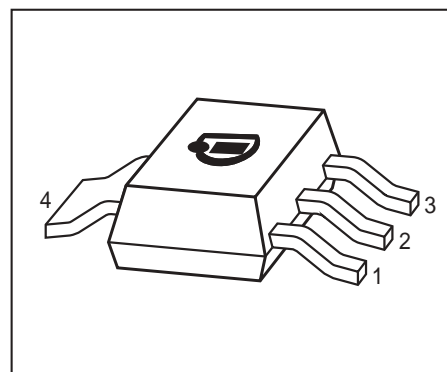
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



**BFG235**

**NPN Silicon RF Transistor\***

- For low-distortion broadband output amplifier stages in antenna and telecommunication systems up to 2 GHz at collector currents from 120 mA to 250 mA
- Power amplifiers for DECT and PCN systems
- Integrated emitter ballast resistor
- $f_T = 5.5$  GHz
- Pb-free (RoHS compliant) package <sup>1)</sup>
- Qualified according AEC Q101



\* Short term description



**ESD (Electrostatic discharge) sensitive device, observe handling precaution!**

Type	Marking	Pin Configuration						Package
BFG235	BFG235	1 = E	2 = B	3 = E	4 = C	-	-	SOT223

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	15	V
Collector-emitter voltage	$V_{CES}$	25	
Collector-base voltage	$V_{CBO}$	25	
Emitter-base voltage	$V_{EBO}$	2	
Collector current	$I_C$	300	mA
Base current	$I_B$	40	
Total power dissipation <sup>2)</sup> $T_S \leq 80^\circ\text{C}$	$P_{tot}$	2	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Ambient temperature	$T_A$	-65 ... 150	
Storage temperature	$T_{stg}$	-65 ... 150	

<sup>1</sup>Pb-containing package may be available upon special request

<sup>2</sup> $T_S$  is measured on the collector lead at the soldering point to the pcb


**BFG235**
**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 35$	K/W

**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**DC Characteristics**

Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	15	-	-	V
Collector-emitter cutoff current $V_{CE} = 25 \text{ V}, V_{BE} = 0$	$I_{CES}$	-	-	200	$\mu\text{A}$
Collector-base cutoff current $V_{CB} = 10 \text{ V}, I_E = 0$	$I_{CBO}$	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	2	$\mu\text{A}$
DC current gain- $I_C = 200 \text{ mA}, V_{CE} = 8 \text{ V}$ , pulse measured	$h_{FE}$	75	120	160	-

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance


**BFG235**
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

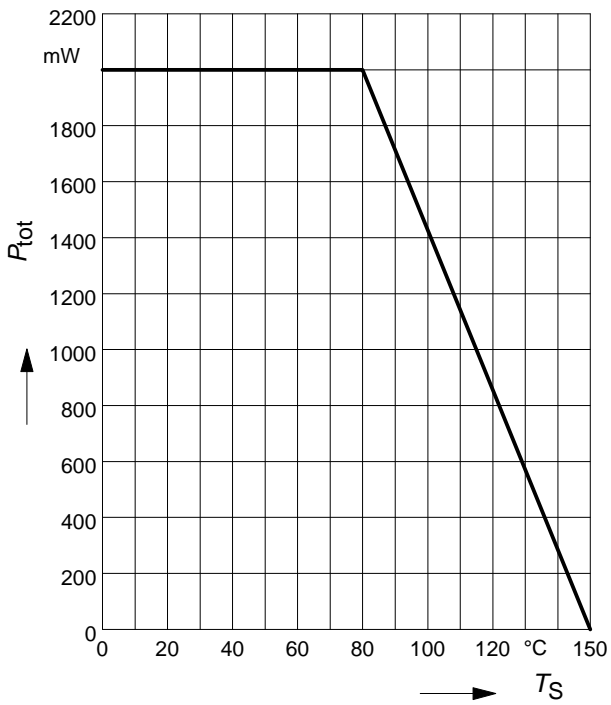
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics (verified by random sampling)</b>					
Transition frequency $I_C = 200\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $f = 200\text{ MHz}$	$f_T$	4	5.5	-	GHz
Collector-base capacitance $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$ , $V_{BE} = 0$ , emitter grounded	$C_{cb}$	-	2.2	3	pF
Collector emitter capacitance $V_{CE} = 10\text{ V}$ , $f = 1\text{ MHz}$ , $V_{BE} = 0$ , base grounded	$C_{ce}$	-	1.5	-	
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$ , $V_{CB} = 0$ , collector grounded	$C_{eb}$	-	14	-	
Noise figure $I_C = 60\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ , $f = 900\text{ MHz}$	$F$	-	1.7	-	dB
Power gain, maximum available <sup>1)</sup> $I_C = 200\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ , $Z_L = Z_{Lopt}$ , $f = 900\text{ MHz}$	$G_{ma}$	-	12.5	-	
Transducer gain $I_C = 200\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_L = 50\Omega$ , $f = 900\text{ MHz}$	$ S_{21e} ^2$	-	6.5	-	dB
Third order intercept point at output $V_{CE} = 8\text{ V}$ , $I_C = 200\text{ mA}$ , $f = 900\text{ MHz}$ , $Z_S = Z_L = 50\Omega$	$IP_3$	-	33	-	dBm

<sup>1)</sup> $G_{ma} = |S_{21}/S_{12}| (k - (k^2 - 1)^{1/2})$

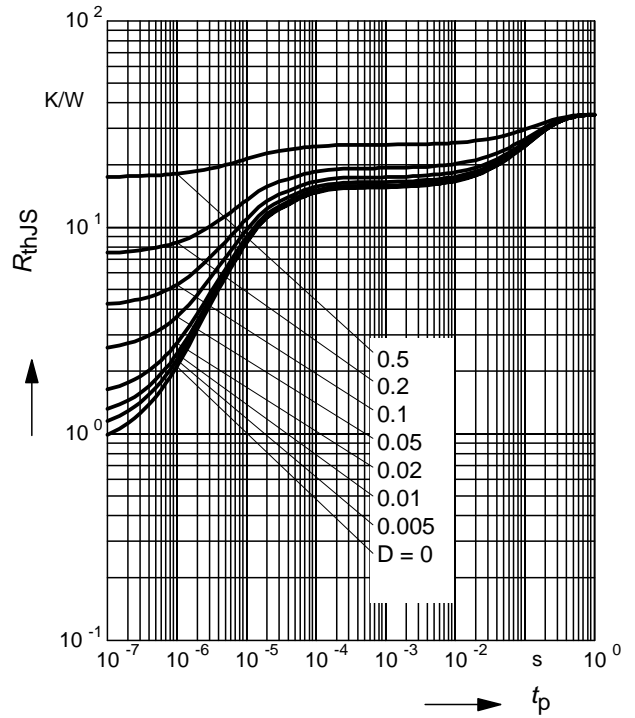


**BFG235**

**Total power dissipation  $P_{tot} = f(T_S)$**

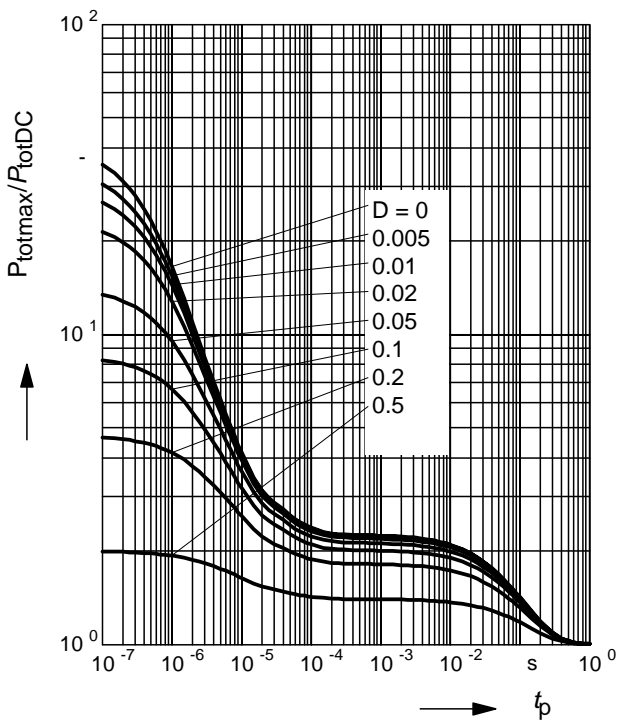


**Permissible Pulse Load  $R_{thJS} = f(t_p)$**



**Permissible Pulse Load**

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

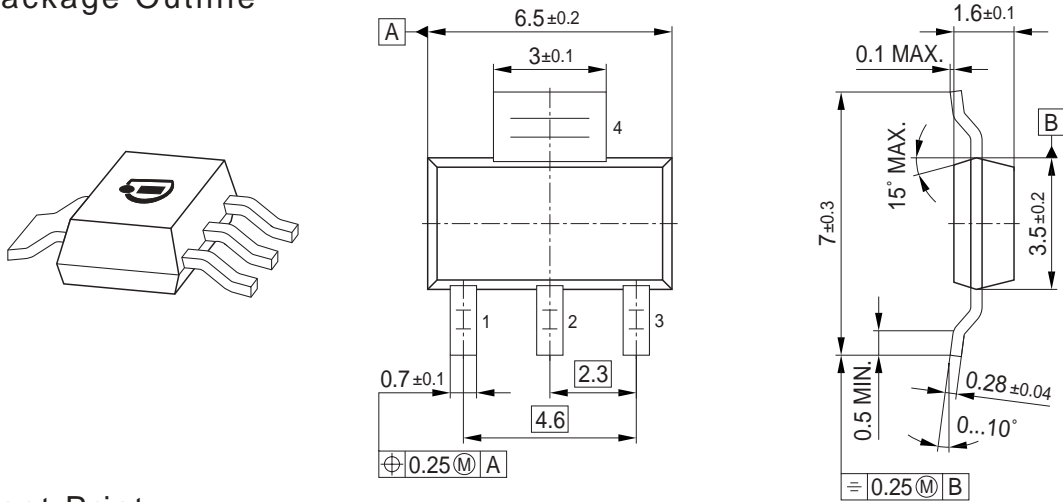




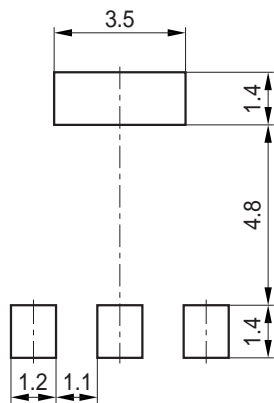
**Package SOT223**

**BFG235**

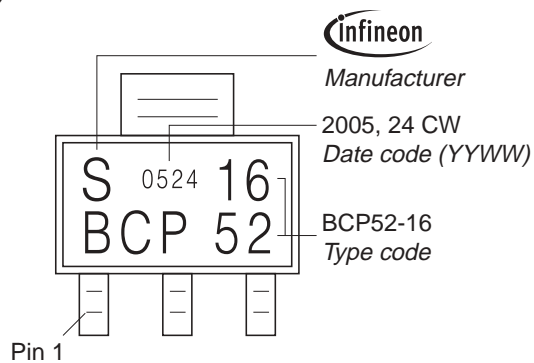
**Package Outline**



**Foot Print**

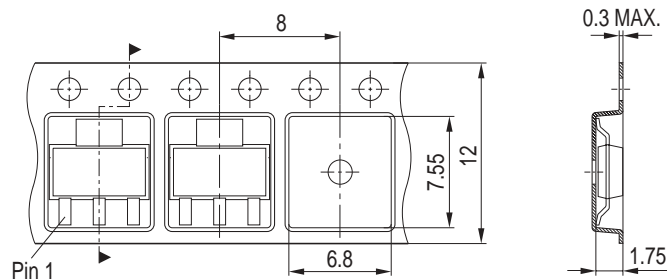


**Marking Layout (Example)**



**Packing**

Reel  $\varnothing 180$  mm = 1.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 4.000 Pieces/Reel





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