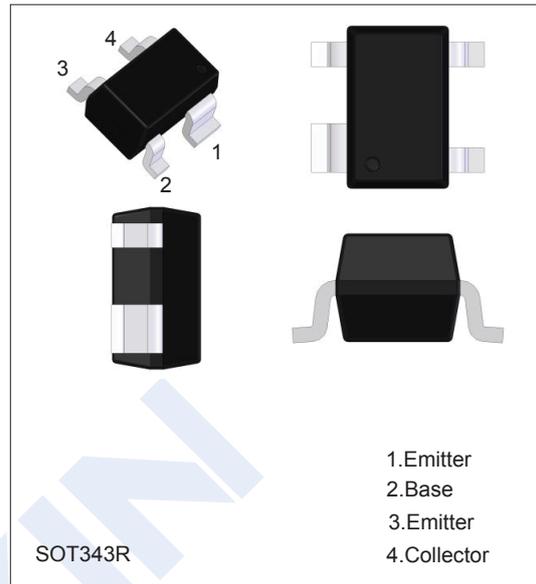


NPN Transistors

BFG425W

■ Features

- Very high power gain
- Low noise figure
- 25 GHz wideband transistor
- Emitter is thermal lead
- Low feedback capacitance.

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	10	V
Collector - Emitter Voltage	V_{CEO}	4.5	
Emitter - Base Voltage	V_{EBO}	1	
Collector Current - Continuous	I_C	30	mA
Collector Power Dissipation See Fig.1 (Note.1)	P_C	135	mW
Thermal Resistance From Junction To Soldering Point	R_{thj-s}	350	K/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	-65 to 150	

Note.1 : T_s is the temperature at the soldering point of the emitter pins.

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■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C = 100 \mu\text{A}$, $I_E = 0$	10			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1 \text{ mA}$, $I_B = 0$	4.5			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu\text{A}$, $I_C = 0$	1			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 4.5 \text{ V}$, $I_E = 0$			15	nA
DC current gain	h_{FE}	$V_{CE} = 2 \text{ V}$, $I_C = 25 \text{ mA}$ See Fig.2	50	80	120	
Maximum power gain (Note.1)	G_{max}	$I_C = 25 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 2 \text{ GHz}$ $T_{amb} = 25^\circ\text{C}$ see Figs 6 and 7		20		dB
Insertion power gain	$ S_{21} ^2$	$I_C = 25 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 2 \text{ GHz}$ $T_{amb} = 25^\circ\text{C}$ see Fig.7		17		
Noise figure	NF	$I_C = 2 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 900 \text{ MHz}$ $G_S = G_{opt}$ see Fig.12		0.8		
		$I_C = 2 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 2 \text{ GHz}$ $\Gamma_S = \Gamma_{opt}$ see Fig.12		1.2		
Output power at 1 dB gain compression	PL_1	$I_C = 25 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 2 \text{ GHz}$, $Z_S = Z_{S opt}$, $Z_L = Z_{L opt}$ (Note.2)		12		dBm
Third order intercept point	ITO	$I_C = 25 \text{ mA}$, $V_{CE} = 2 \text{ V}$, $f = 2 \text{ GHz}$, $Z_S = Z_{S opt}$, $Z_L = Z_{L opt}$ (Note.2)		22		
Collector capacitance	C_c	$I_E = I_C = 0$, $V_{CB} = 2 \text{ V}$, $f = 1 \text{ MHz}$		300		f F
Emitter capacitance	C_e	$I_C = I_C = 0$, $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$		575		
Feedback capacitance	C_{re}	$I_C = 0$, $V_{CB} = 2 \text{ V}$, $f = 1 \text{ MHz}$ see Fig.3		95		
Transition frequency	f_T	$V_{CE} = 2 \text{ V}$, $I_C = 25 \text{ mA}$, $f = 2 \text{ GHz}$ See Fig.4		25		GHz

Note.1 : G_{max} is the maximum power gain, if $K > 1$. If $K < 1$ then $G_{max} = MSG$; see Figs 5, 6 and 7.

Note.2 : Z_S is optimized for noise; Z_L is optimized for gain.

■ Marking

Marking	P5
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■ Typical Characteristics

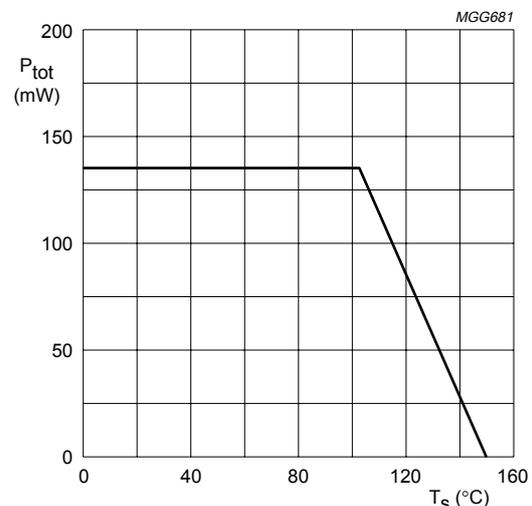
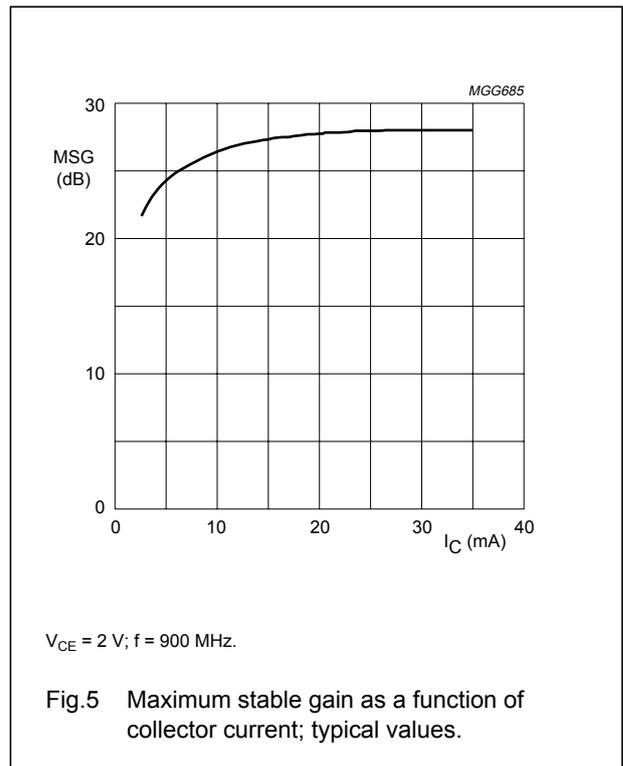
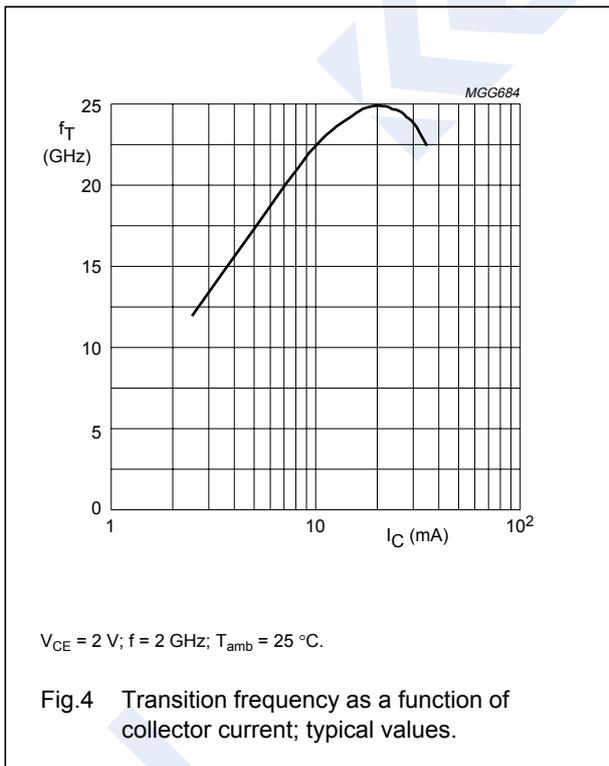
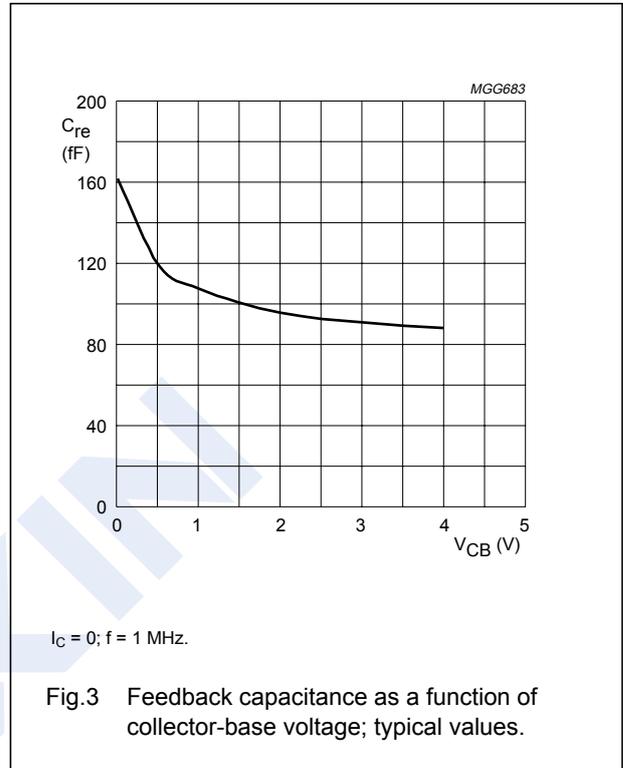
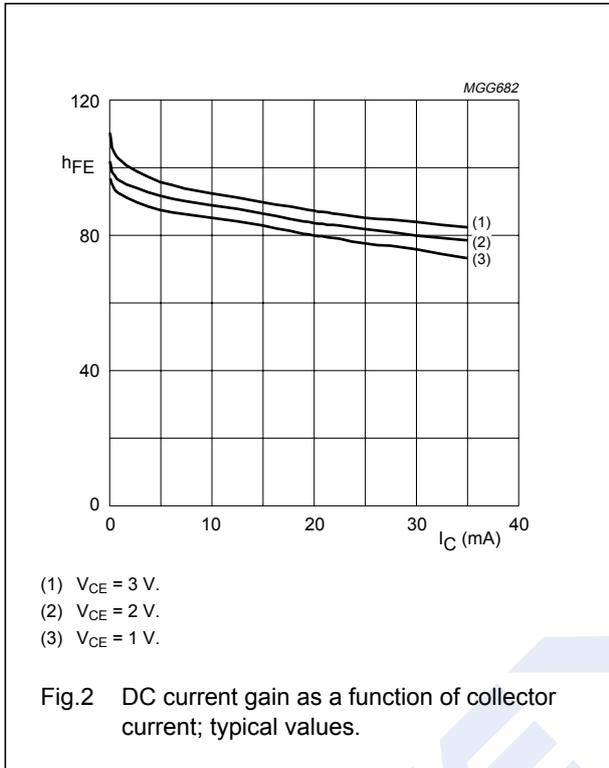


Fig.1 Power derating curve.

NPN Transistors

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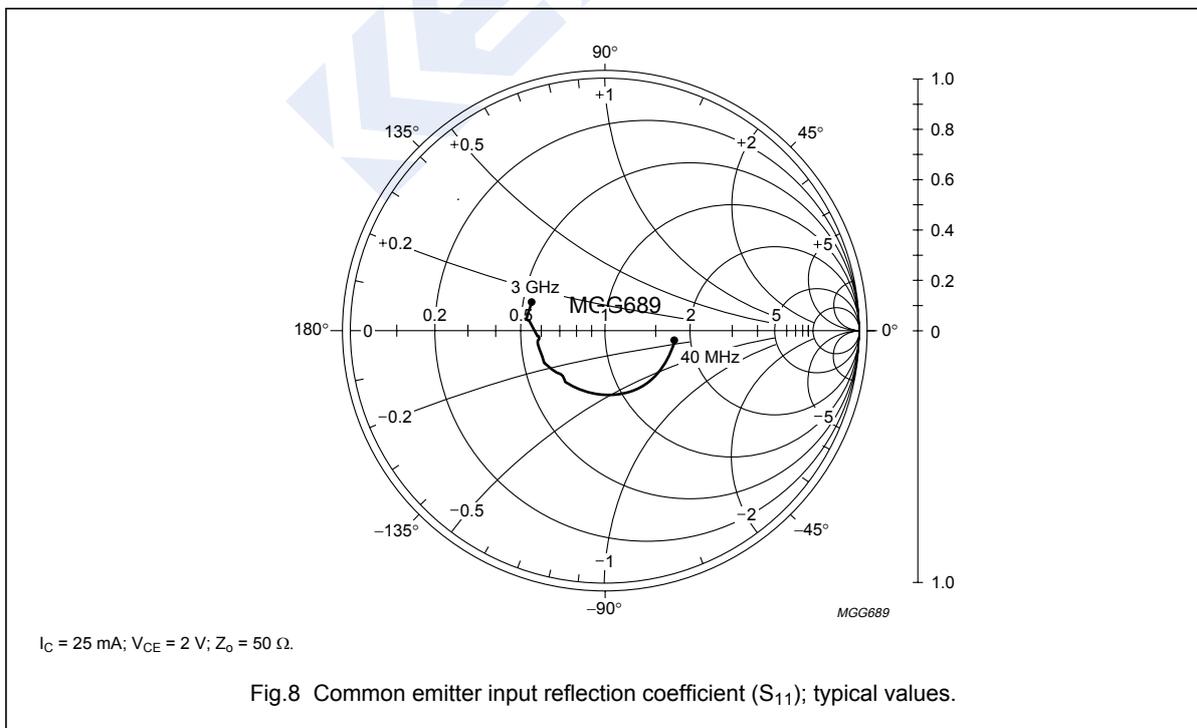
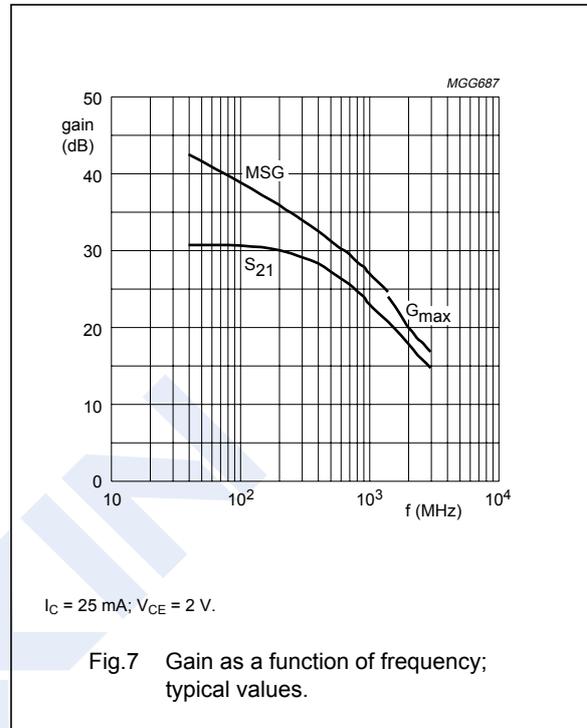
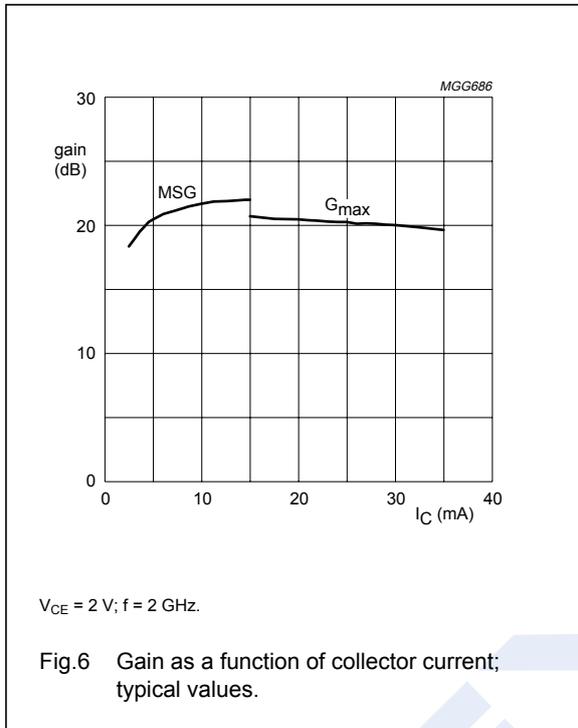
■ Typical Characteristics



NPN Transistors

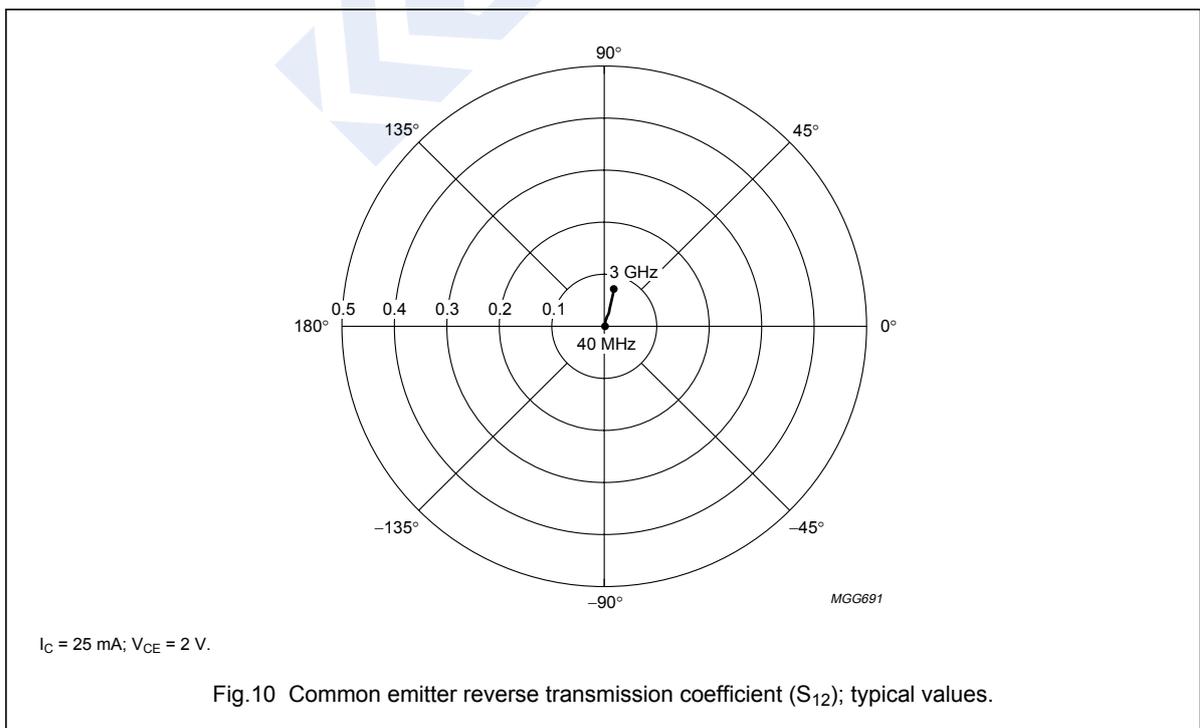
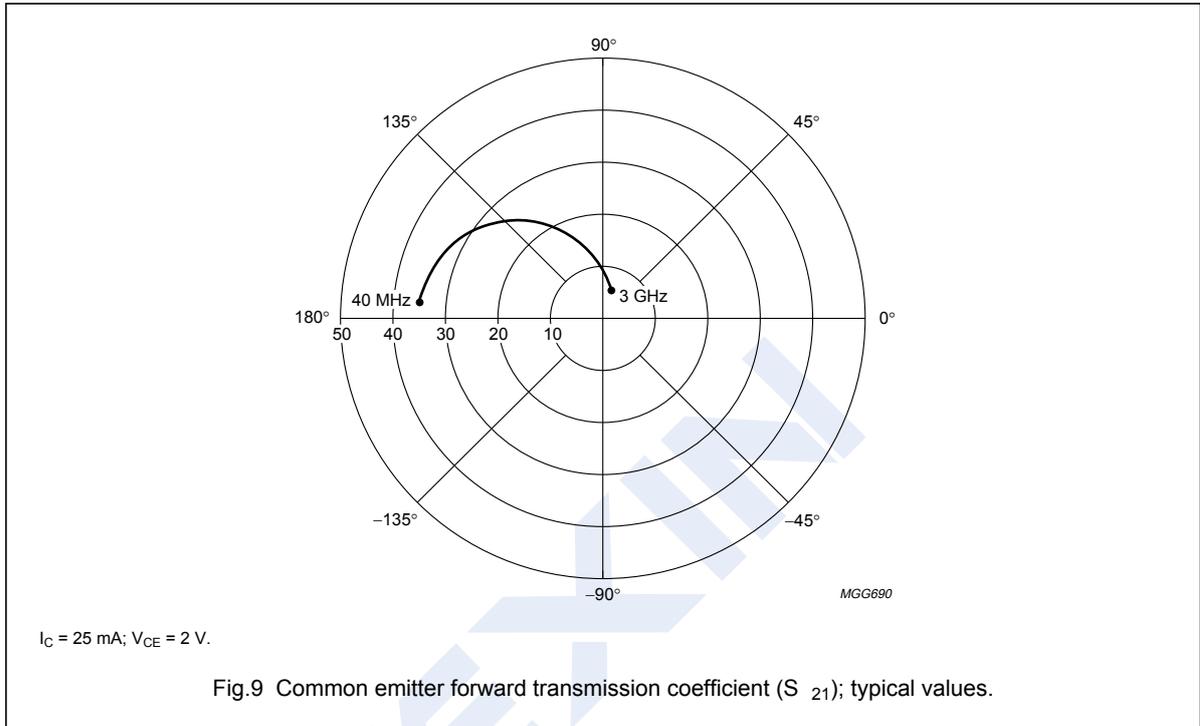
BFG425W

■ Typical Characteristics



NPN Transistors BFG425W

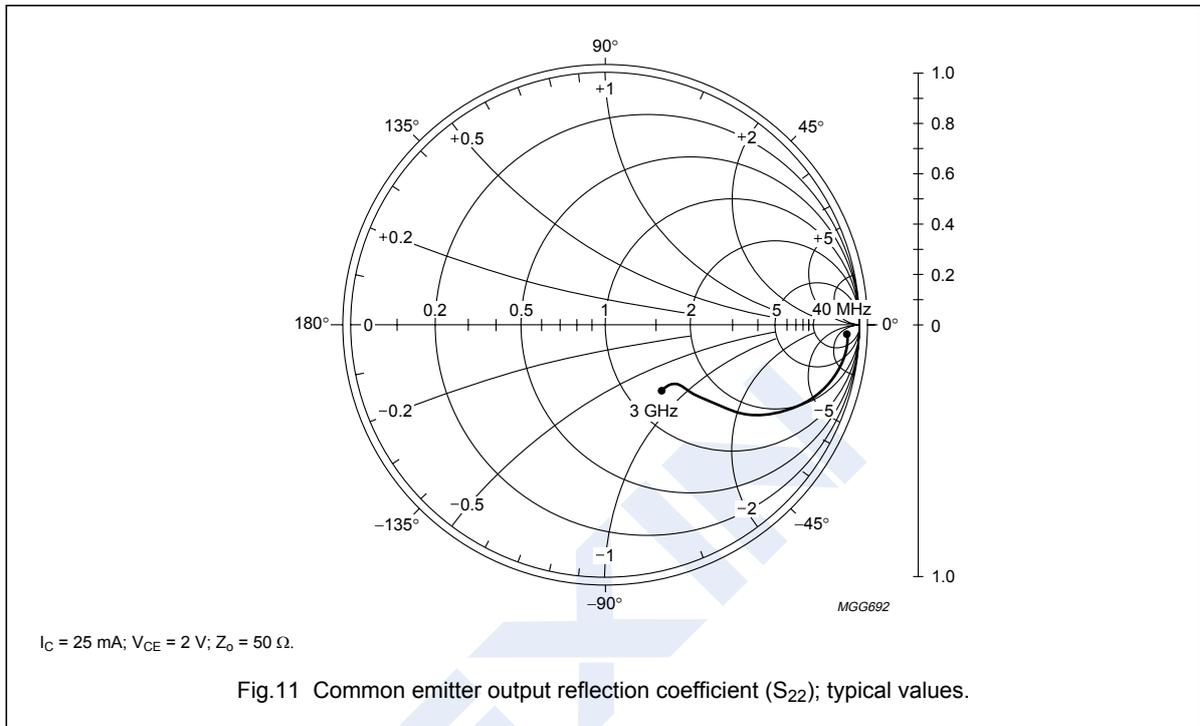
■ Typical Characteristics



NPN Transistors

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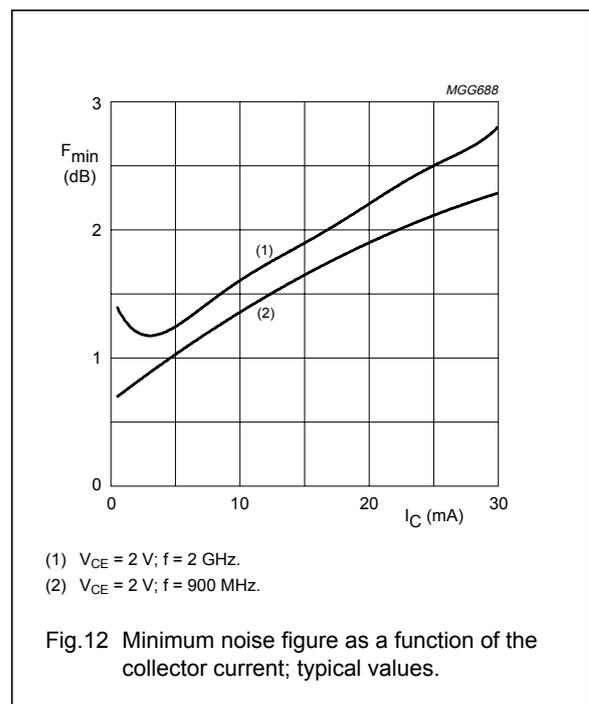
■ Typical Characteristics



Noise data

$V_{CE} = 2\text{ V}$; typical values.

f (MHz)	I_C (mA)	F_{min} (dB)	Γ_{mag}	Γ_{angle}	r_n (Ω)
900	1	0.7	0.67	19.1	0.40
	2	0.8	0.48	17.8	0.27
	4	1	0.28	11.7	0.24
	10	1.4	0.02	-63.9	0.19
	15	1.6	0.11	-162.4	0.18
	20	1.9	0.19	-165.5	0.18
	25	2.1	0.25	-166.3	0.19
	30	2.3	0.29	-166.5	0.19
2000	1	1.3	0.56	57.5	0.36
	2	1.2	0.43	57.2	0.25
	4	1.2	0.22	60.8	0.18
	10	1.6	0.06	137.4	0.19
	15	1.9	0.13	-162.1	0.20
	20	2.2	0.17	-155.5	0.20
	25	2.5	0.22	-152.2	0.21
	30	2.8	0.27	-150.8	0.25



NPN Transistors

BFG425W

■ Typical Application

PACKAGE OUTLINE

Plastic surface mounted package; reverse pinning; 4 leads

