

NPN-General use transistor 225mW 50m 20V

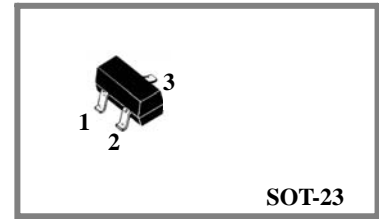
Quality level and executive standard

◆“G”level

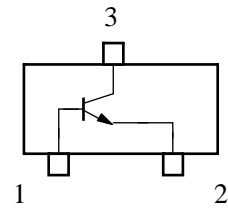
QZJ840611 Q/FRQZJ123-2007

◆the II level of national standard

GB4589.1-89 GB/T 12560-1999 Q/FR124-2007



Applications: Can be used for switching and amplifying in various electrical and electronic equipments.



Max ratings

Parameters	Symbol	Rating	Unit
Collector-emitter voltage ($I_B=0$)	V_{CEO}	20	V
Collector-base voltage ($I_E=0$)	V_{CBO}	30	V
Emitter - base voltage ($I_C=0$)	V_{EBO}	3	V
Collector current	I_C	50	mA
Total power dissipation ($T_A=25^\circ\text{C}$) [*]	P_{tot}	225	mW
Max junction temperature	T_{jm}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~150	$^\circ\text{C}$

* mounted on printed circuit board.

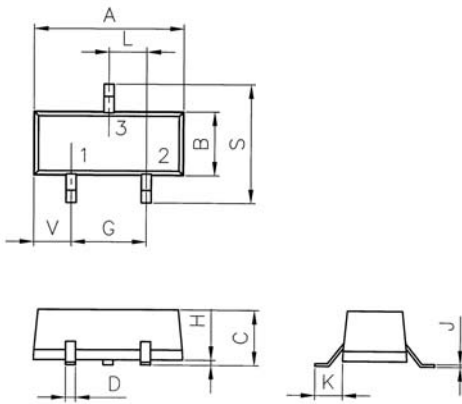
Characteristics (Unless otherwise specified, $T_A=25^\circ\text{C}$)

Parameters	symbol	Test condition	min	typ	max	unit
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=3\text{mA}, I_B=0$	20	—	—	V
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	30	—	—	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	3	—	—	V
Forward current transfer ratio ¹⁾	h_{FE}	$V_{CE}=1\text{V}; I_C=3\text{mA}$	40	—	180	—
Collector-base cutoff current	I_{CBO}	$V_{CB}=15\text{V}, I_E=0$	—	—	50	nA
Collector-emitter saturation voltage ¹⁾	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	—	—	0.4	V
Base-emitter saturation voltage ¹⁾	$V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	—	—	1	V
Transition frequency	f_T	$I_C=4\text{mA}, V_{CE}=10\text{V}, f=100\text{MHz}$	600	—	—	MHz

Classification of h_{FE}

Marking	F12	F13	F14
h_{FE} Range	40 to 80	60 to 120	90 to 180

Outline dimensions (see fig.1)



UNIT: mm

SOT-23		
	min	max
A	2.80	3.04
B	1.20	1.40
C	0.89	1.13
D	0.30	0.50
G	1.78	2.04
H	0.01	0.10
J	0.08	0.18
K	0.45	0.60
L	0.89	1.02
S	2.10	2.50
V	0.42	0.60

Typical curve

DC CURRENT GAIN

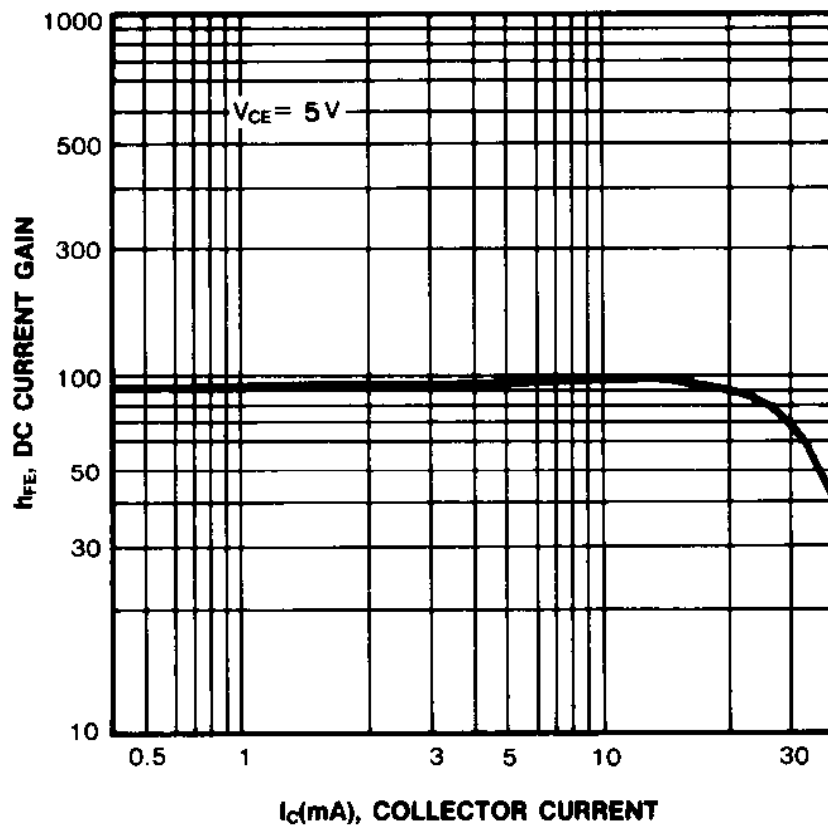


Fig.2 DC current gain; typical values.