NPN 1 GHz video transistor

BFQ234; BFQ234/I

DESCRIPTION

NPN silicon epitaxial transistor in SOT172A1 and SOT172A3 envelopes, with emitter-ballasting resistors and a gold sandwich metallization to ensure optimum temperature profile and excellent reliability properties. It features high frequency behaviour and a low output capacitance.

This transistor is primarily intended for application in the driver for high-resolution colour graphics monitors.

This BFQ234 has a 4-lead stud envelope with a ceramic cap (SOT172A1). All leads are isolated from the stud.

The BFQ234/I uses the SOT172A3 envelope, with the leads formed in accordance with the footprint of the industry standard package, 244D-01 (Motorola).

A version with $V_{(BR)CBO}$ = 115 V, $V_{(BR)CER}$ = 110 V and $V_{(BR)CEO}$ = 95 V is available on request.

PNP complements are the BFQ254 and BFQ254/I respectively.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter
4	base

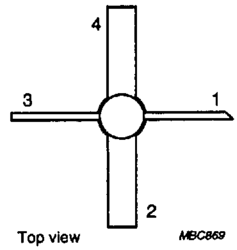

Fig.1 SOT172A1.

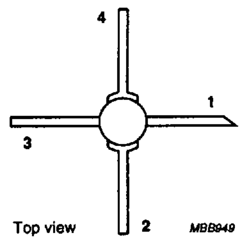

Fig.2 SOT172A3.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	100	V
V_{CER}	collector-emitter voltage	R_{BE} = 100 Ω	–	95	V
I_C	DC collector current		–	300	mA
P_{tot}	total power dissipation	up to T_c = 140 °C	–	3	W
h_{FE}	DC current gain	I_C = 50 mA; V_{CE} = 10 V; T_{amb} = 25 °C	20	–	
f_T	transition frequency	I_C = 50 mA; V_{CE} = 10 V; f = 500 MHz; T_{amb} = 25 °C	1	–	GHz

WARNING

Product and environmental safety - toxic materials
This product contains beryllium oxide. The product is entirely safe provided that the BeO disc is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with the general or domestic waste.

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LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	100	V
V_{CEO}	collector-emitter voltage	open base	–	65	V
V_{CER}	collector-emitter voltage	R_{BE} = 100 Ω	–	95	V
V_{EBO}	emitter-base voltage	open collector	–	3	V
I_C	DC collector current		–	300	mA
P_{tot}	total power dissipation	up to T_c = 140 °C	–	3	W
T_{stg}	storage temperature		–65	175	°C
T_j	junction temperature		–	200	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	THERMAL RESISTANCE
$R_{th\ j\text{-}c}$	thermal resistance from junction to case	20 K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; I_C = 0.1 mA	100	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; I_C = 10 mA	65	–	–	V
$V_{(BR)CER}$	collector-emitter breakdown voltage	I_C = 10 mA; R_{BE} = 100 Ω	95	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; I_E = 0.1 mA	3	–	–	V
I_{CES}	collector cut-off current	V_{BE} = 0; V_{CE} = 50 V	–	–	100	μA
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 50 V	–	–	20	μA
h_{FE}	DC current gain	I_C = 50 mA; V_{CE} = 10 V; T_{amb} = 25 °C	20	35	–	
f_T	transition frequency	I_C = 50 mA; V_{CE} = 10 V; f = 500 MHz; T_{amb} = 25 °C	1	1.4	–	GHz
C_{cb}	collector-base capacitance	I_C = 0; V_{CB} = 10 V; f = 1 MHz; T_{amb} = 25 °C	–	2	–	pF

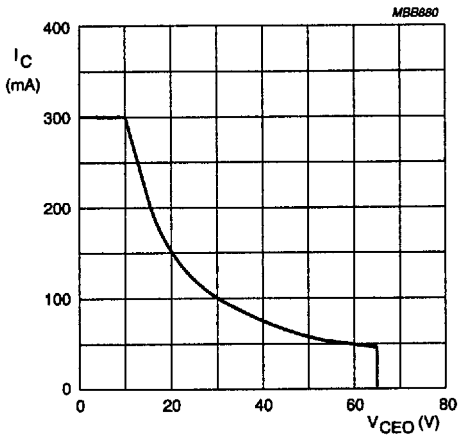


Fig.3 DC SOAR.

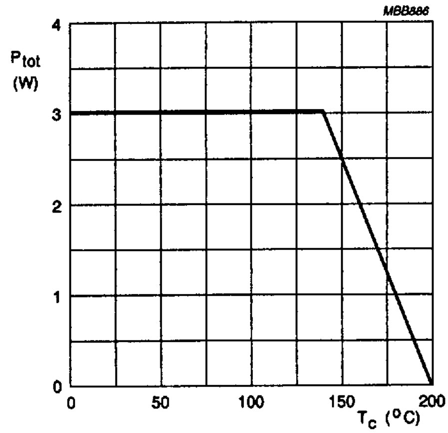
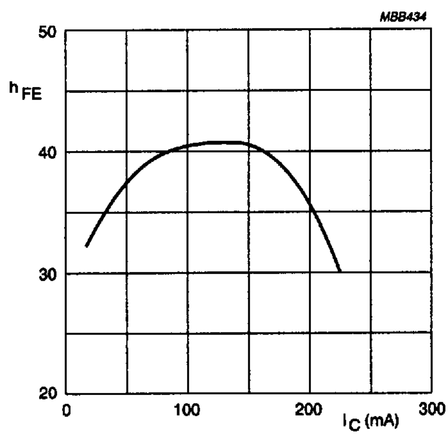
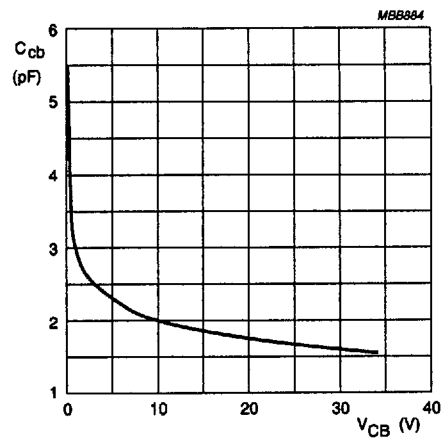


Fig.4 Power derating curve.



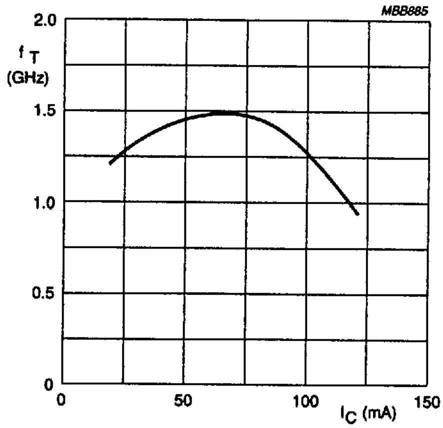
V_{CE} = 10 V; T_{amb} = 25 °C.

Fig.5 DC current gain as a function of collector current.



f = 1 MHz; T_{amb} = 25 °C.

Fig.6 Collector-base capacitance as a function of collector-base voltage.



V_{CE} = 10 V; f = 500 MHz; T_{amb} = 25 °C.

Fig.7 Transition frequency as a function of collector current.