

# DATA SHEET

## **BFQ256; BFQ256A** PNP video transistors

Product specification  
Supersedes data of November 1992  
File under Discrete Semiconductors, SC05

1997 Oct 02

## PNP video transistors

## BFQ256; BFQ256A

### FEATURES

- High breakdown voltages
- Low output capacitance
- High gain bandwidth
- Good thermal stability
- Gold metallization ensures excellent reliability
- Surface mounting.

### APPLICATIONS

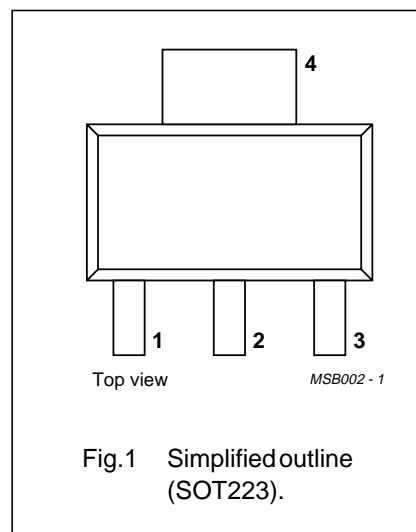
- Buffer/driver in high-resolution colour graphics monitors.

### DESCRIPTION

PNP video transistor in a SOT223 plastic package.  
NPN complements: BFQ236 and BFQ236A.

### PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	emitter
4	collector



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage BFQ256 BFQ256A	open emitter	–	–	–100	V
			–	–	–115	V
V <sub>CER</sub>	collector-emitter voltage BFQ256 BFQ256A	R <sub>BE</sub> = 100 Ω	–	–	–95	V
			–	–	–110	V
I <sub>C</sub>	collector current (DC)		–	–	–300	mA
P <sub>tot</sub>	total power dissipation	T <sub>s</sub> ≤ 115 °C; note 1	–	–	2	W
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = –50 mA; V <sub>CE</sub> = –10 V	20	30	–	
f <sub>T</sub>	transition frequency BFQ256 BFQ256A	I <sub>C</sub> = –50 mA; V <sub>CE</sub> = –10 V; f = 100 MHz	1	1.3	–	GHz
			0.8	1.2	–	GHz

### Note

1. T<sub>s</sub> is the temperature at the soldering point of the collector lead.

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BFQ256		–	–100	V
	BFQ256A		–	–115	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BFQ256		–	–65	V
	BFQ256A		–	–95	V
V <sub>CER</sub>	collector-emitter voltage	R <sub>BE</sub> = 100 Ω			
	BFQ256		–	–95	V
	BFQ256A		–	–110	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–3	V
I <sub>C</sub>	collector current (DC)		–	–300	mA
P <sub>tot</sub>	total power dissipation	T <sub>s</sub> ≤ 115 °C; note 1; see Fig.3	–	2	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	175	°C

**Note**

1. T<sub>s</sub> is the temperature at the soldering point of the collector lead.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-s</sub>	thermal resistance from junction to soldering point	T <sub>s</sub> ≤ 115 °C; P <sub>tot</sub> = 2 W; notes 1 and 2	30	K/W

**Notes**

1. T<sub>s</sub> is the temperature at the soldering point of the collector lead.
2. Device mounted on a printed-circuit board measuring 40 × 40 × 1 mm (collector pad 35 × 17 mm).

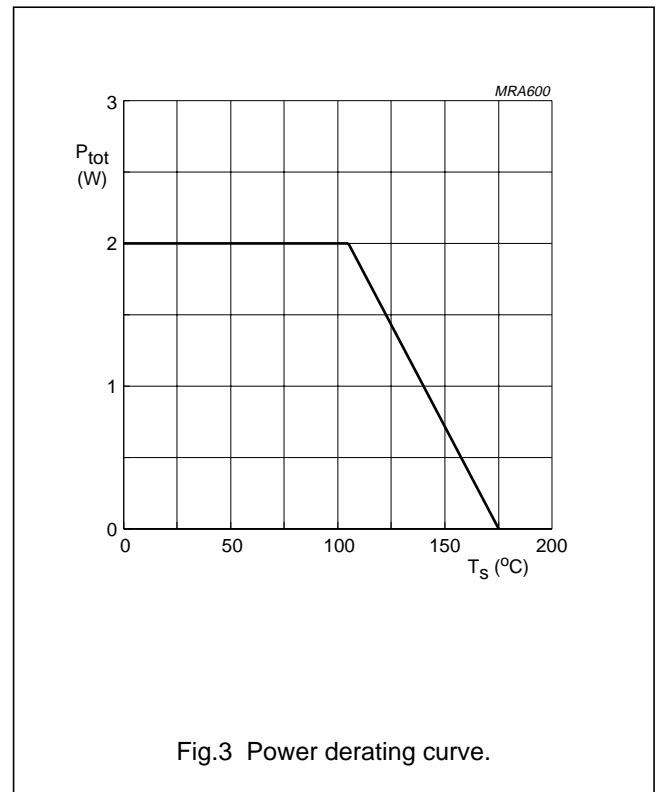
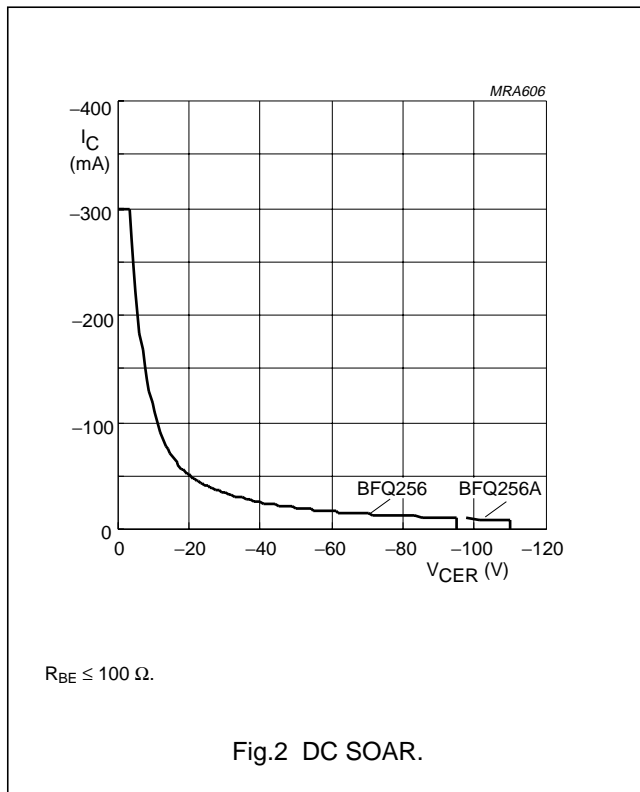
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**CHARACTERISTICS**

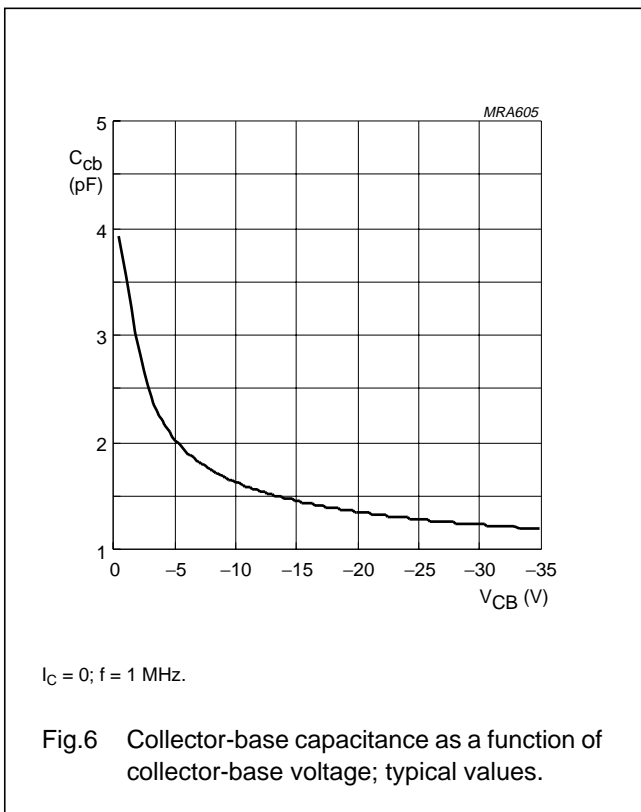
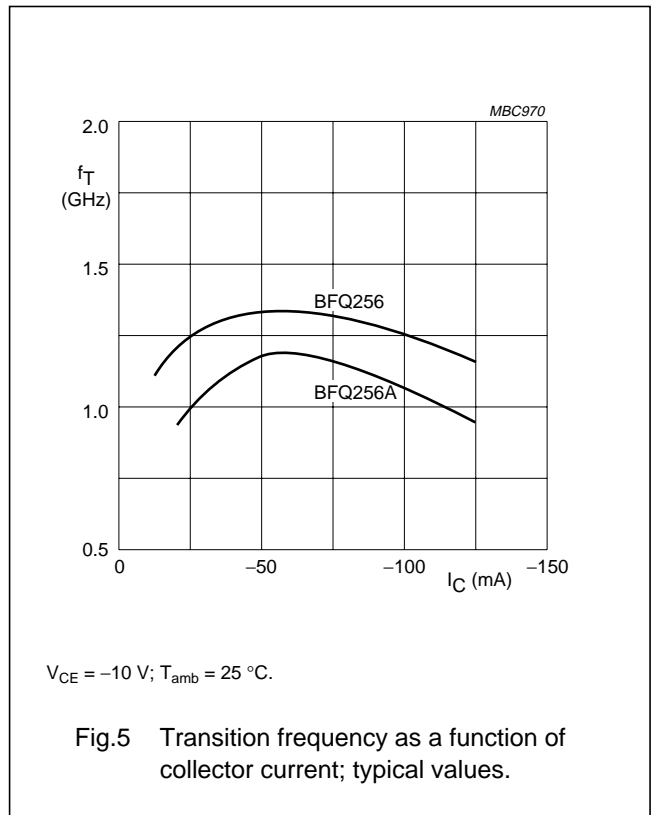
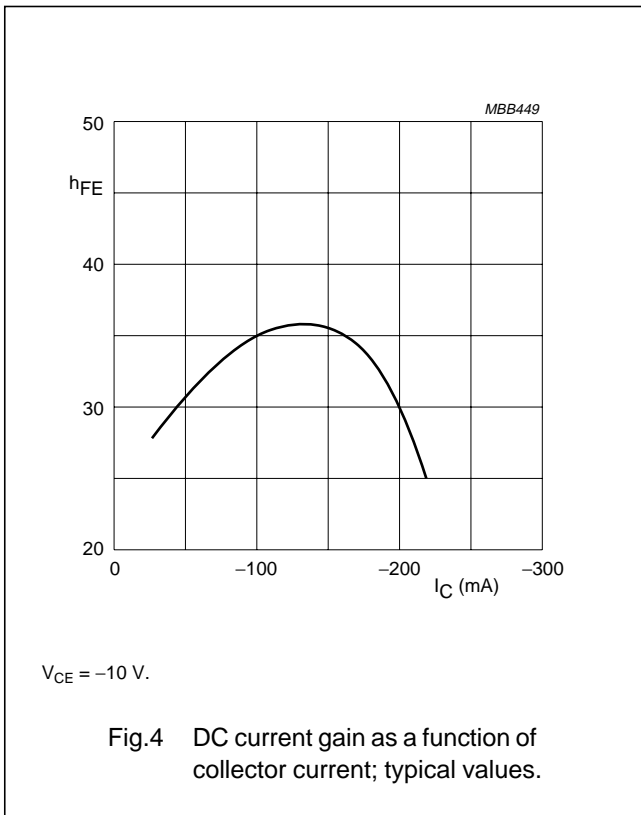
T<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>(BR)CBO</sub>	collector-base breakdown voltage BFQ256 BFQ256A	I <sub>C</sub> = -100 μA; I <sub>E</sub> = 0	-100	-	-	V
			-115	-	-	V
V <sub>(BR)CEO</sub>	collector-emitter breakdown voltage BFQ256 BFQ256A	I <sub>C</sub> = -10 mA; I <sub>B</sub> = 0	-65	-	-	V
			-95	-	-	V
V <sub>(BR)CER</sub>	collector-emitter breakdown voltage BFQ256 BFQ256A	I <sub>C</sub> = -1 mA; R <sub>BE</sub> = 100 Ω	-95	-	-	V
			-110	-	-	V
I <sub>CES</sub>	collector-emitter cut-off current	I <sub>B</sub> = 0; V <sub>CE</sub> = -50 V	-	-	-100	μA
I <sub>CBO</sub>	collector-base cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = -50 V	-	-	-20	μA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = -50 mA; V <sub>CE</sub> = -10 V; see Fig.4	20	30	-	
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = i <sub>e</sub> = 0; V <sub>CB</sub> = -10 V; f = 1 MHz	-	1.9	-	pF
C <sub>cb</sub>	collector-base capacitance	I <sub>C</sub> = i <sub>c</sub> = 0; V <sub>CB</sub> = -10 V; f = 1 MHz; see Fig.6	-	1.6	-	pF
f <sub>T</sub>	transition frequency BFQ256 BFQ256A	I <sub>C</sub> = -50 mA; V <sub>CE</sub> = -10 V; f = 100 MHz; see Fig.5	1	1.3	-	GHz
			0.8	1.2	-	GHz



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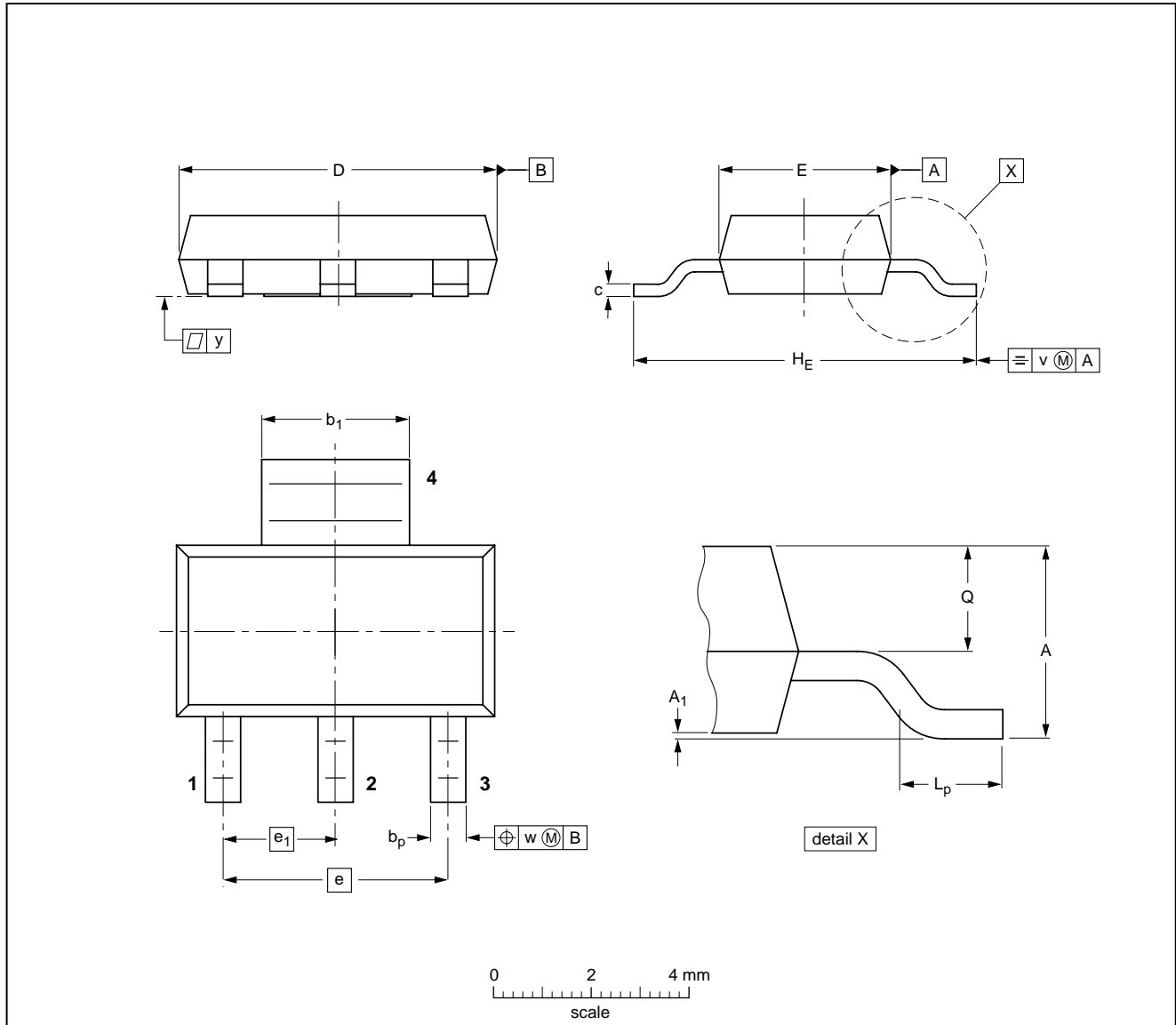
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PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub>	b <sub>p</sub>	b <sub>1</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223						96-11-11 97-02-28

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**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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