

# DATA SHEET

## **BFQ221** NPN video transistor

Product specification  
Supersedes data of 1996 July 18  
File under Discrete Semiconductors, SC05

1996 Sep 04

# NPN video transistor

# BFQ221

### APPLICATIONS

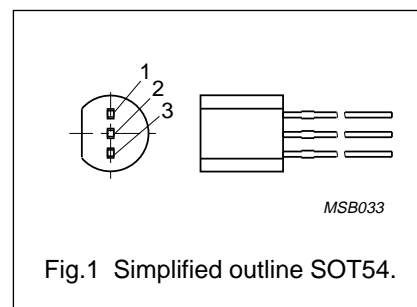
- Primarily intended for buffer stages in high resolution colour monitors.

### DESCRIPTION

NPN silicon transistor encapsulated in a 3-lead plastic SOT54 package.

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP	MAX	UNIT
$V_{CB0}$	collector-base voltage	open emitter	–	100	V
$I_C$	collector current (DC)		–	100	mA
$P_{tot}$	total power dissipation	up to $T_s = 60\text{ }^\circ\text{C}$	–	1.15	W
$f_T$	transition frequency	$I_C = 25\text{ mA}$ ; $V_{CE} = 10\text{ V}$	1	–	GHz
$C_{re}$	feedback capacitance	$I_C = 0$ ; $V_{CB} = 10\text{ V}$	1.7	–	pF
$T_j$	junction temperature		–	150	$^\circ\text{C}$

### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CB0}$	collector-base voltage	open emitter	–	100	V
$V_{CER}$	collector-emitter voltage	$R_{BE} = 100\ \Omega$	–	95	V
$V_{EBO}$	emitter-base voltage	open collector	–	3	V
$I_C$	collector current (DC)	see Fig.2	–	100	mA
$I_{C(AV)}$	average collector current	see Fig.2	–	100	mA
$P_{tot}$	total power dissipation	up to $T_s = 60\text{ }^\circ\text{C}$ ; note 1; see Fig.3	–	1.15	W
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$

### Note

- $T_s$  is the temperature at the soldering point of the collector pin.

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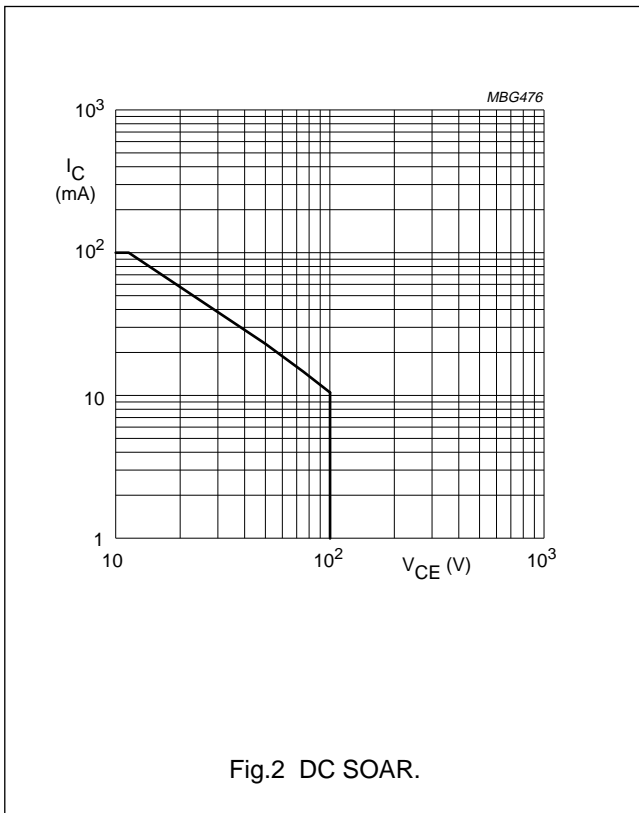


Fig.2 DC SOAR.

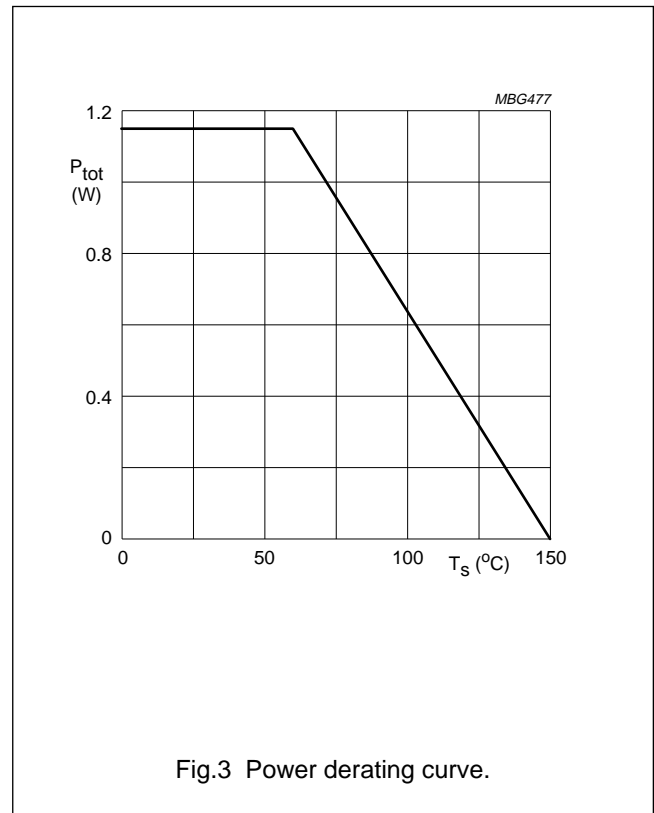


Fig.3 Power derating curve.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	$P_{tot} = 1.15\ W$ ; up to $T_s = 60\ ^\circ C$ ; note 1	78	K/W

Note

- $T_s$  is the temperature of the soldering point of the collector pin.

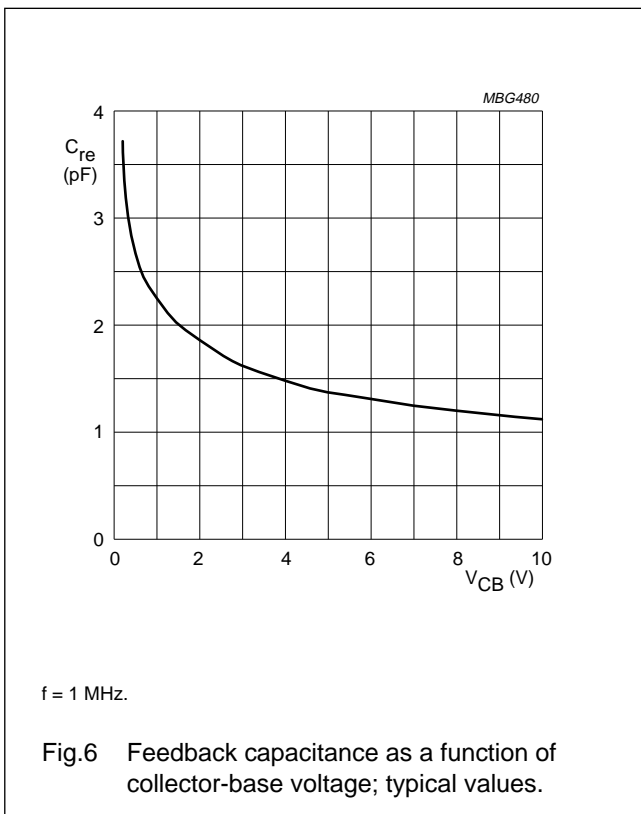
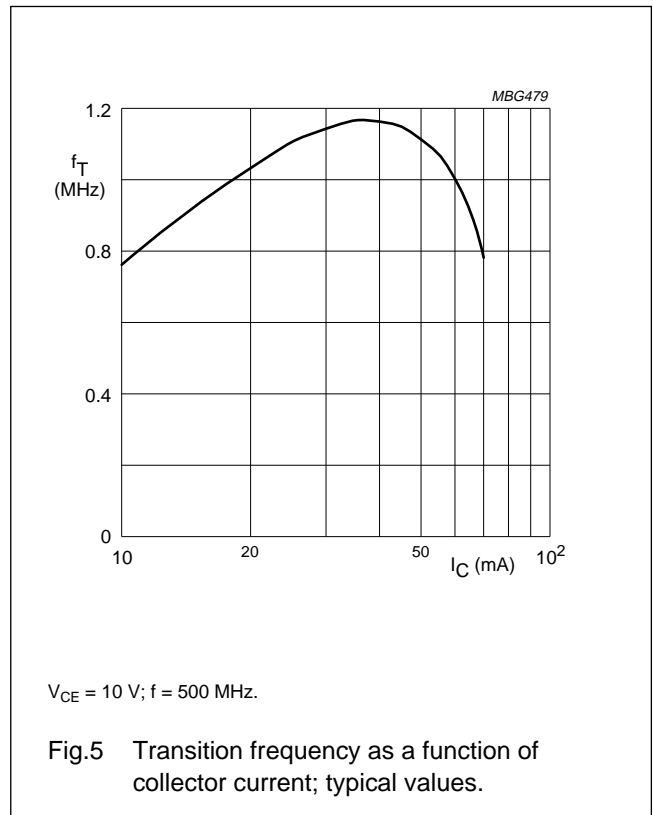
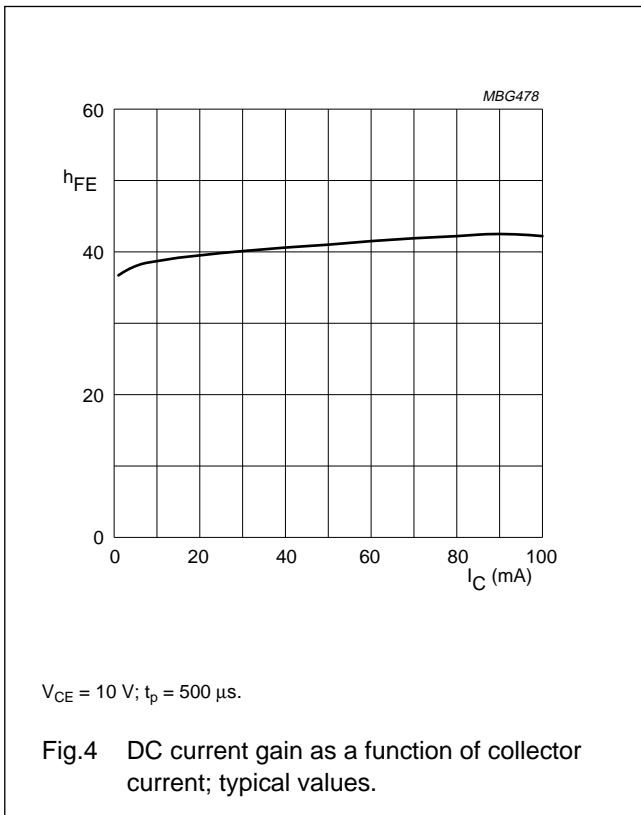
CHARACTERISTICS

$T_j = 25\ ^\circ C$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 0.1\ mA$ ; $I_E = 0$	100	–	–	V
$V_{(BR)CER}$	collector-emitter breakdown voltage	$I_C = 1\ mA$ ; $R_{BE} = 100\ \Omega$	95	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_C = 0$ ; $I_E = 0.1\ mA$	3	–	–	V
$I_{CES}$	collector-emitter leakage current	$V_{CE} = 50\ V$ ; $V_{BE} = 0$	–	–	100	$\mu A$
$h_{FE}$	DC current gain	$I_C = 25\ mA$ ; $V_{CE} = 10\ V$ ; see Fig.4	20	–	–	
$f_T$	transition frequency	$I_C = 25\ mA$ ; $V_{CE} = 10\ V$ ; $f = 500\ MHz$ ; see Fig.5	–	1	–	GHz
$C_{re}$	feedback capacitance	$I_C = 0$ ; $V_{CB} = 10\ V$ ; $f = 1\ MHz$ ; see Fig.6	–	1.7	–	pF

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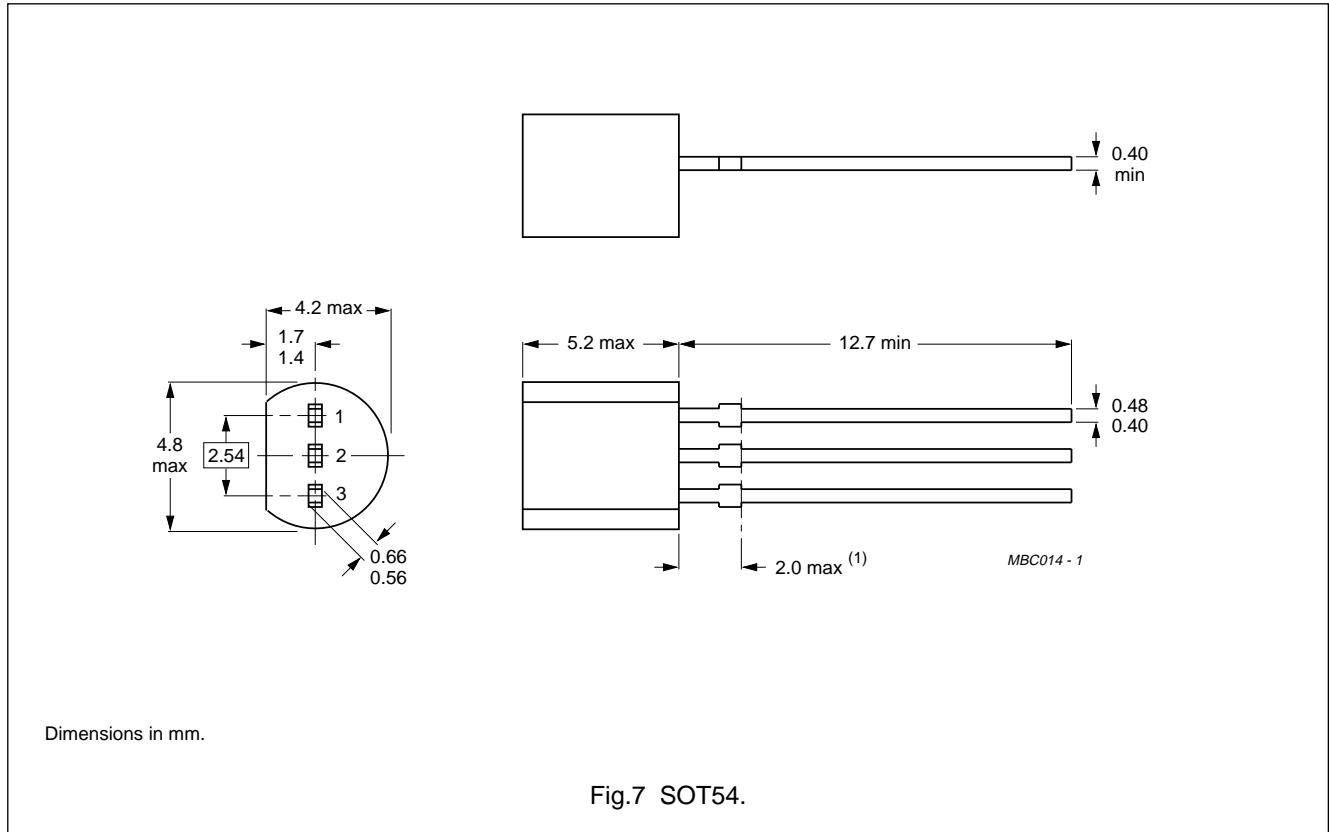
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PACKAGE OUTLINE



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.	

LIFE SUPPORT APPLICATIONS

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