

DATA SHEET

BFQ131 NPN video transistor

Product specification
File under Discrete Semiconductors, SC05

1995 Sep 26

NPN video transistor

BFQ131

FEATURES

- Low output capacitance
- High dissipation
- High gain bandwidth product.

APPLICATIONS

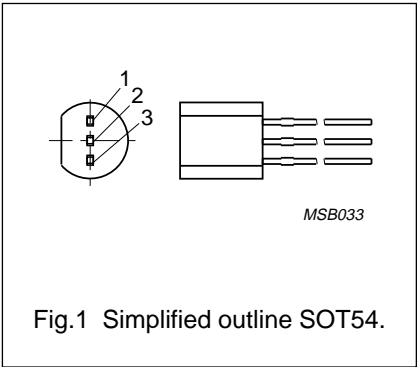
- Buffer stage in colour monitors between the video amplifier and the input of the video module
- Pre-stage (cascode driver) in discrete video amplifiers.

DESCRIPTION

NPN silicon transistor 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_{CEO}	collector-emitter voltage	open base	—	18	V
I_C	collector current (DC)		—	150	mA
P_{tot}	total power dissipation	up to $T_s = 60\text{ }^{\circ}\text{C}$; see Fig.2	—	1.9	W
f_T	transition frequency	$I_C = 100\text{ mA}$; $V_{CE} = 10\text{ V}$; see Fig.4	4	—	GHz
C_{re}	feedback capacitance	$I_C = 0$; $V_{CE} = 10\text{ V}$; see Fig.5	1.2	—	pF
T_j	junction temperature		—	175	$^{\circ}\text{C}$

NPN video transistor

BFQ131

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	25	V
V_{CEO}	collector-emitter voltage	open base	–	18	V
V_{EBO}	emitter-base voltage	open collector	–	2	V
I_C	collector current (DC)		–	150	mA
P_{tot}	total power dissipation	up to $T_s = 60\text{ }^{\circ}\text{C}$; note 1; see Fig.2	–	1.9	W
T_{stg}	storage temperature		–65	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	175	$^{\circ}\text{C}$

Note

1. T_s = the temperature at the soldering point of the collector pin.

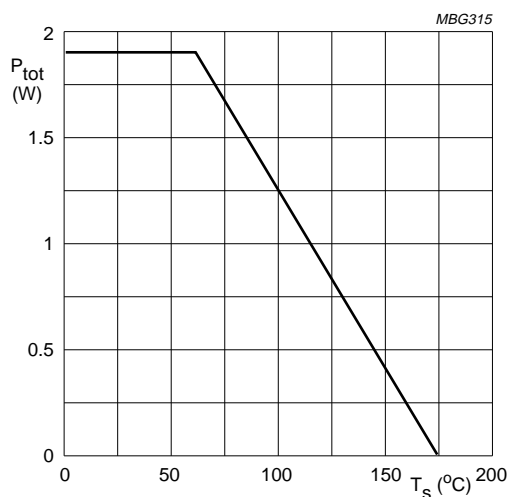


Fig.2 Power derating curve.

NPN video transistor

BFQ131

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	up to $T_s = 60\text{ °C}$; note 1; $P_{tot} = 1.9\text{ W}$	60	K/W

Note

1. T_s = the temperature at the soldering point of the collector pin.

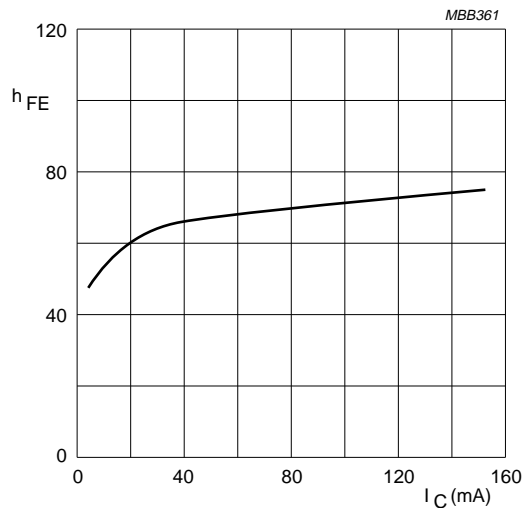
CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 0.1\text{ mA}$; $I_E = 0$	25	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = 0.1\text{ mA}$; $I_B = 0$	18	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_E = 0.1\text{ mA}$; $I_C = 0$	2	–	–	V
I_{CES}	collector-emitter cut-off current	$V_{CE} = 18\text{ V}$; $V_{BE} = 0$	–	–	1	μA
h_{FE}	DC current gain	$I_C = 25\text{ mA}$; $V_{CE} = 10\text{ V}$; see Fig.3	25		–	
f_T	transition frequency	$I_C = 100\text{ mA}$; $V_{CE} = 10\text{ V}$; $f = 500\text{ MHz}$; see Fig.4	–	4	–	GHz
C_{re}	feedback capacitance	$I_C = 0$; $V_{CE} = 10\text{ V}$; $f = 1\text{ MHz}$; see Fig.5	–	1.2	–	pF

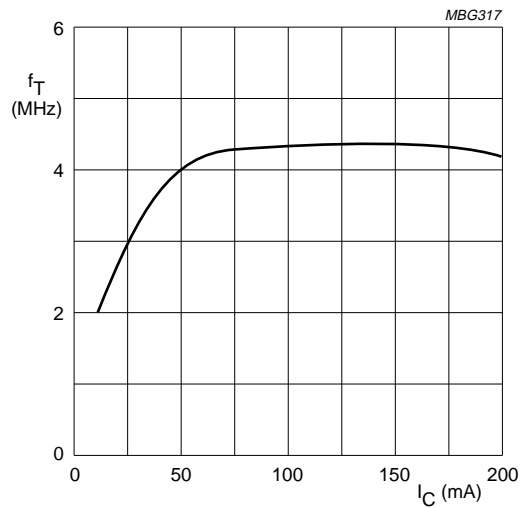
NPN video transistor

BFQ131



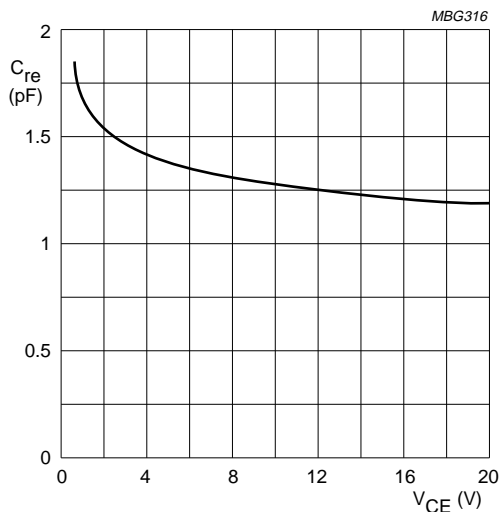
$V_{CE} = 10\text{ V}; T_J = 25\text{ }^{\circ}\text{C}.$

Fig.3 DC current gain as a function of collector current; typical values.



$V_{CE} = 10\text{ V}; f = 500\text{ MHz}; T_J = 25\text{ }^{\circ}\text{C}.$

Fig.4 Transition frequency as a function of collector current; typical values.



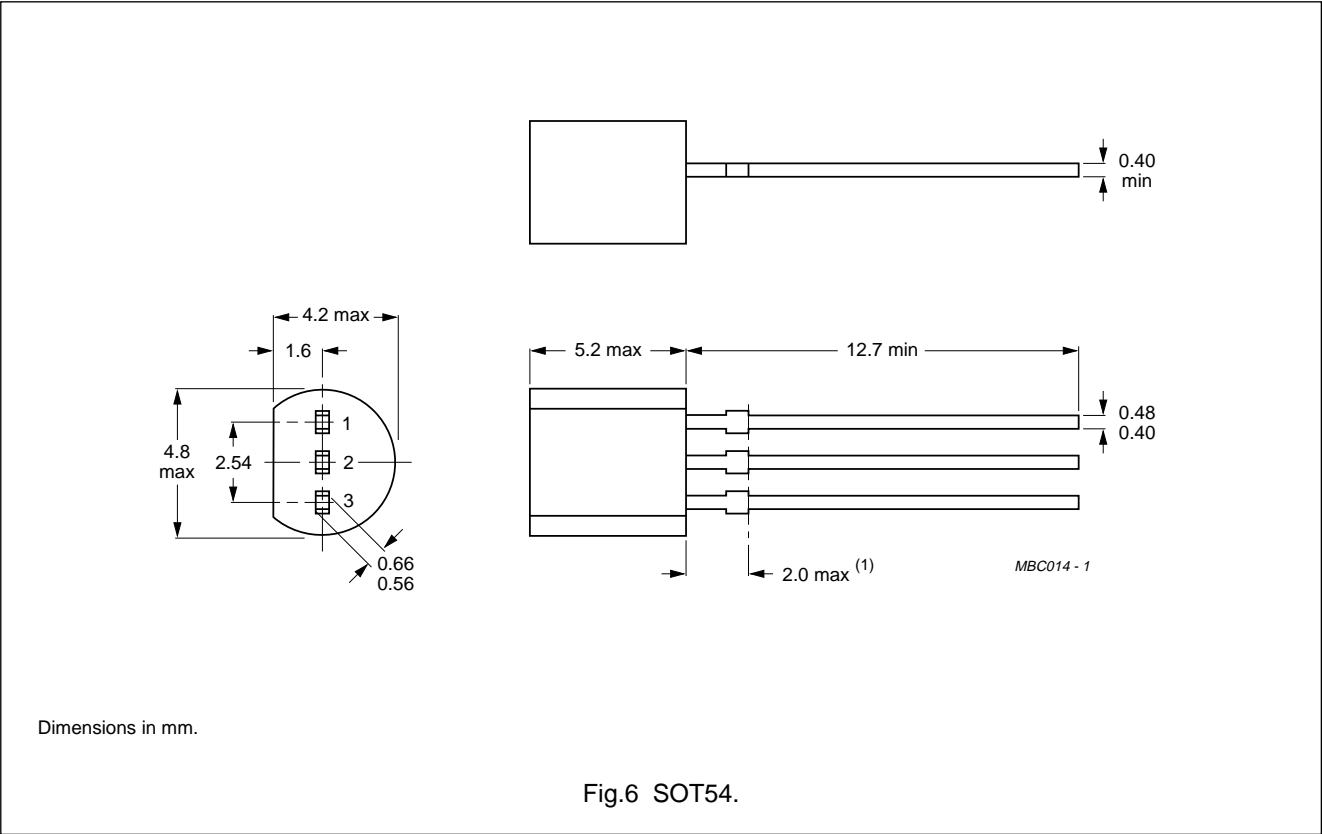
$f = 1\text{ MHz}; I_C = 0; T_J = 25\text{ }^{\circ}\text{C}.$

Fig.5 Feedback capacitance as a function of collector-emitter voltage; typical values.

NPN video transistor

BFQ131

PACKAGE OUTLINE



DEFINITIONS

Data sheet status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.