DATA SHEET

BFQ222
NPN video transistor

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

1996 Sep 04

Philips
Semiconductors

PHILIPS

NPN video transistor BFQ222

APPLICATIONS

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

DESCRIPTION

NPN silicon transistor encapsulated in a 3-lead plastic SOT32 package.

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base

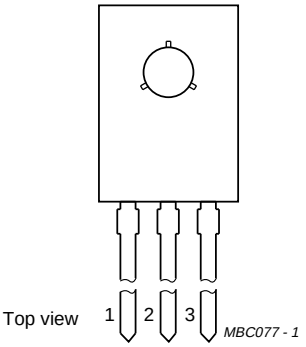


Fig.1 Simplified outline SOT32.

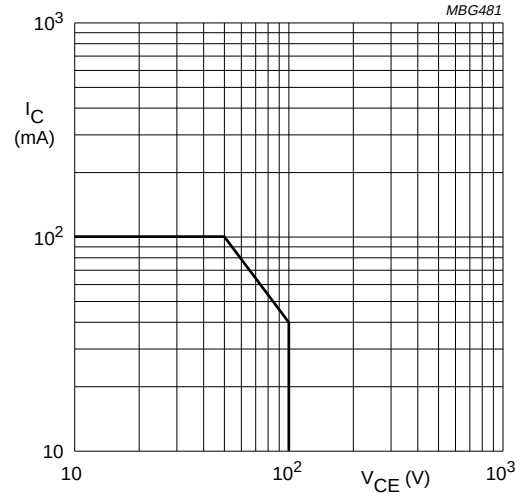
QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	100	V
I_C	collector current (DC)		–	100	mA
P_{tot}	total power dissipation	T_{mb} = 25 °C	–	5	W
f_T	transition frequency	I_C = 25 mA; V_{CE} = 10 V	1	–	GHz
C_{re}	feedback capacitance	I_C = 0; V_{CB} = 10 V	1.7	–	pF
T_j	junction temperature		–	175	°C

LIMITING VALUES

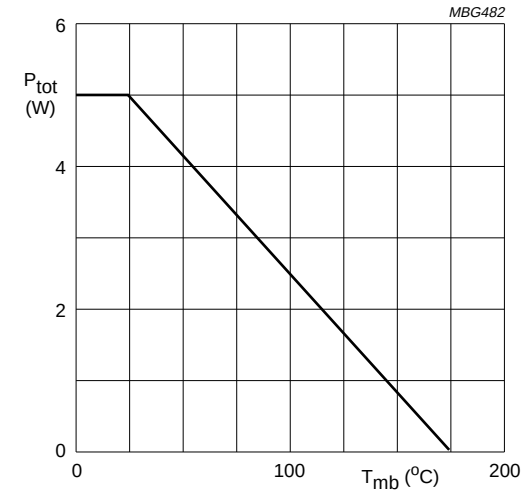
In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	100	V
V_{CER}	collector-emitter voltage	R_{BE} = 100 Ω	–	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	T_{mb} = 25 °C; see Fig.3	–	5	W
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature		–	175	°C



T_{mb} = 25 °C.

Fig.2 DC SOAR.



$V_{CE} \leq 50$ V.

Fig.3 Power derating curve.

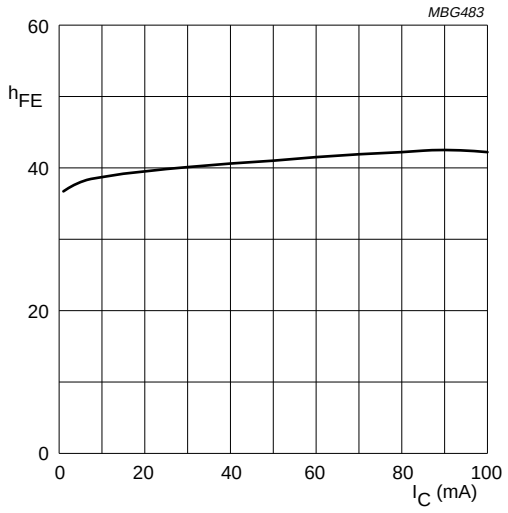
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}mb}$	thermal resistance from junction to mounting base	P_{tot} = 5 W; T_{mb} = 25 °C	30	K/W

CHARACTERISTICS

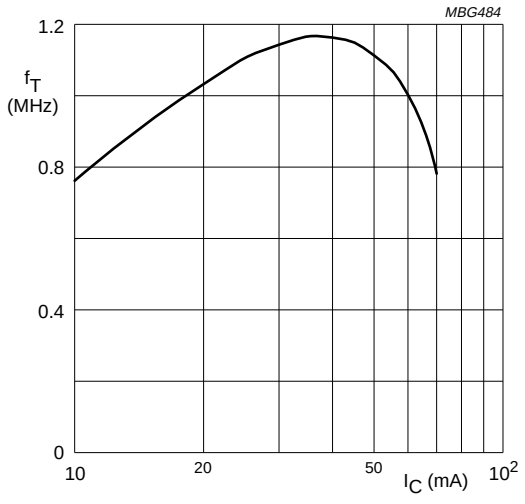
T_j = 25 °C unless otherwise specified.

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 Ω	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	µA
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



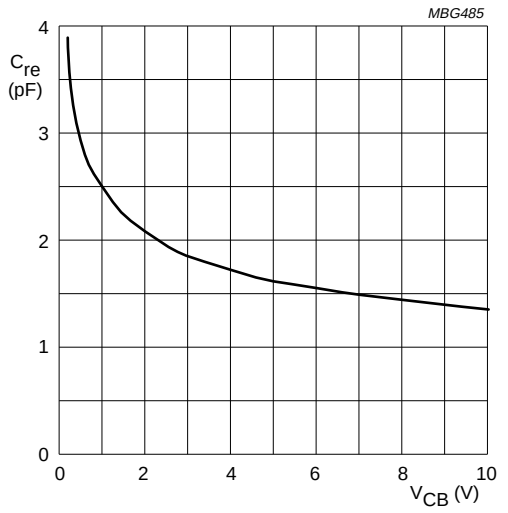
V_{CE} = 10 V; t_p = 500 µs.

Fig.4 DC current gain as a function of collector current; typical values.



V_{CE} = 10 V; f = 500 MHz.

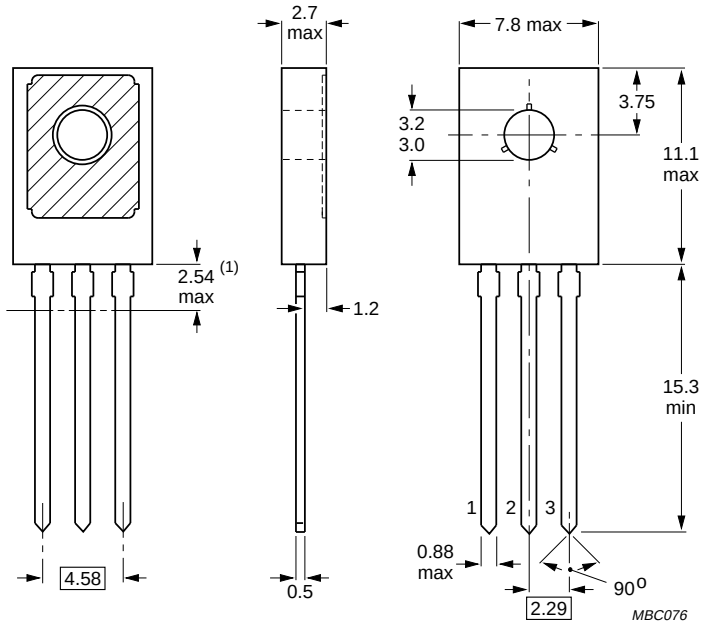
Fig.5 Transition frequency as a function of collector current; typical values.



f = 1 MHz.

Fig.6 Feedback capacitance as a function of collector-base voltage; typical values.

PACKAGE OUTLINE



Dimensions in mm.

Fig.7 SOT32.

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.