

# DATA SHEET



## **BF494; BF495** NPN medium frequency transistors

Product specification  
Supersedes data of September 1994  
File under Discrete Semiconductors, SC04

1997 Jul 08

# NPN medium frequency transistors

# BF494; BF495

### FEATURES

- Low current (max. 30 mA)
- Low voltage (max. 20 V).

### APPLICATIONS

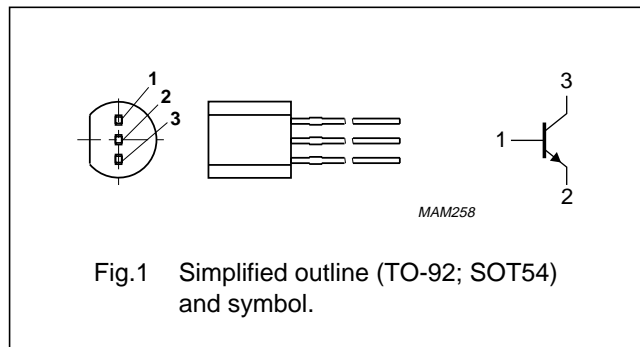
- HF applications in radio and television receivers
- FM tuners
- Low noise AM mixer-oscillators
- IF amplifiers in AM/FM receivers.

### DESCRIPTION

NPN medium frequency transistor in a TO-92; SOT54 plastic package.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	30	V
$V_{CEO}$	collector-emitter voltage	open base	–	20	V
$I_{CM}$	peak collector current		–	30	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	–	300	mW
$h_{FE}$	DC current gain	$I_C = 1\text{ mA}; V_{CE} = 10\text{ V}$			
	BF494		67	220	
	BF495		35	125	
$f_T$	transition frequency	$I_C = 1\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	120	–	MHz

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**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	–	30	V
$V_{CEO}$	collector-emitter voltage	open base	–	20	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_C$	collector current (DC)		–	30	mA
$I_{CM}$	peak collector current		–	30	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	300	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	420	K/W

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0$ ; $V_{CB} = 20\text{ V}$	–	100	nA
		$I_E = 0$ ; $V_{CB} = 20\text{ V}$ ; $T_{amb} = 150\text{ °C}$	–	4	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0$ ; $V_{EB} = 4\text{ V}$	–	100	nA
$h_{FE}$	DC current gain	$I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$			
			BF494	67	220
			BF494B	100	220
			BF495	35	125
	BF495B	100	125		
$V_{BE}$	base-emitter voltage	$I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$	650	740	mV
$C_{re}$	feedback capacitance	$I_C = 0$ ; $V_{CB} = 10\text{ V}$ ; $f = 1\text{ MHz}$	–	1	pF
$f_T$	transition frequency	$I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$ ; $f = 100\text{ MHz}$	120	–	MHz

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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup>
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT54		TO-92	SC-43		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.	

**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.

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**NOTES**

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**NOTES**

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