NPN high-voltage transistors | BF457; BF458; BF459

DESCRIPTION

NPN transistors in a TO-126; SOT32 plastic package.

APPLICATIONS

- Intended for video output stages in black-and-white and in colour television receivers.

PINNING

PIN	DESCRIPTION
1	emitter
2	collector, connected to mounting base
3	base

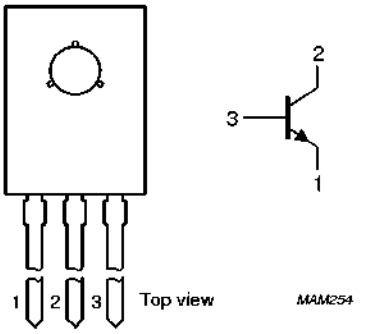


Fig.1 Simplified outline (TO-126; SOT32) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BF457		–	–	160	V
	BF458		–	–	250	V
	BF459		–	–	300	V
V_{CEO}	collector-emitter voltage	open base				
	BF457		–	–	160	V
	BF458		–	–	250	V
	BF459		–	–	300	V
I_{CM}	peak collector current		–	–	300	mA
P_{tot}	total power dissipation	$T_{mb} \leq 90$ °C	–	–	6	W
h_{FE}	DC current gain	I_C = 30 mA; V_{CE} = 10 V	26	–	–	
C_{re}	feedback capacitance	$I_C = i_c = 0$; V_{CE} = 30 V; f = 1 MHz	–	–	3.5	pF
f_T	transition frequency	I_C = 15 mA; V_{CE} = 10 V; f = 100 MHz	–	90	–	MHz

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			
	BF457		–	160	V
	BF458		–	250	V
	BF459		–	300	V
V_{CEO}	collector-emitter voltage	open base			
	BF457		–	160	V
	BF458		–	250	V
	BF459		–	300	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	100	mA
I_{CM}	peak collector current		–	300	mA
I_{BM}	peak base current		–	100	mA
P_{tot}	total power dissipation	$T_{mb} \leq 90$ °C	–	6	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

THERMAL CHARACTERISTICS

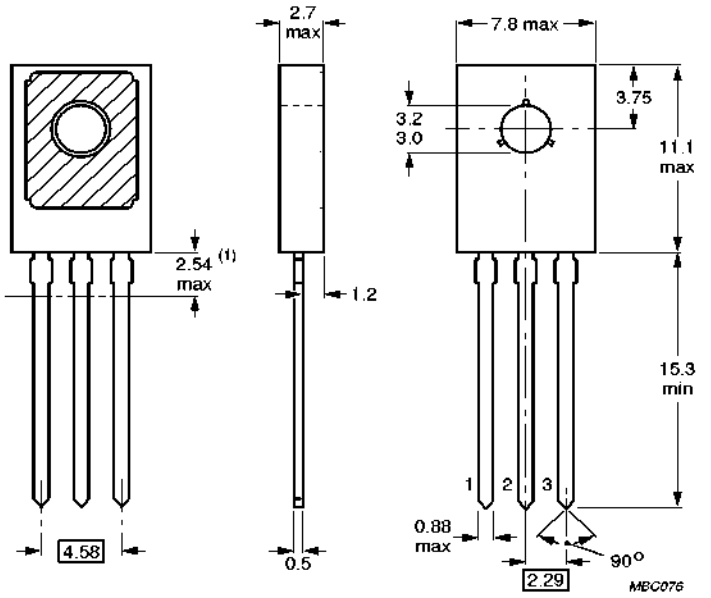
SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient		104	K/W
$R_{th\ j\text{-}mb}$	thermal resistance from junction to mounting base		10	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current BF457	I_E = 0; V_{CB} = 100 V	–	–	50	nA
		I_E = 0; V_{CB} = 100 V; T_j = 150 °C	–	–	5	µA
I_{CBO}	collector cut-off current BF458	I_E = 0; V_{CB} = 200 V	–	–	50	nA
		I_E = 0; V_{CB} = 200 V; T_j = 150 °C	–	–	5	µA
I_{CBO}	collector cut-off current BF459	I_E = 0; V_{CB} = 250 V	–	–	50	nA
		I_E = 0; V_{CB} = 250 V; T_j = 150 °C	–	–	5	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 5 V	–	–	100	nA
h_{FE}	DC current gain	I_C = 30 mA; V_{CE} = 10 V	26	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 30 mA; I_B = 6 mA	–	–	1	V
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = 30 V; f = 1 MHz	–	–	4.5	pF
C_{re}	feedback capacitance	$I_C = i_c$ = 0; V_{CE} = 30 V; f = 1 MHz	–	–	3.5	pF
f_T	transition frequency	I_C = 15 mA; V_{CE} = 10 V; f = 100 MHz	–	90	–	MHz

PACKAGE OUTLINE



Dimensions in mm.

(1) Terminal dimensions within this zone are uncontrolled.

Fig.2 TO-126; 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.