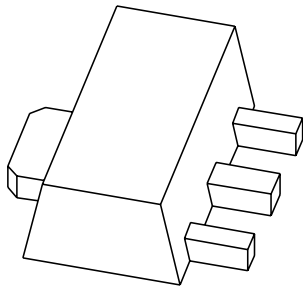


DATA SHEET



BCX54; BCX55; BCX56 NPN medium power transistors

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

1997 Mar 24

NPN medium power transistors

BCX54; BCX55; BCX56

FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V).

APPLICATIONS

- Driver stages of audio and video amplifiers.

DESCRIPTION

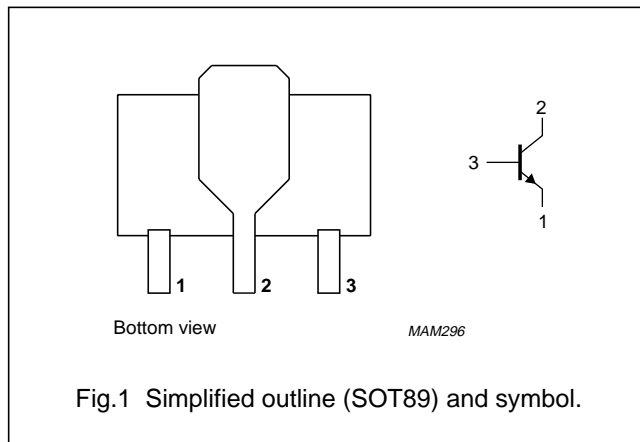
NPN medium power transistor in a SOT89 plastic package. PNP complements: BCX51, BCX52 and BCX53.

MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BCX54	BA	BCX55-16	BM
BCX54-10	BC	BCX56	BH
BCX54-16	BD	BCX56-10	BK
BCX55	BE	BCX56-16	BL
BCX55-10	BG		

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BCX54		–	–	45	V
	BCX55		–	–	60	V
	BCX56		–	–	100	V
V_{CEO}	collector-emitter voltage	open base				
	BCX54		–	–	45	V
	BCX55		–	–	60	V
	BCX56		–	–	80	V
I_{CM}	peak collector current		–	–	1.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	–	1.39	W
h_{FE}	DC current gain	$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$	40	–	250	
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	–	130	–	MHz

NPN medium power transistors

BCX54; BCX55; BCX56

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			
	BCX54		–	45	V
	BCX55		–	60	V
	BCX56		–	100	V
V _{CEO}	collector-emitter voltage	open base			
	BCX54		–	45	V
	BCX55		–	60	V
	BCX56		–	80	V
V _{EBO}	emitter-base voltage	open collector	–	5	V
I _C	collector current (DC)		–	1	A
I _{CM}	peak collector current		–	1.5	A
I _{BM}	peak base current		–	0.2	A
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	–	1.39	W
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Note

- Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².
For other mounting conditions, see “*Thermal considerations for SOT89 in the General part of handbook SC04*”.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	note 1	90	K/W
R _{th j-s}	thermal resistance from junction to soldering point		9	K/W

Note

- Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².
For other mounting conditions, see “*Thermal considerations for SOT89 in the General part of handbook SC04*”.

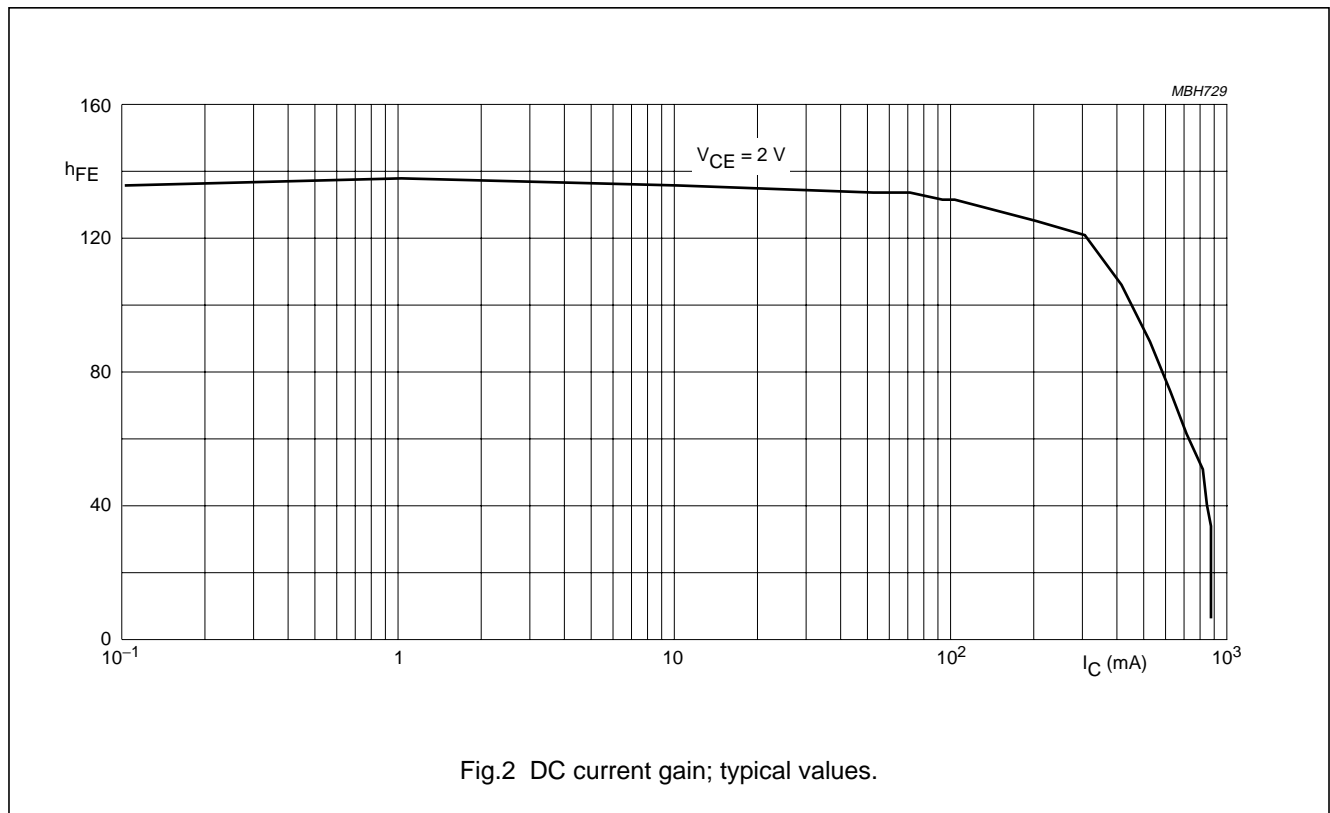
NPN medium power transistors

BCX54; BCX55; BCX56

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 30 V	–	–	100	nA
		I _E = 0; V _{CB} = 30 V; T _j = 125 °C	–	–	10	μA
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 5 V	–	–	100	nA
h _{FE}	DC current gain	V _{CE} = 2 V; see Fig.2 I _C = 5 mA I _C = 150 mA I _C = 500 mA	40	–	–	
			40	–	250	
			25	–	–	
h _{FE}	DC current gain BCX54-10; 55-10; 56-10 BCX54-16; 55-16; 56-16	I _C = 150 mA; V _{CE} = 2 V; see Fig.2	63	–	160	
			100	–	250	
V _{CEsat}	collector-emitter saturation voltage	I _C = 500 mA; I _B = 50 mA	–	–	0.5	V
V _{BE}	base-emitter voltage	I _C = 500 mA; V _{CE} = 2 V	–	–	1	V
f _T	transition frequency	I _C = 10 mA; V _{CE} = 5 V; f = 100 MHz	–	130	–	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	I _C = 150 mA; V _{CE} = 2 V	–	1.3	1.6	



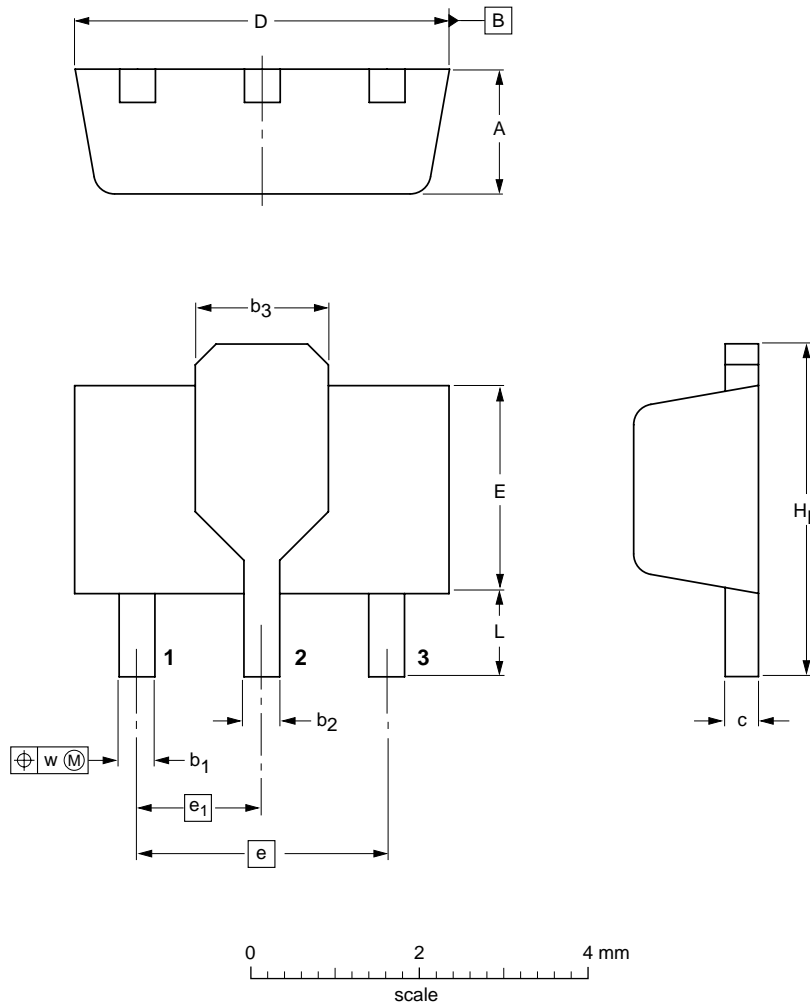
NPN medium power transistors

BCX54; BCX55; BCX56

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b ₁	b ₂	b ₃	c	D	E	e	e ₁	H _E	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28

NPN medium power transistors

BCX54; BCX55; BCX56

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

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NPN medium power transistors

BCX54; BCX55; BCX56

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