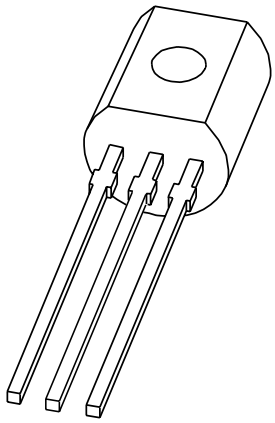
DATA SHEET



BC617; BC618
NPN Darlington transistors

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

1997 Jul 04

Philips
Semiconductors

PHILIPS

NPN Darlington transistors BC617; BC618

FEATURES

- Low current (max. 500 mA)
- Low voltage (max. 55 V)
- High DC current gain.

APPLICATIONS

- General purpose low frequency
- Relay drivers.

DESCRIPTION

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

PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector

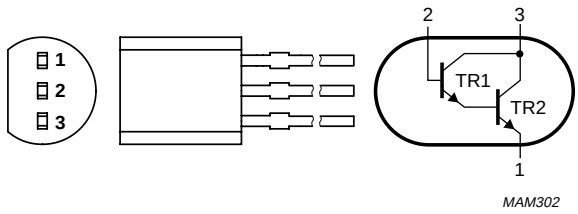


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BC617		–	50	V
	BC618		–	80	V
V_{CES}	collector-emitter voltage	V_{BE} = 0			
	BC617		–	40	V
	BC618		–	55	V
I_C	collector current		–	1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	500	mW
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 5 V			
	BC617		4000	–	
	BC618		2000	–	
f_T	transition frequency	I_C = 500 mA; V_{CE} = 5 V; f = 100 MHz	155	–	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			
	BC617		–	50	V
	BC618		–	80	V
V_{CES}	collector-emitter voltage	V_{BE} = 0			
	BC617		–	40	V
	BC618		–	55	V
V_{EBO}	emitter-base voltage	open collector	–	12	V
I_C	collector current (DC)		–	500	mA
I_{CM}	peak collector current		–	800	mA
I_B	base current (DC)		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	500	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
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	250	K/W

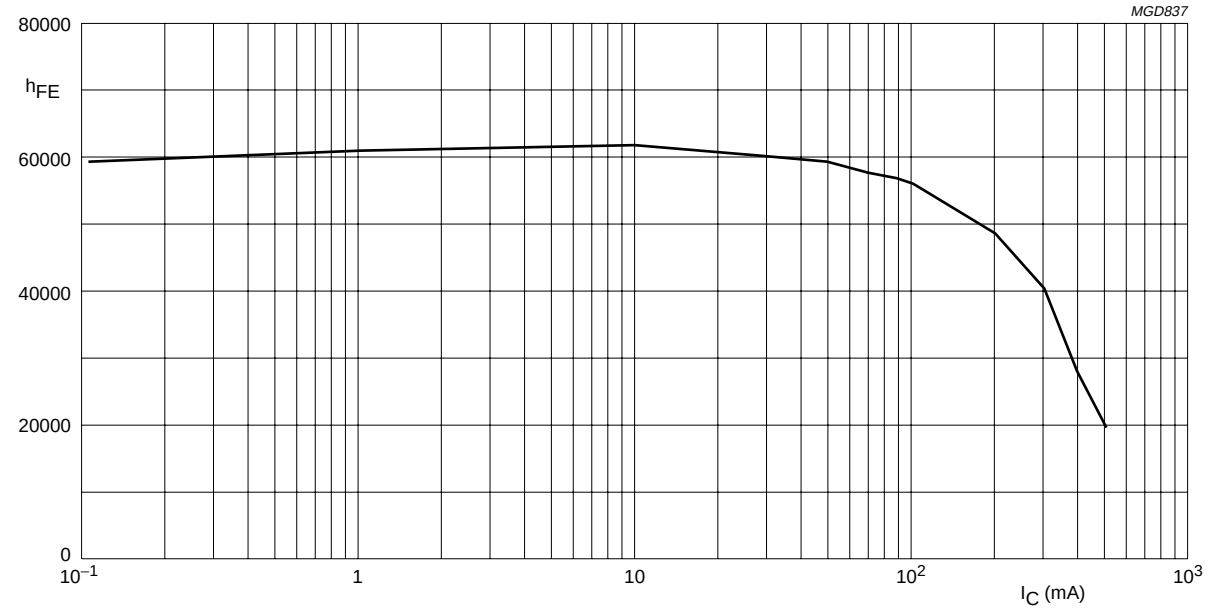
Note

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

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current					
	BC617	I_E = 0; V_{CB} = 40 V	–	–	50	nA
	BC618	I_E = 0; V_{CB} = 60 V	–	–	50	nA
I_{CES}	collector cut-off current					
	BC617	V_{BE} = 0; V_{CE} = 40 V	–	–	50	µA
	BC618	V_{BE} = 0; V_{CE} = 60 V	–	–	50	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 10 V	–	–	50	nA
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 5 V; see Fig.2		–		
	BC617		4000	–	–	
	BC618		2000	–	–	
h_{FE}	DC current gain	I_C = 10 mA; V_{CE} = 5 V; see Fig.2		–		
	BC617		10000	–	–	
	BC618		4000	–	–	
h_{FE}	DC current gain	I_C = 200 mA; V_{CE} = 5 V; see Fig.2	10000	–	70000	
V_{CEsat}	collector-emitter saturation voltage	I_C = 200 mA; I_B = 0.2 mA	–	–	1.1	V
V_{BEsat}	base-emitter saturation voltage	I_C = 200 mA; I_B = 0.2 mA	–	–	1.6	V
C_c	collector capacitance	I_E = 0; V_{CB} = 30 V	–	3.5	–	pF
f_T	transition frequency	I_C = 500 mA; V_{CE} = 5 V; f = 100 MHz	155	–	–	MHz

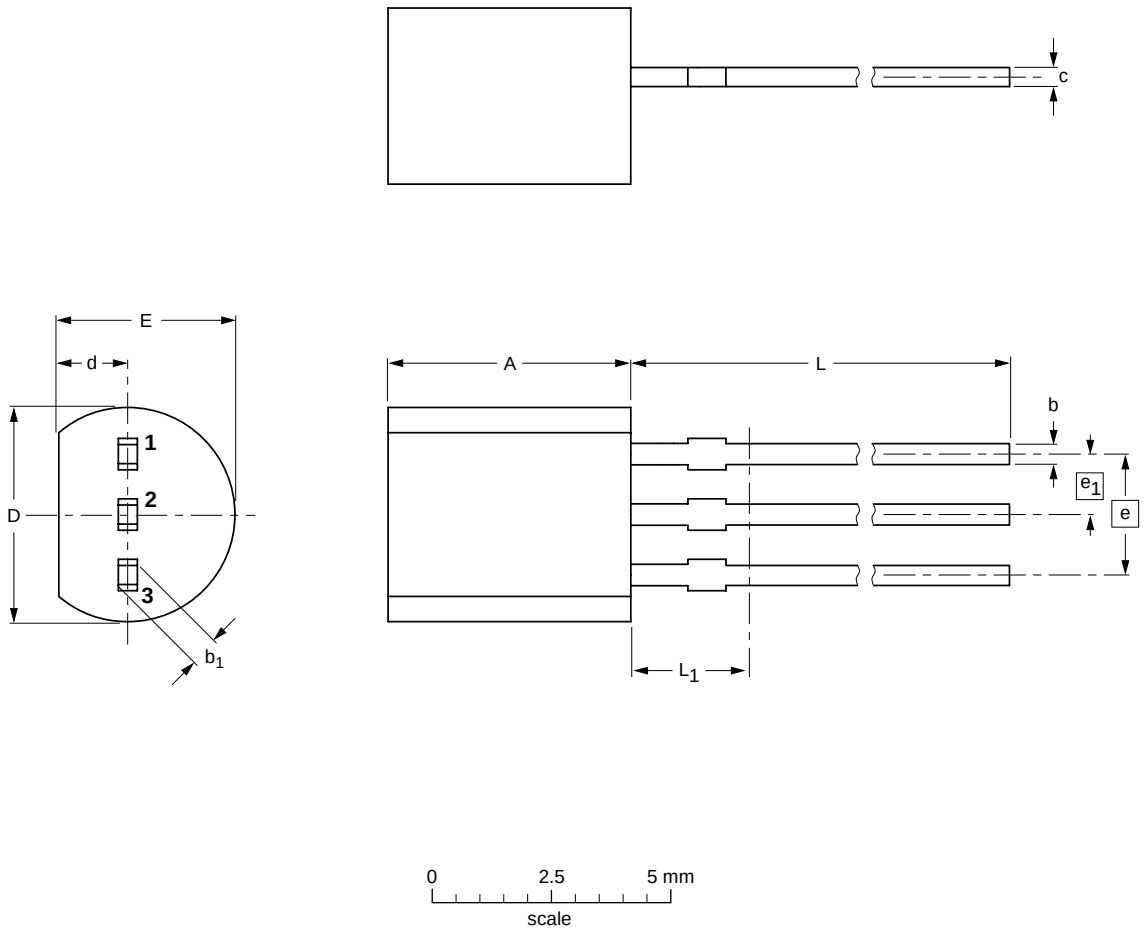


V_{CE} = 2 V.

Fig.2 DC current gain; typical values.

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads **SOT54**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b_1	c	D	d	E	e	e_1	L	L_1(1)
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

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.	

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