NPN Darlington transistors MPSA25; MPSA26; MPSA27

FEATURES

- High current (max. 500 mA)
- Low voltage (max. 60 V)
- High DC current gain (min. 10000).

APPLICATIONS

- High gain amplification.

DESCRIPTION

NPN Darlington transistor in a TO-92; SOT54 plastic package. PNP complements: MPSA75, MPSA76, and MPSA77.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter

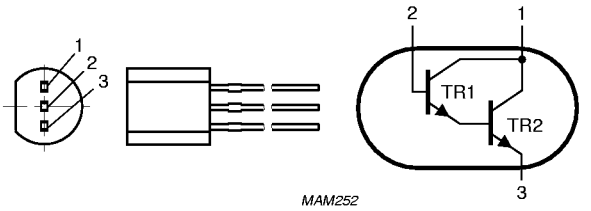


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	MPSA25		–	–	40	V
	MPSA26		–	–	50	V
	MPSA27		–	–	60	V
V_{CES}	collector-emitter voltage	V_{BE} = 0				
	MPSA25		–	–	40	V
	MPSA26		–	–	50	V
	MPSA27		–	–	60	V
I_C	collector current (DC)		–	–	500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	–	500	mW
h_{FE}	DC current gain	I_C = 10 mA; V_{CE} = 5 V	10000	–	–	
f_T	transition frequency	I_C = 30 mA; V_{CE} = 5 V; f = 100 MHz	125	220	–	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			
	MPSA25		–	40	V
	MPSA26		–	50	V
	MPSA27		–	60	V
V_{CES}	collector-emitter voltage	V_{BE} = 0			
	MPSA25		–	40	V
	MPSA26		–	50	V
	MPSA27		–	60	V
V_{EBO}	emitter-base voltage	open collector	–	10	V
I_C	collector current (DC)		–	500	mA
I_{CM}	peak collector current		–	1	A
I_B	base current (DC)		–	100	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

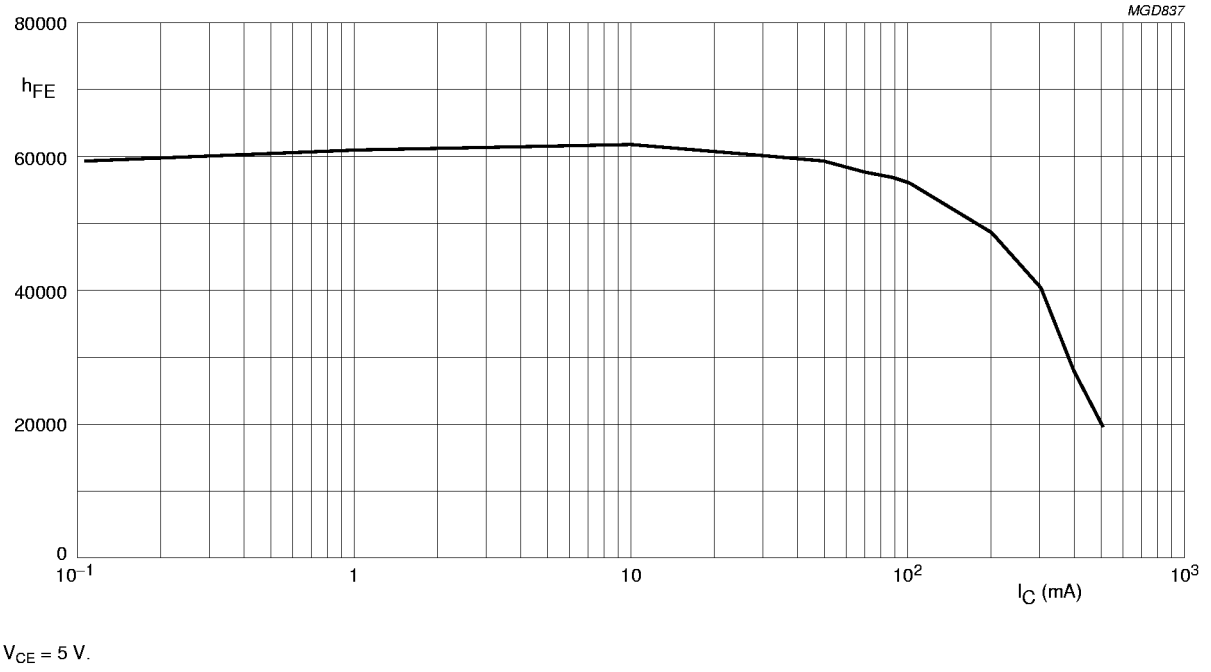
Note

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 MPSA25; MPSA26	I_E = 0; V_{CB} = 40 V	–	–	100	nA
I_{CBO}	collector cut-off current MPSA27	I_E = 0; V_{CB} = 50 V	–	–	100	nA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 10 V	–	–	100	nA
h_{FE}	DC current gain	I_C = 10 mA; V_{CE} = 5 V; see Fig.2	10000	–	–	
		I_C = 100 mA; V_{CE} = 5 V; see Fig.2	10000	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 100 mA; I_B = 0.1 mA	–	–	1.5	V
V_{BEsat}	base-emitter saturation voltage	I_C = 100 mA; I_B = 0.1 mA	–	–	1.5	V
V_{BEon}	base-emitter on-state voltage	I_C = 100 mA; V_{CE} = 5 V	–	–	2	V
f_T	transition frequency	I_C = 30 mA; V_{CE} = 5 V; f = 100 MHz	125	220	–	MHz

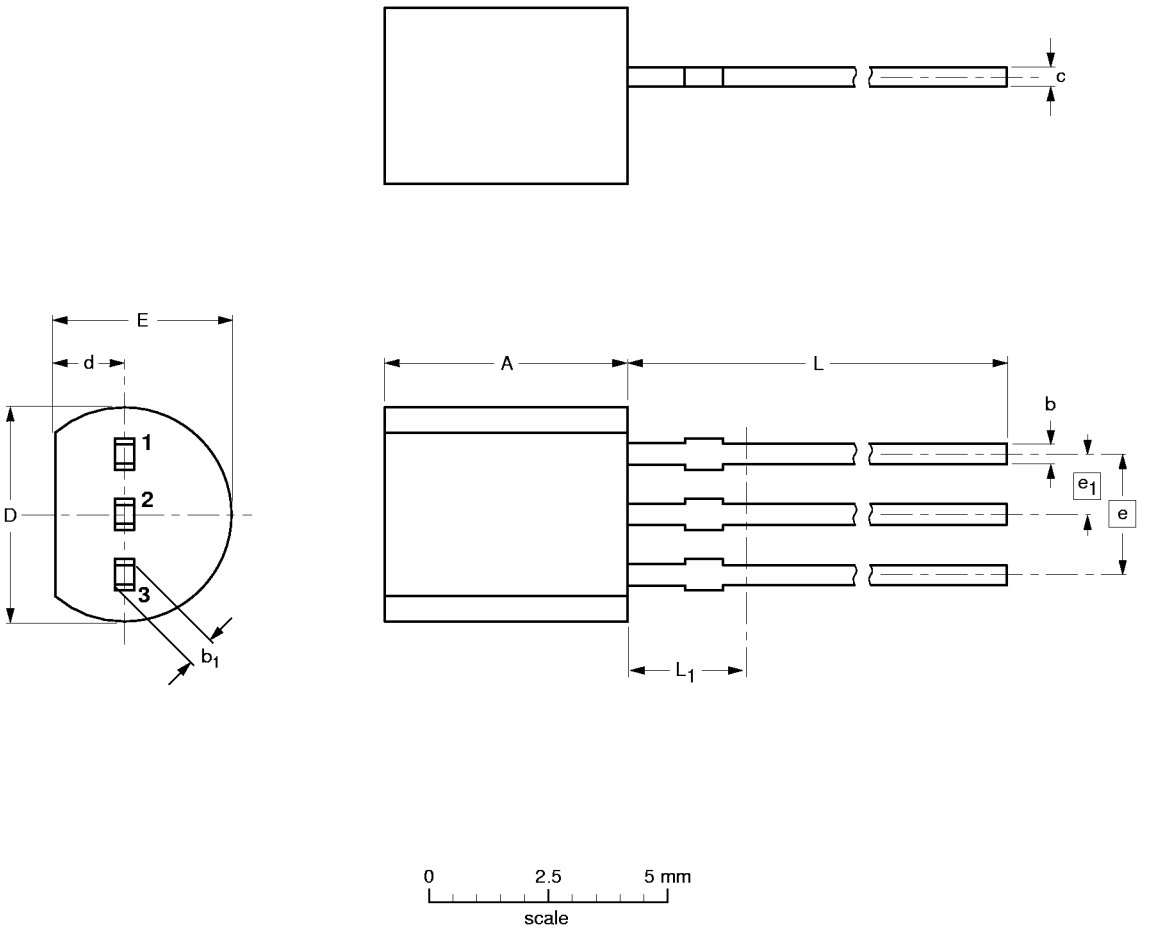


V_{CE} = 5 V.

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