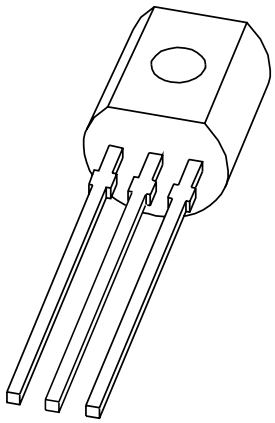
DATA SHEET



PN2907A
PNP switching transistor

Product data sheet
Supersedes data of 1997 May 05

2004 Oct 11

PNP switching transistor PN2907A

FEATURES

- High current (max. 600 mA)
- Low voltage (max. 60 V).

APPLICATIONS

- Switching and linear amplification.

DESCRIPTION

PNP switching transistor in a TO-92; SOT54 plastic package. NPN complement: PN2222A.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter

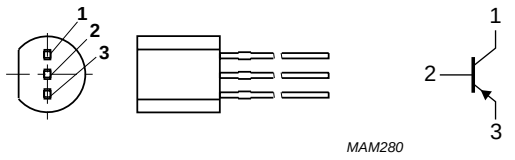


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	−60	V
V_{CEO}	collector-emitter voltage	open base	–	−60	V
I_C	collector current (DC)		–	−600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	500	mW
h_{FE}	DC current gain	$V_{CE} = -10$ V; $I_C = -150$ mA	100	300	
f_T	transition frequency	$V_{CE} = -20$ V; $I_C = -50$ mA; f = 100 MHz	200	–	MHz
t_{off}	turn-off time	$I_{Con} = -150$ mA; $I_{Bon} = -15$ mA; $I_{Boff} = 15$ mA	–	365	ns

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PN2907A	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	−60	V
V_{CEO}	collector-emitter voltage	open base	–	−60	V
V_{EBO}	emitter-base voltage	open collector	–	−5	V
I_C	collector current (DC)		–	−600	mA
I_{CM}	peak collector current		–	−800	mA
I_{BM}	peak base current		–	−200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	500	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	ambient temperature		−65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	250	K/W

Note

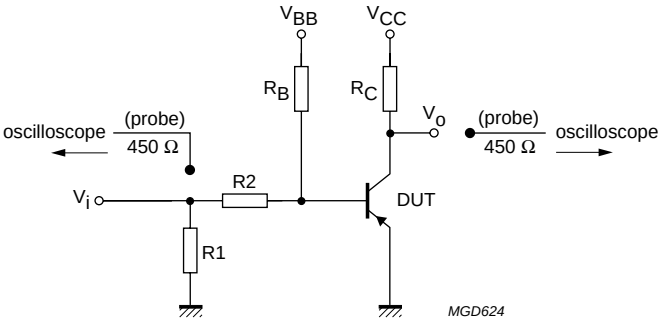
1. Transistor mounted on an FR4 printed-circuit board.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = −50 V; I_E = 0 A	–	−10	nA
		V_{CB} = −50 V; I_E = 0 A; T_j = 125 °C	–	−10	μA
I_{EBO}	emitter-base cut-off current	V_{EB} = −5 V; I_C = 0 A	–	−50	nA
h_{FE}	DC current gain	V_{CE} = −10 V; I_C = −0.1 mA	75	–	
		V_{CE} = −10 V; I_C = −1 mA	100	–	
		V_{CE} = −10 V; I_C = −10 mA	100	–	
		V_{CE} = −10 V; I_C = −150 mA	100	300	
		V_{CE} = −10 V; I_C = −500 mA	50	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = −150 mA; I_B = −15 mA	–	−400	mV
		I_C = −500 mA; I_B = −50 mA	–	−1.6	V
V_{BEsat}	base-emitter saturation voltage	I_C = −150 mA; I_B = −15 mA	–	−1.3	V
		I_C = −150 mA; I_B = −50 mA	–	−2.6	V
C_c	collector capacitance	V_{CB} = −10 V; $I_E = i_e$ = 0 A; f = 1 MHz	–	8	pF
C_e	emitter capacitance	V_{EB} = −2 V; $I_C = i_c$ = 0 A; f = 1 MHz	–	30	pF
f_T	transition frequency	V_{CE} = −20 V; I_C = −50 mA; f = 100 MHz	200	–	MHz

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Switching times (between 10 % and 90 % levels); see Fig.2					
t_{on}	turn-on time	I_{Con} = −150 mA; I_{Bon} = −15 mA; I_{Boff} = 15 mA	–	40	ns
t_d	delay time		–	12	ns
t_r	rise time		–	30	ns
t_{off}	turn-off time		–	365	ns
t_s	storage time		–	300	ns
t_f	fall time		–	65	ns

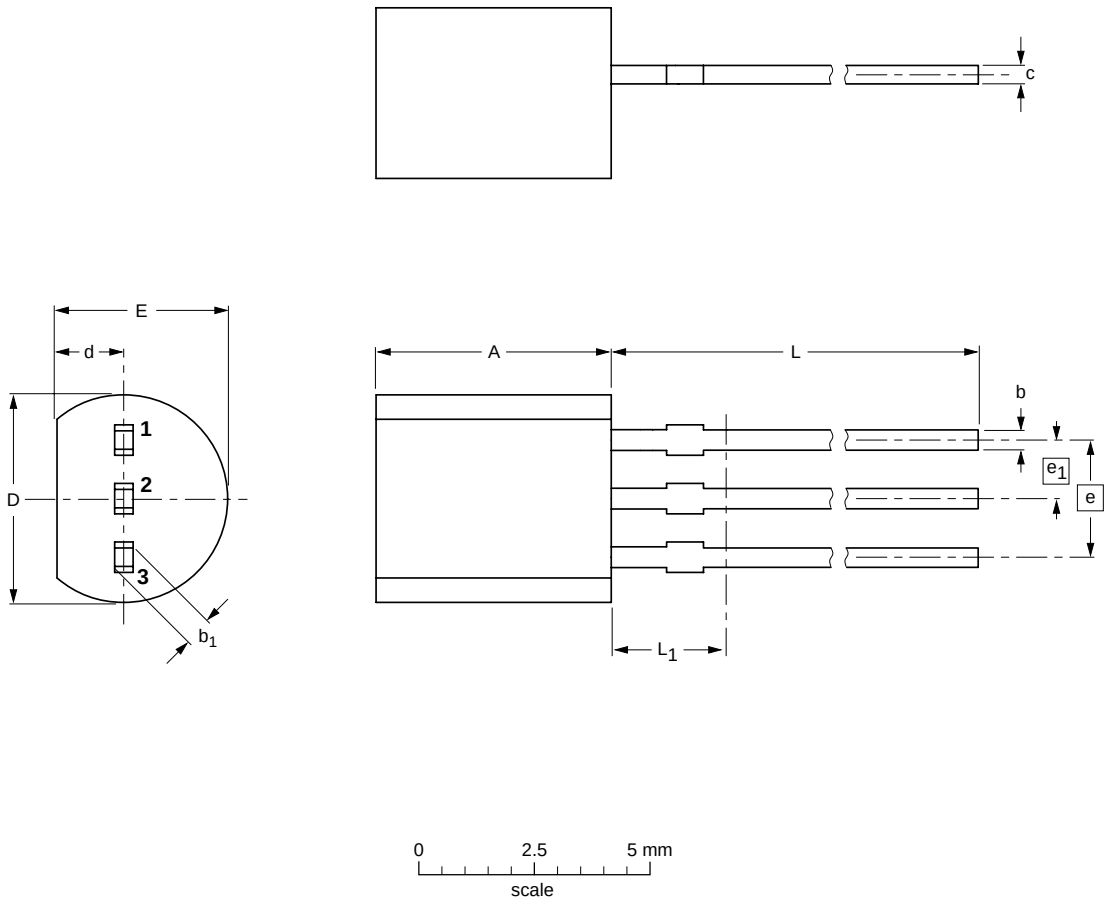


V_i = −9.5 V; T = 500 μs; t_p = 10 μs; $t_r = t_f \leq 3$ ns.
R1 = 68 Ω; R2 = 325 Ω; R_B = 325 Ω; R_C = 160 Ω.
V_{BB} = 3.5 V; V_{CC} = −29.5 V.
Oscilloscope: input impedance Z_i = 50 Ω.

Fig.2 Test circuit for switching times.

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) max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	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	JEITA			
SOT54		TO-92	SC-43A			~~04-06-28~~ 04-11-16

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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NXP Semiconductors

Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

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