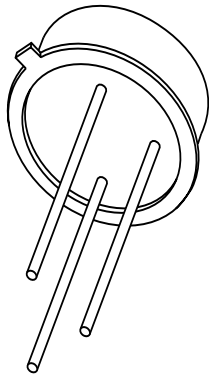


# DATA SHEET



**2N2484**

**NPN general purpose transistor**

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

1997 May 01

# NPN general purpose transistor

# 2N2484

## FEATURES

- Low current (max. 50 mA)
- Low voltage (max. 60 V)

## APPLICATIONS

- General purpose switching and amplification
- High performance (low-level), low-noise amplifier applications both for direct current and frequencies up to 100 MHz.

## DESCRIPTION

NPN transistor in a TO-18; SOT18 metal package.

## PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector, connected to the case

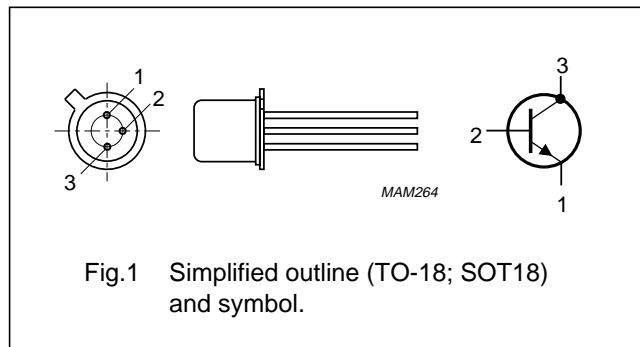


Fig.1 Simplified outline (TO-18; SOT18) and symbol.

## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	–	60	V
$V_{CEO}$	collector-emitter voltage	open base	–	–	60	V
$I_{CM}$	peak collector current		–	–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	–	–	360	mW
$h_{FE}$	DC current gain	$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	100	–	500	
		$I_C = 1\text{ mA}; V_{CE} = 5\text{ V}$	250	–	–	
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	–	–	800	
$f_T$	transition frequency	$I_C = 0.5\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	60	80	–	MHz

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**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	60	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	60	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	6	V
I <sub>C</sub>	collector current (DC)		–	50	mA
I <sub>CM</sub>	peak collector current		–	100	mA
I <sub>BM</sub>	peak base current		–	50	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	360	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	200	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	480	K/W
R <sub>th j-c</sub>	thermal resistance from junction to case	150	K/W

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## CHARACTERISTICS

 $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 45\text{ V}$	–	–	10	nA
		$I_E = 0; V_{CB} = 45\text{ V}; T_j = 150\text{ }^\circ\text{C}$	–	–	10	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	10	nA
$h_{FE}$	DC current gain	$I_C = 1\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	30	–	–	
		$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	100	–	500	
		$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; T_j = 55\text{ }^\circ\text{C}$	20	–	–	
		$I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	175	–	–	
		$I_C = 500\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	200	–	–	
		$I_C = 1\text{ mA}; V_{CE} = 5\text{ V}$	250	–	–	
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; \text{note 1}$	–	–	800	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 1\text{ mA}; I_B = 0.1\text{ mA}$	–	–	350	mV
$V_{BE}$	base-emitter voltage	$I_C = 0.1\text{ mA}; V_{CE} = 5\text{ V}$	500	–	700	mV
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 5\text{ V}; f = 1\text{ MHz}$	–	–	6	pF
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{EB} = 0.5\text{ V}; f = 1\text{ MHz}$	–	9	–	pF
$f_T$	transition frequency	$I_C = 50\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	15	–	–	MHz
		$I_C = 500\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	60	80	–	MHz
F	noise figure	$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 10\text{ k}\Omega$ $f = 100\text{ Hz}; B = 20\text{ Hz}$	–	–	10	dB
		$f = 1\text{ kHz}; B = 200\text{ Hz}$	–	–	3	dB
		$f = 10\text{ kHz}; B = 2\text{ kHz}$	–	–	2	dB
		Wide band; $B = 15.7\text{ kHz}$	–	–	3	dB

## Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.01$ .

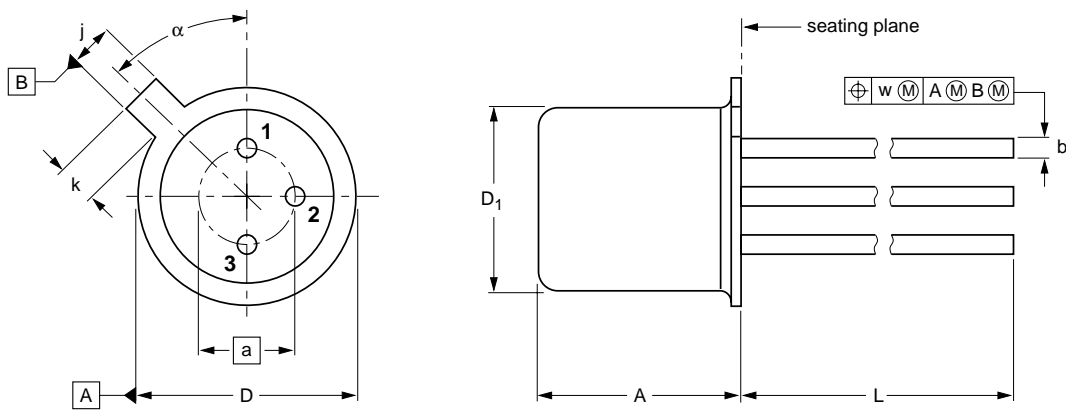
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PACKAGE OUTLINE

Metal-can cylindrical single-ended package; 3 leads

SOT18/13



DIMENSIONS (millimetre dimensions are derived from the original inch dimensions)

UNIT	A	a	b	D	D <sub>1</sub>	j	k	L	w	α
mm	5.31 4.74	2.54	0.47 0.41	5.45 5.30	4.70 4.55	1.03 0.94	1.1 0.9	15.0 12.7	0.40	45°

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT18/13	B11/C7 type 3	TO-18				97-04-18

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**DEFINITIONS**

<b>Data Sheet Status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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Printed in The Netherlands

117047/00/02/pp8

Date of release: 1997 May 01

Document order number: 9397 750 02025

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