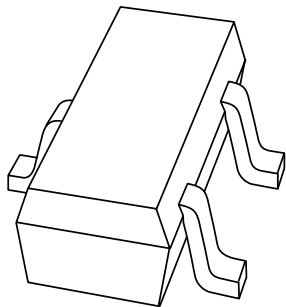


DATA SHEET



BC846T; BC847T; BC848T series NPN general purpose transistors

Preliminary specification
File under Discrete Semiconductors, SC04

1997 Jul 07

NPN general purpose transistors

BC846T; BC847T; BC848T series

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

APPLICATIONS

- General purpose switching and amplification, especially in portable communication equipment
- Electronic data processing (EDP) and consumer applications.

DESCRIPTION

NPN transistor in an SC-75 plastic package.
PNP complements: BC856T, BC857T and BC858T series.

MARKING

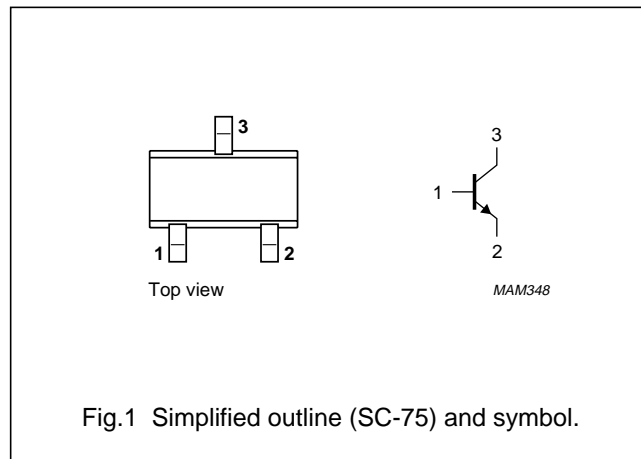
TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BC846AT	1A	BC847CT	1G
BC846BT	1B	BC848AT	1J
BC847AT	1E	BC848BT	1K
BC847BT	1F	BC848CT	1L

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BC846AT; BC846BT		–	80	V
	BC847AT; BC847BT; BC847CT		–	50	V
	BC848AT; BC848BT; BC848CT		–	30	V
V_{CEO}	collector-emitter voltage	open base			
	BC846AT; BC846BT		–	65	V
	BC847AT; BC847BT; BC847CT		–	45	V
	BC848AT; BC848BT; BC848CT		–	30	V
I_{CM}	peak collector current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	150	mW
h_{FE}	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110	800	
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	MHz

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



NPN general purpose transistors

BC846T; BC847T; BC848T series

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			
	BC846AT; BC846BT		–	80	V
	BC847AT; BC847BT; BC847CT		–	50	V
	BC848AT; BC848BT; BC848CT		–	30	V
V _{CEO}	collector-emitter voltage	open base			
	BC846AT; BC846BT		–	65	V
	BC847AT; BC847BT; BC847CT		–	45	V
	BC848AT; BC848BT; BC848CT		–	30	V
V _{EBO}	emitter-base voltage	open collector	–	5	V
I _C	collector current (DC)		–	100	mA
I _{CM}	peak collector current		–	200	mA
I _{BM}	peak base current		–	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	–	150	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-a}	thermal resistance from junction to ambient	note 1	833	K/W

Note

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

NPN general purpose transistors

BC846T; BC847T; BC848T series

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 30\text{ V}$	–	–	15	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$	–	–	5	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
h_{FE}	DC current gain BC846AT; BC847AT; BC848AT BC846BT; BC847BT; BC848BT BC847CT; BC848CT	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	–	–	–	–
			110	–	220	–
			200	–	450	–
			420	–	800	–
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	200	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$	–	–	400	mV
V_{BE}	base-emitter voltage	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	580	–	700	mV
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	–	–	770	mV
C_c	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	–	1.5	pF
C_e	emitter capacitance	$I_C = i_c = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$	–	11	–	pF
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	–	10	dB

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

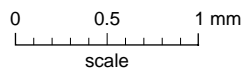
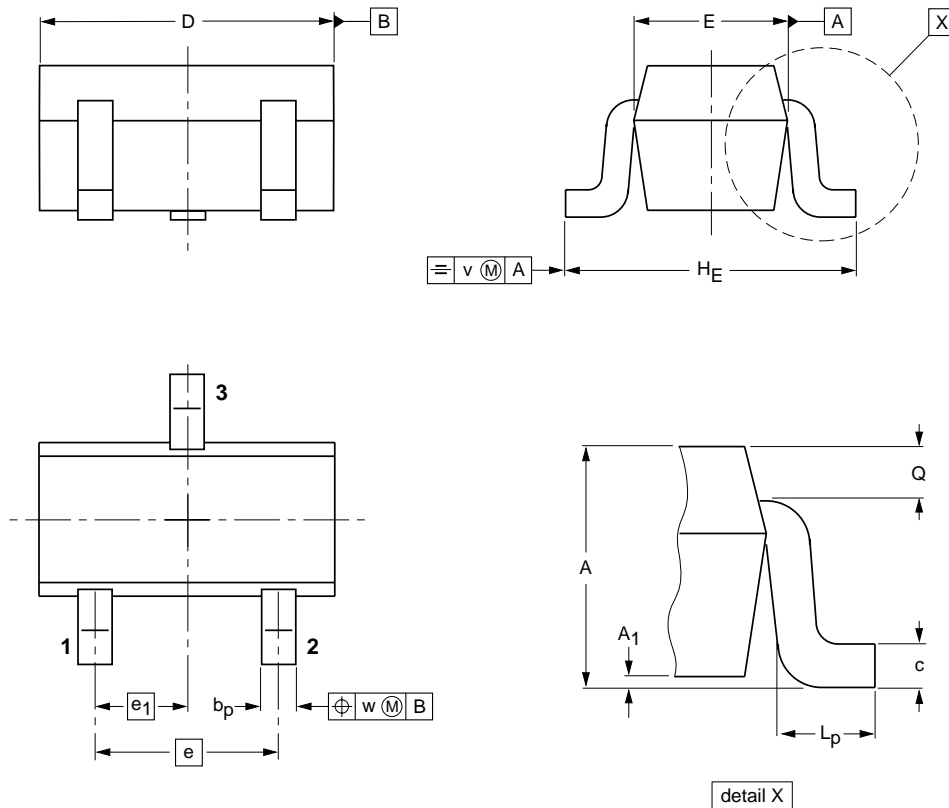
NPN general purpose transistors

BC846T; BC847T; BC848T series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT416



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT416			SC-75			97-02-28

NPN general purpose transistors

BC846T; BC847T; BC848T series

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

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

NPN general purpose transistors

BC846T; BC847T; BC848T series

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