

NPN general purpose transistors

BCW31; BCW32; BCW33

FEATURES

- Low current (100 mA)
- Low voltage (32 V).

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

NPN transistors in a plastic SOT23 package.
PNP complements: BCW29 and BCW30.

MARKING

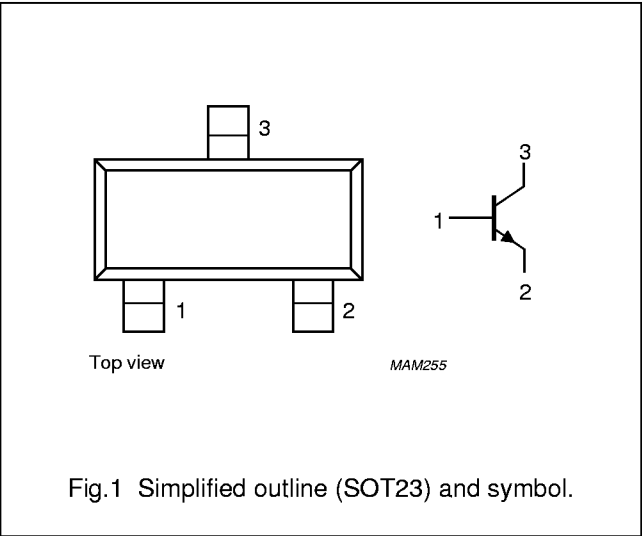
TYPE NUMBER	MARKING CODE ⁽¹⁾
BCW31	D1*
BCW32	D2*
BCW33	D3*

Note

1. * = p : Made in Hong Kong.
 * = t : Made in Malaysia.

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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	—	32	V
V _{CEO}	collector-emitter voltage	open base; I _C = 2 mA	—	32	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		—	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	—	250	mW
T _{stg}	storage temperature		−65	+150	°C
T _j	junction temperature		—	150	°C
T _{amb}	operating ambient temperature		−65	+150	°C

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Transistor mounted on an FR4 printed-circuit.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 32\text{ V}$	—	—	100	nA
		$I_E = 0; V_{CB} = 32\text{ V}; T_j = 100\text{ °C}$	—	—	10	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	—	—	100	nA
h_{FE}	DC current gain	$I_C = 10\text{ μA}; V_{CE} = 5\text{ V}$	—	—	—	—
	BCW31		—	90	—	—
	BCW32		—	150	—	—
	BCW33		—	270	—	—
	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	—	—	—	—
	BCW31		110	—	220	—
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	—	120	250	mV
		$I_C = 50\text{ mA}; I_B = 2.5\text{ mA}$	—	210	—	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	—	750	—	mV
		$I_C = 50\text{ mA}; I_B = 2.5\text{ mA}$	—	850	—	mV
V_{BE}	base-emitter voltage	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	550	—	700	mV
C_c	collector capacitance	$I_E = I_C = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	—	2.5	—	pF
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	—	—	MHz
F	noise figure	$I_C = 200\text{ μA}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$	—	—	10	dB

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23

