NPN power transistor BDP31

FEATURES

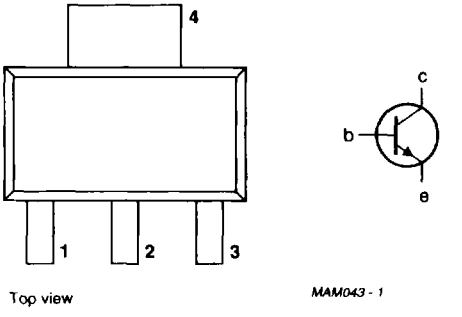
- SOT223 package.

DESCRIPTION

NPN power transistor in a plastic SOT223 package for general purpose, medium power applications. PNP complement is BDP32.

PINNING - SOT223

PIN	DESCRIPTION
1	base
2	collector
3	emitter
4	collector



Marking code: BPD31

Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	70	V
V_{CEO}	collector-emitter voltage	open base	–	45	V
I_C	DC collector current		–	3	A
I_{CM}	peak collector current		–	6	A
P_{tot}	total power dissipation	up to T_{mb} = 25 °C	–	1.5	W
f_T	transition frequency	I_C = 250 mA; V_{CE} = 5 V; f = 35 MHz	60	–	MHz
h_{FE}	DC current gain	I_C = 500 mA; V_{CE} = 12 V	40	–	

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	–	70	V
V_{CEO}	collector-emitter voltage	open base	–	45	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_C	DC collector current		–	3	A
I_{CM}	peak collector current		–	6	A
I_{BM}	peak base current		–	0.5	A
I_{RBM}	peak reverse base current		–	–0.5	A
P_{tot}	total power dissipation	up to T_{mb} = 25 °C; note 1	–	1.5	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Mounted on an epoxy printed-circuit board 40 × 40 × 1.5 mm; mounting pad for the collector lead minimum 6 cm^2.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	83.3	K/W

Note

1. Mounted on an epoxy printed-circuit board 40 × 40 × 1.5 mm; mounting pad for the collector lead minimum 6 cm^2.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CEsat}	collector-emitter saturation voltage	I_C = 500 mA; I_B = 50 mA; note 1	–	0.3	V
		I_C = 2 A; I_B = 200 mA; note 1	–	0.7	V
V_{BEsat}	base-emitter saturation voltage	I_C = 500 mA; I_B = 50 mA; note 1	–	1.2	V
		I_C = 2 A; I_B = 200 mA; note 1	–	1.5	V
I_{CBO}	collector cut-off current	V_{CB} = 50 V; I_E = 0	–	50	nA
		V_{CB} = 50 V; I_E = 0; T_j = 150 °C	–	500	µA
I_{EBO}	emitter cut-off current	V_{EB} = 5 V; I_C = 0	–	50	nA
C_c	collector capacitance	V_{CB} =5 V; I_E = I_e = 0; f = 1 MHz	–	60	pF
h_{FE}	DC current gain	I_C = 0.5 A; V_{CE} = 12 V; note 1	40	–	
		I_C = 2 A; V_{CE} = 1 V; note 1	20	–	
h_{FE1}/h_{FE2}	DC current gain ratio of the complementary pairs	I_C = 0.5 A; V_{CE} = 12 V; note 1	–	1.2	
f_T	transition frequency	V_{CE} = 5 V; I_C = 250 mA; f = 100 MHz	60	–	MHz

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.