PNP high-voltage transistors | BSR20; BSR20A

FEATURES

- Low current (max. 300 mA)
- High voltage (max. 150 V).

APPLICATIONS

- General purpose switching and amplification
- Telephony applications.

DESCRIPTION

PNP high-voltage transistor in a SOT23 plastic package.
NPN complements: BSR19 and BSR19A.

MARKING

TYPE NUMBER	MARKING CODE
BSR20	T35
BSR20A	T36

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

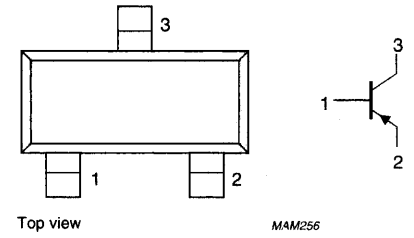

Fig.1 Simplified outline (SOT23) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BSR20		–	−130	V
	BSR20A		–	−160	V
V_{CEO}	collector-emitter voltage	open base			
	BSR20		–	−120	V
	BSR20A		–	−150	V
I_{CM}	peak collector current		–	−600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	250	mW
h_{FE}	DC current gain	$I_C = -10$ mA; $V_{CE} = -5$ V			
	BSR20		40	180	
	BSR20A		60	240	
f_T	transition frequency	$I_C = -10$ mA; $V_{CE} = -10$ V; f = 100 MHz	100	–	MHz

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			
	BSR20		–	–130	V
	BSR20A		–	–160	V
V_{CEO}	collector-emitter voltage	open base			
	BSR20		–	–120	V
	BSR20A		–	–150	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–300	mA
I_{CM}	peak collector current		–	–600	mA
I_B	base current		–	–100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	500	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 cut-off current				
	BSR20	I_E = 0; V_{CB} = −100 V	−	−100	nA
		I_E = 0; V_{CB} = −100 V; T_{amb} = 100 °C	−	−100	μA
I_{CBO}	collector cut-off current				
	BSR20A	I_E = 0; V_{CB} = −120 V	−	−50	nA
		I_E = 0; V_{CB} = −120 V; T_{amb} = 100 °C	−	−50	μA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = −4 V	−	−50	nA
h_{FE}	DC current gain	I_C = −1 mA; V_{CE} = −5 V			
	BSR20		30	−	
	BSR20A		50	−	
h_{FE}	DC current gain	I_C = −10 mA; V_{CE} = −5 V			
	BSR20		40	180	
	BSR20A		60	240	
h_{FE}	DC current gain	I_C = −50 mA; V_{CE} = −5 V			
	BSR20		40	−	
	BSR20A		50	−	
V_{CEsat}	collector-emitter saturation voltage	I_C = −10 mA; I_B = −1 mA	−	−200	mV
		I_C = −50 mA; I_B = −5 mA	−	−500	mV
C_c	collector capacitance	I_E = 0; V_{CB} = −10 V; f = 1 MHz	−	6	pF
f_T	transition frequency	I_C = −10 mA; V_{CE} = −10 V; f = 100 MHz			
	BSR20		100	400	MHz
	BSR20A		100	300	MHz

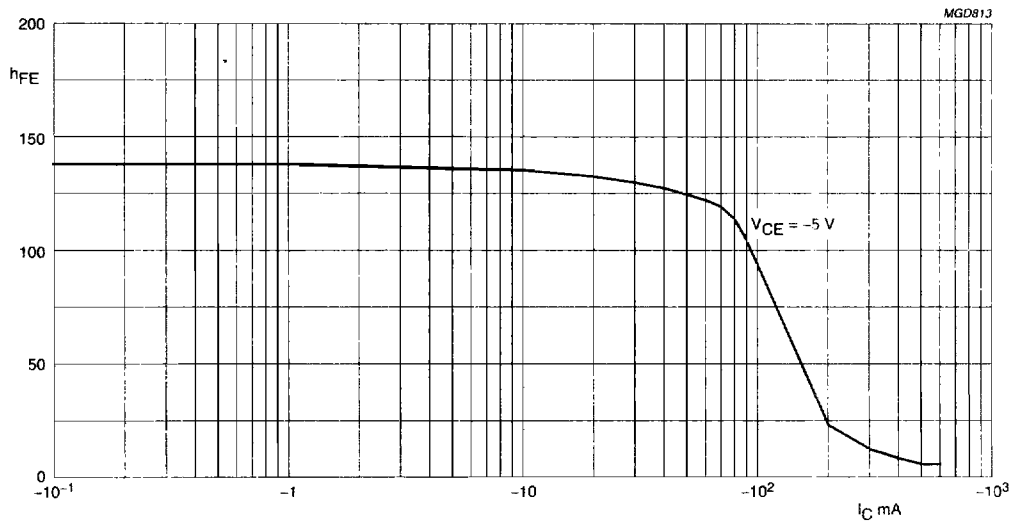

Fig.2 DC current gain; typical values.