

Bipolar Transistor

-20 V, -5 A, Low V_{CE}(sat), PNP Single PCP

1 2 3

SOT-89 / PCP-1 CASE 419AU

2SB1302

Features

- Adoption of FBET, MBIT Processes
- Large Current Capacity
- Ultrasmall Size Making it Easy to Provide High–Density Small–Sized Hybrid IC's
- Low Collector to Emitter Saturation Voltage
- Fast Switching Speed
- These Devices are Pb-Free and are RoHS Compliant

Applications

• DC-DC Converters, Motor Drivers, Relay Drivers, Lamp Drivers

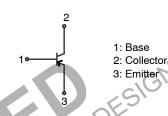
SPECIFICATIONS ABSOLUTE MAXIMUM RATINGS at Ta = 25° C

Parameter	Symbol	Value	Unit
Collector to Base Voltage	V _{CBO}	-25	V
Collector to Emitter Voltage	V _{CEO}	-20	V
Emitter to Base Voltage	V _{EBO}	-5	V
Collector Current	J _C	-5	А
Collector Current (Pulse)	I _C R	(-8 /	A
Collector Dissipation (Note 1)	S Pc C	1:3	W
Junction Temperature	ŢĴ	150	°C
Storage Temperature	T _{STG}	-55 to +150	∘C

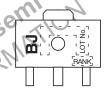
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Surface mounted on ceramic substrate (250 mm² x 0.8 mm).

ELECTRICAL CONNECTION



MARKING DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping [†]
2SB1302S-TD-E	PCP (Pb-Free)	1000 / Tape & Reel
2SB1302T-TD-E	PCP (Pb-Free)	1000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS at T_A = 25°C

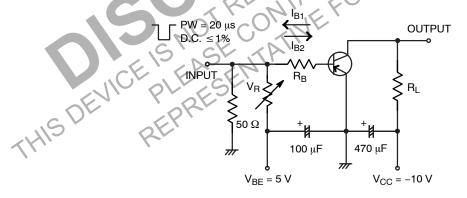
			Ratings			
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector Cutoff Current	I _{CBO}	$V_{CB} = -20 \text{ V}, I_E = 0 \text{ A}$			-500	nA
Emitter Cutoff Current	I _{EBO}	$V_{EB} = -4V$, $I_C = 0$ A			-500	nA
DC Current Gain	h _{FE} 1	$V_{CE} = -2 \text{ V}, I_{C} = -500 \text{ mA}$	140*		400*	
	h _{FE} 2	$V_{CE} = -2 \text{ V}, I_{C} = -4 \text{ A}$	60			
Gain-Bandwidth Product	f _T	$V_{CE} = -5 \text{ V}, I_{C} = -200 \text{ mA}$		320		MHz
Output Capacitance	Cob	V _{CB} = -10 V, f = 1 MHz		60		pF
Collector to Emitter Saturation Voltage	V _{CE} (sat)	$I_C = -3 \text{ A}, I_B = -60 \text{ mA}$		-250	-500	mV
Base to Emitter Saturation Voltage	V _{BE} (sat)	$I_C = -3 \text{ A}, I_B = -60 \text{ mA}$		-1.0	-1.3	V
Collector to Base Breakdown Voltage	V _{(BR)CBO}	$I_C = -10 \mu A, I_E = 0 A$	-25			V
Collector to Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = −1 mA, R _{BE} = ∞	-20		~	V
Emitter to Base Breakdown Voltage	V _{(BR)EBO}	$I_E = -10 \mu A, I_C = 0 A$	-5		~IGI	V
Turn-On Time	t _{on}	See specified Test Circuit		40	65.	ns
Storage Time	t _{stg}			200	,	ns
Fall Time	t _f			10		ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

*2SB1302 is classified by 500 mA h_{FE} as follows :

Rank	s	T
h _{FE}	140 to 280	200 to 400

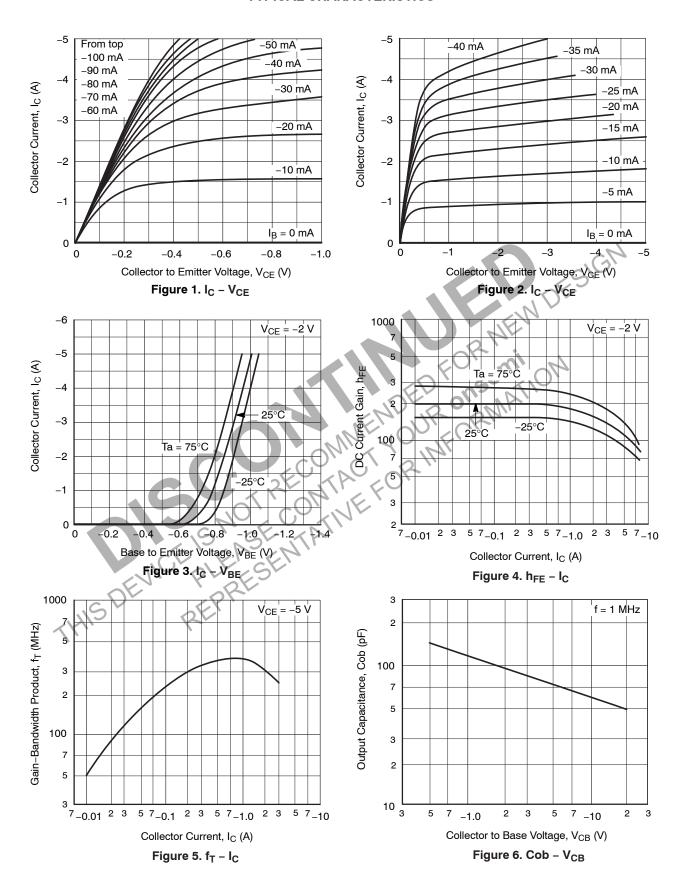
Switching Time Test Circuit



$$I_C = 10 I_{B1} = -10 I_{B2} = -2 A$$

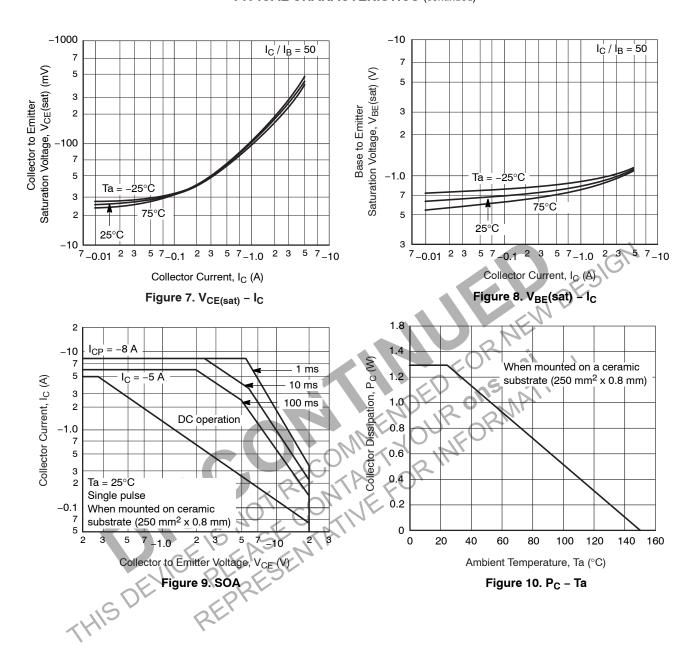
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TYPICAL CHARACTERISTICS



2SB1302

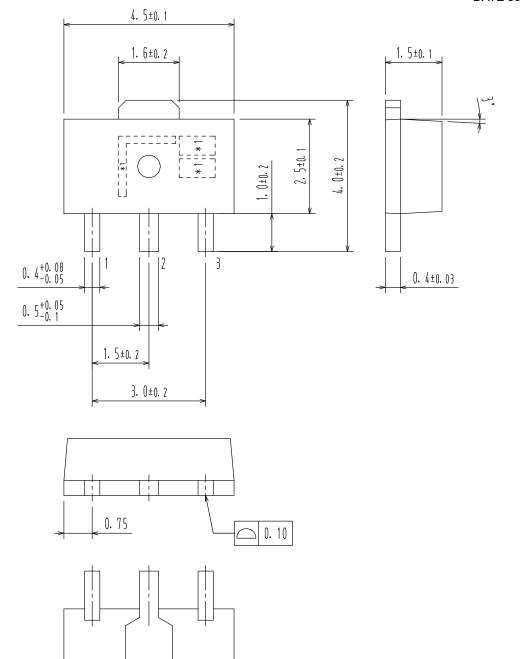
TYPICAL CHARACTERISTICS (continued)





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