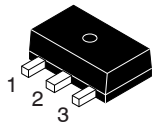
Bipolar Transistor

10 V, 3 A, Low V_{CE}(sat), NPN Single PCP

2SD1620



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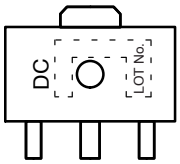
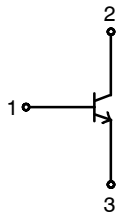
Features

- Less Power Dissipation Because of Low V_{CE}(sat), Permitting More Flashes of Light to be Emitted
- Large Current Capacity and Highly Resistant to Breakdown
- Excellent Linearity of h_{FE} in the Region from Low Current to High Current
- Ultrasmall Size Supports High−density, Ultrasmall−sized Hybrid IC Designs
- This is a Pb−Free Device

MARKING DIAGRAM



ELECTRICAL CONNECTION



Specifications

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector−to−Base Voltage	V_{CBO}		30	V
Collector−to−Emitter Voltage	V_{CEX}		20	V
Collector−to−Emitter Voltage	V_{CEO}		10	V
Emitter−to−Base Voltage	V_{EBO}		6	V
Collector Current	I_C		3	A
Collector Current (Pulse)	I_{CP}		5	A
Collector Dissipation	P_C		500	mW
		When mounted on ceramic substrate (250 mm^2 x 0.8 mm)	1.3	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−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.

ORDERING INFORMATION

Device	Package	Shipping†
2SD1620−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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 20 V, I_E = 0 A	–	–	100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 4 V, I_C = 0 A	–	–	100	nA
DC Current Gain	h_{FE}	V_{CE} = 2 V, I_C = 3 A	140	210	–	
Gain−Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 50 mA	–	200	–	MHz
Output Capacitance	Cob	V_{CB} = 10 V, f = 1 MHz	–	30	–	pF
Collector−to−Emitter Saturation Voltage	V_{CE}(sat)	I_C = 3 A, I_B = 60 mA	–	0.3	0.4	V
Collector−to−Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10 μA, I_E = 0 A	30	–	–	V
Collector−to−Emitter Breakdown Voltage	$V_{(BR)CEX}$	I_C = 1 mA, R_{BE} = 3 V	20	–	–	V
Collector−to−Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1 mA, R_{BE} = ∞	10	–	–	V
Emitter−to−Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10 μA, I_C = 0 A	6	–	–	V

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.

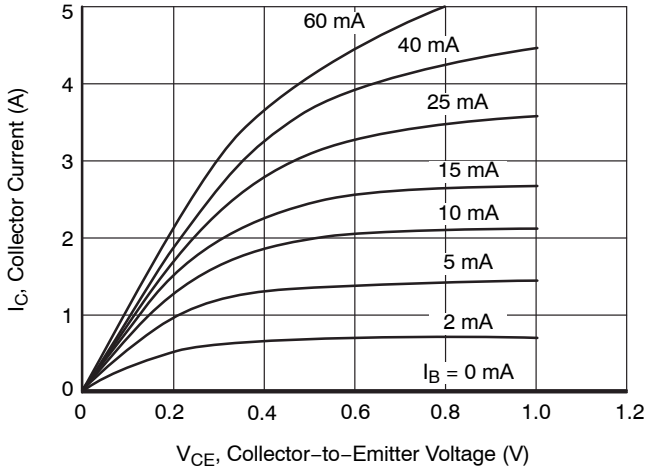


Figure 1. I_C – V_{CE}

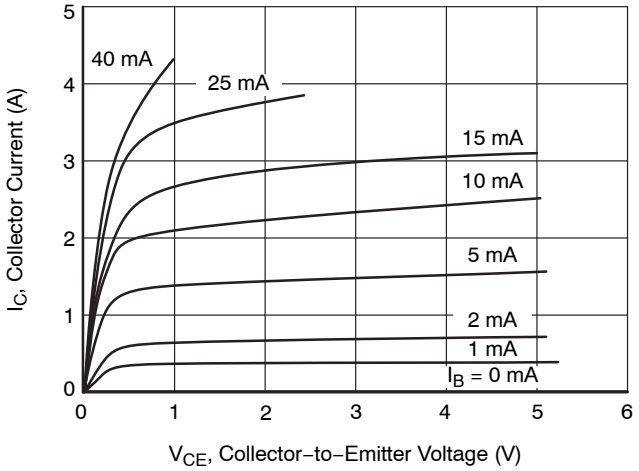


Figure 2. I_C – V_{CE}

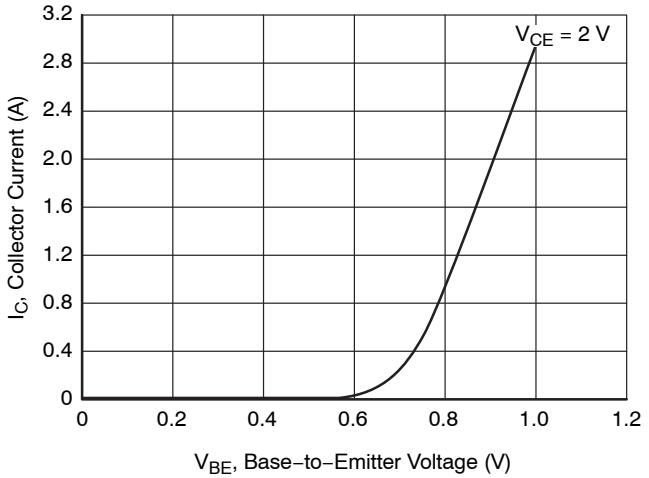


Figure 3. I_C – V_{BE}

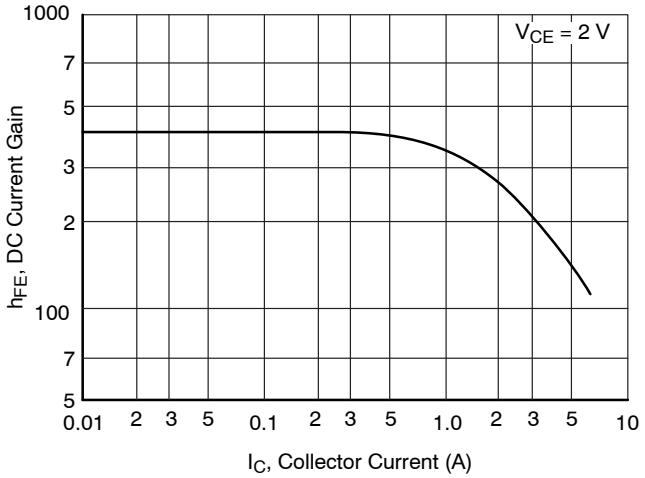


Figure 4. h_{FE} – I_C

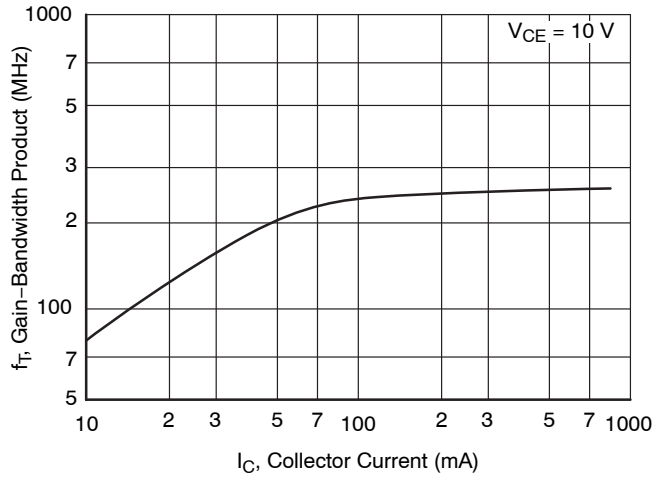


Figure 8. f_T – I_C

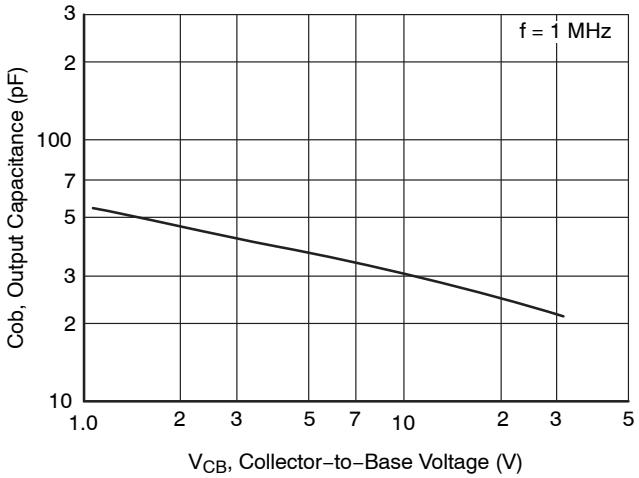


Figure 9. Cob – V_{CB}

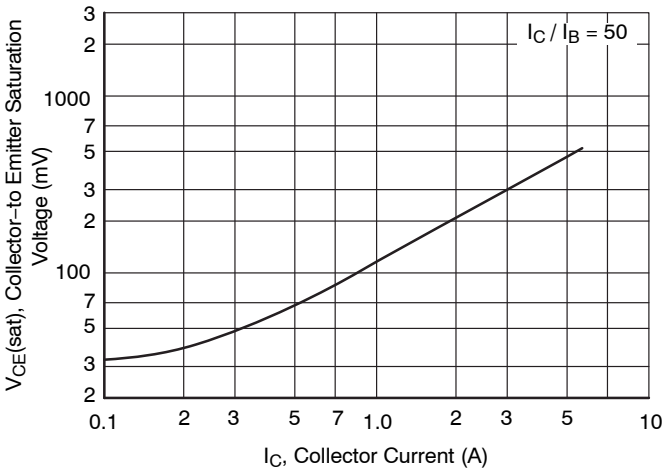


Figure 5. V_{CE}(sat) – I_C

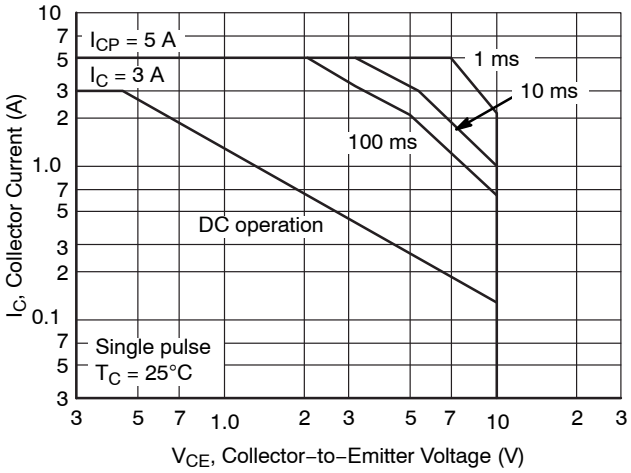


Figure 6. ASO

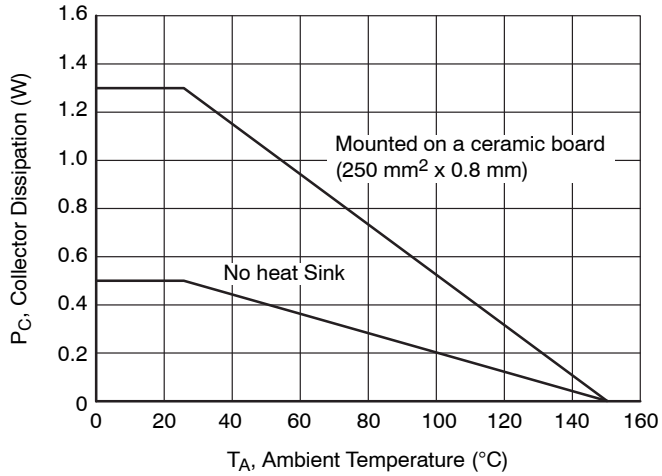


Figure 7. P_C – T_A

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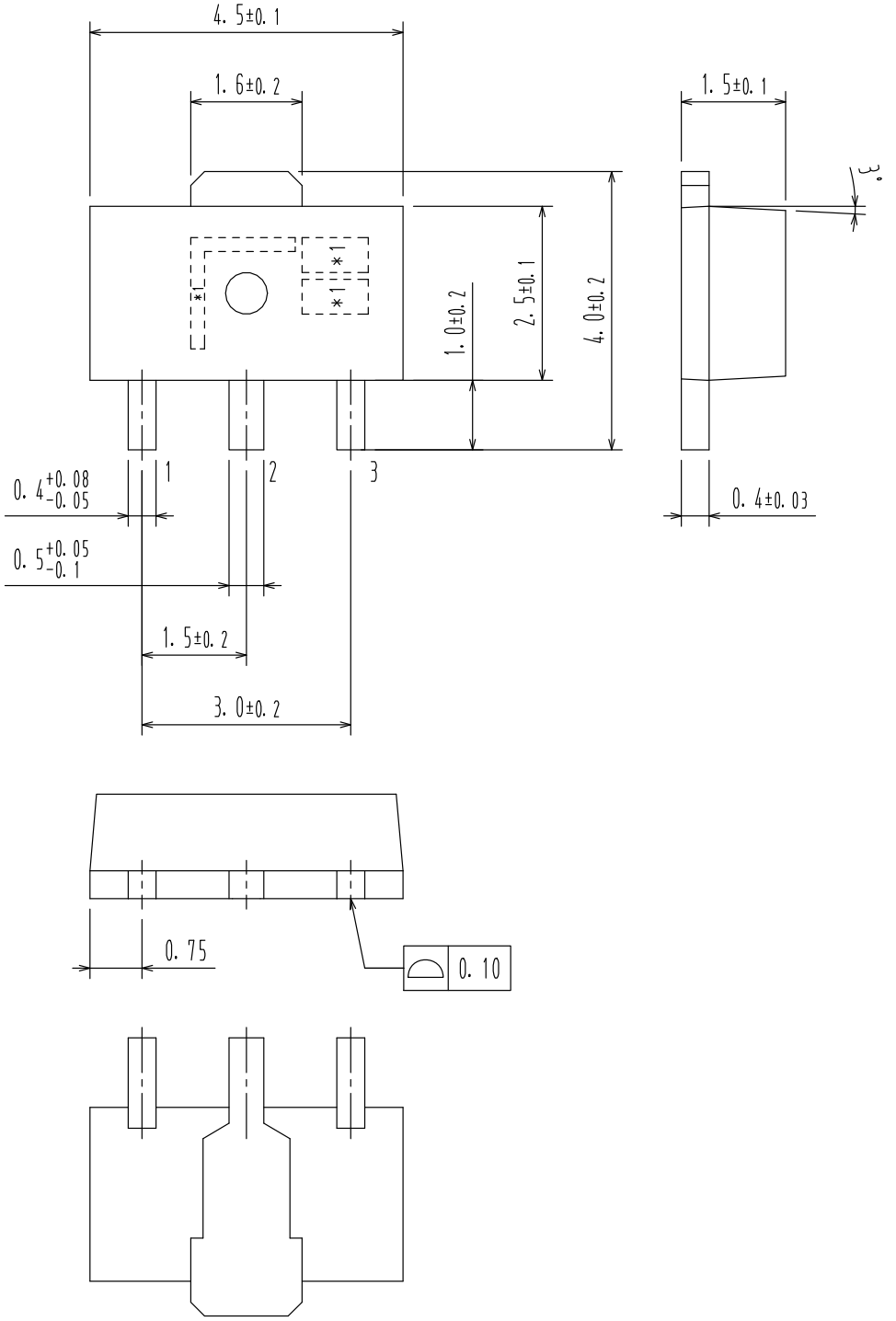

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