

Bipolar Transistor

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

2SD1620

Features

- \bullet 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

Specifications

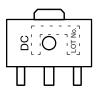
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		30	V
Collector-to-Emitter Voltage	V _{CEX}		20	٧
Collector-to-Emitter Voltage	V _{CEO}		10	>
Emitter-to-Base Voltage	V _{EBO}		6	V
Collector Current	I _C		3	Α
Collector Current (Pulse)	I _{CP}		5	Α
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

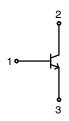
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



MARKING DIAGRAM



ELECTRICAL CONNECTION



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.

2SD1620

ELECTRICAL CHARACTERISTICS $(T_A = 25^{\circ}C)$

Parameter	Symbol	Conditions	Min	Тур	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.

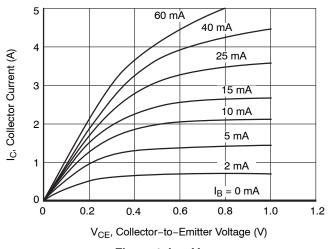


Figure 1. I_C - V_{CE}

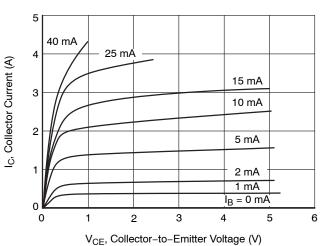


Figure 2. I_C – V_{CE}

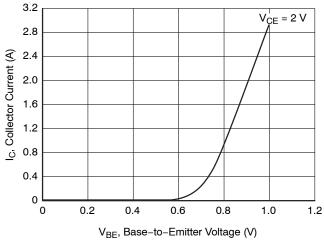


Figure 3. I_C - V_{BE}

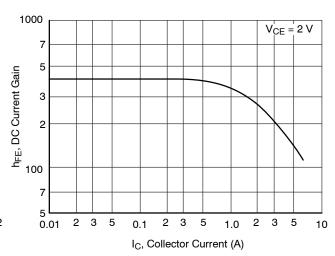
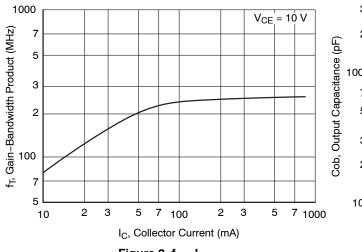


Figure 4. h_{FE} – I_{C}

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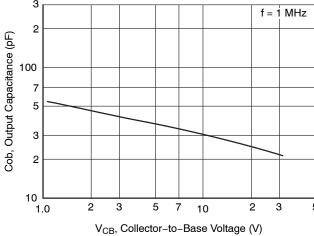
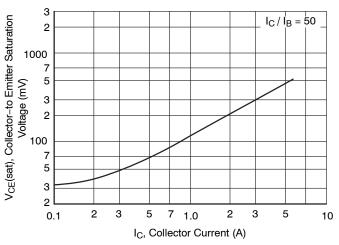


Figure 8. f_T - I_C

Figure 9. Cob - V_{CB}



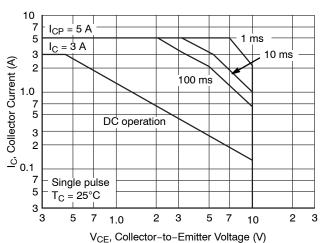


Figure 5. V_{CE}(sat) - I_C

Figure 6. ASO

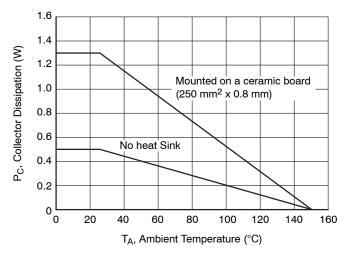


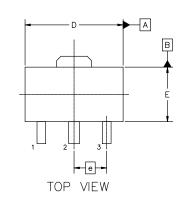
Figure 7. P_C - T_A

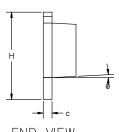


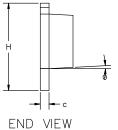
SOT-89 4.50x2.50x1.50 1.50P CASE 419AU **ISSUE A**

SEATING PLANE

DATE 21 MAY 2025





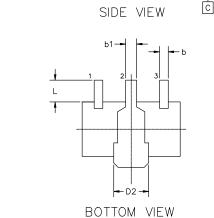


NOTES:

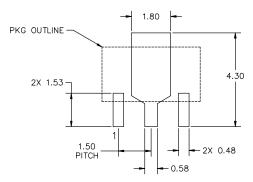
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018. CONTROLLING DIMENSION: MILLIMETERS. LEAD THICKNESS INCLUDES LEAD FINISH.

- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

MILLIMETERS				
DIM	MIN	NOM	MAX	
Α	1.40	1.50	1.60	
b	0.35	0.40	0.48	
b1	0.40	0.50	0.55	
С	0.37	0.40	0.43	
D	4.40	4.50	4.60	
D2	1.40	1.60	1.80	
E	2.40	2.50	2.60	
е	1.50 BSC			
Н	3.80	4.00	4.20	
L	0.80	1.00	1.20	
Θ	0.		3.	



△ 0.10 C



RECOMMENDED MOUNTING FOOTPRINT

*For additional information on our Pb—Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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DESCRIPTION:	SOT-89 4.50x2.50x1.50 1.50P		PAGE 1 OF 1

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