

Bipolar Transistor

20 V, 5 A, Low $V_{CE(sat)}$, NPN Single PCP

2SD1628

Features

- Low Saturation Voltage
- High h_{FE}
- Large Current Capacity
- Very Small Size Making it Easy to Provide High-Density Small-Sized Hybrid IC's
- These Devices are Pb-Free and are RoHS Compliant

Applications

- Strobe DC-DC Converters, Relay Drivers, Hammer Drivers, Lamp Drivers, Motor Drivers

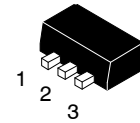
SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Value	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	20	V
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current	I_C	5	A
Collector Current (Pulse)	I_{CP}	8	A
Collector Dissipation	P_C	500	mW
		1.5 (Note 1)	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

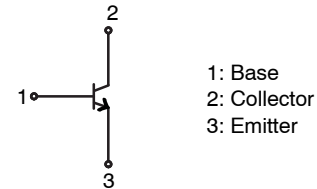
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

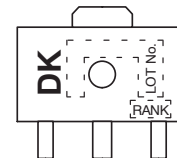


SOT-89 / PCP-1
CASE 419AU

ELECTRICAL CONNECTION



MARKING DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping [†]
2SD1628G-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.

2SD1628

ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$

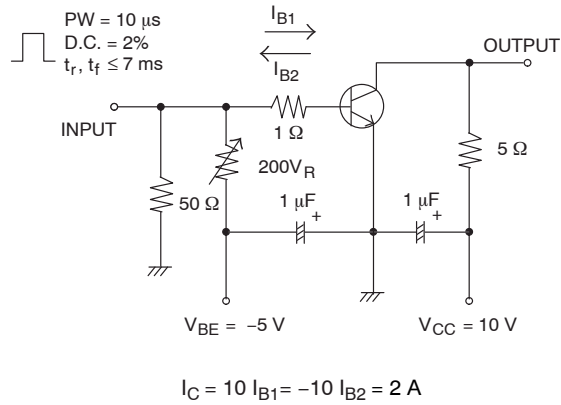
Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = 50\text{ V}, I_E = 0\text{ A}$			100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0\text{ A}$			100	nA
DC Current Gain	h_{FE1}	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	120*		560*	
	h_{FE2}	$V_{CE} = 2\text{ V}, I_C = 3\text{ A}$	95			
Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{ V}, I_C = 50\text{ mA}$		120		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$		45		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 60\text{ mA}$			500	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 3\text{ A}, I_B = 60\text{ mA}$			1.5	V
Turn-On Time	t_{on}	See specified Test Circuit		30		ns
Storage Time	t_{stg}			300		ns
Fall Time	t_f			40		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.

*The 2SD1628 is classified by 0.5 A h_{FE} as follows :

Rank	E	F	G
h_{FE}	120 to 200	160 to 320	280 to 560

Switching Time Test Circuit



TYPICAL CHARACTERISTICS

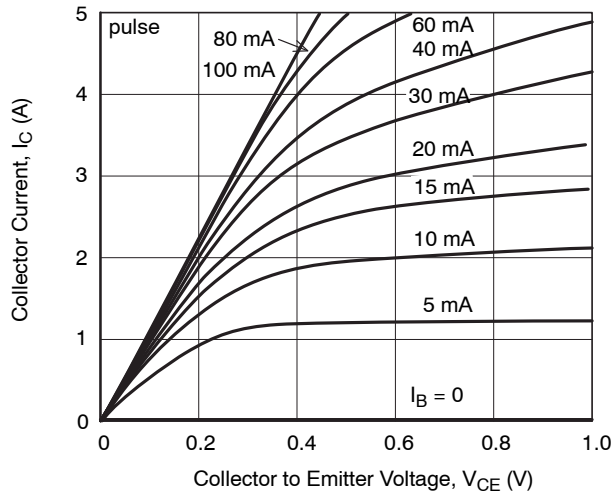


Figure 1. $I_C - V_{CE}$

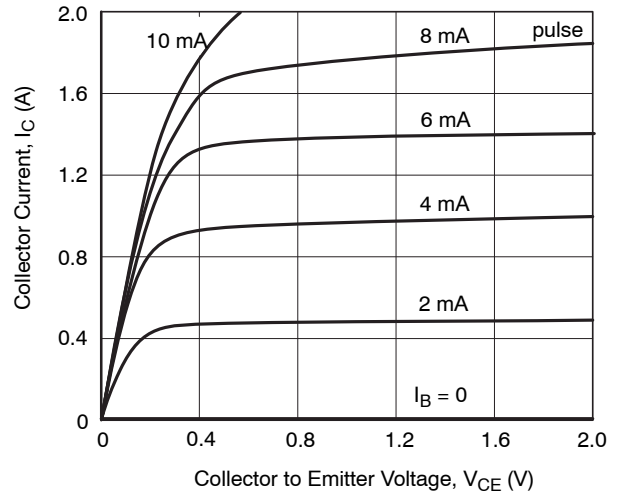


Figure 2. $I_C - V_{CE}$

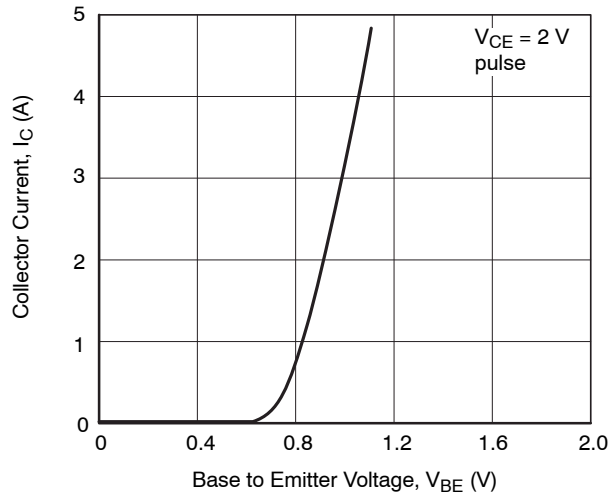


Figure 3. $I_C - V_{BE}$

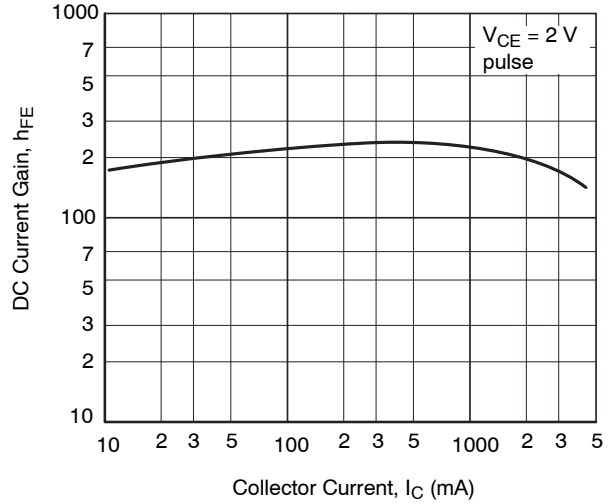


Figure 4. $h_{FE} - I_C$

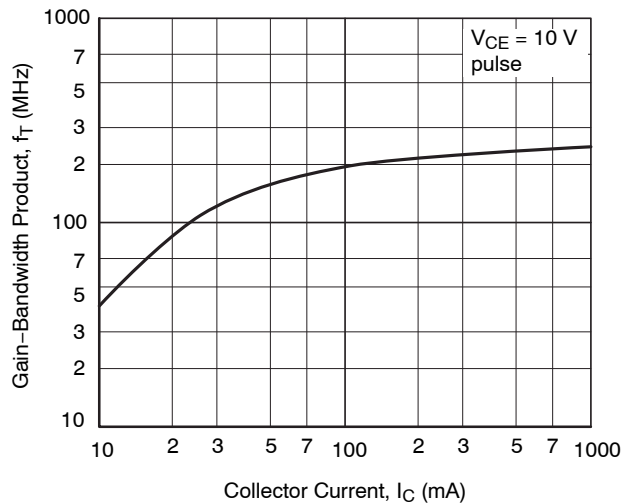


Figure 5. $f_T - I_C$

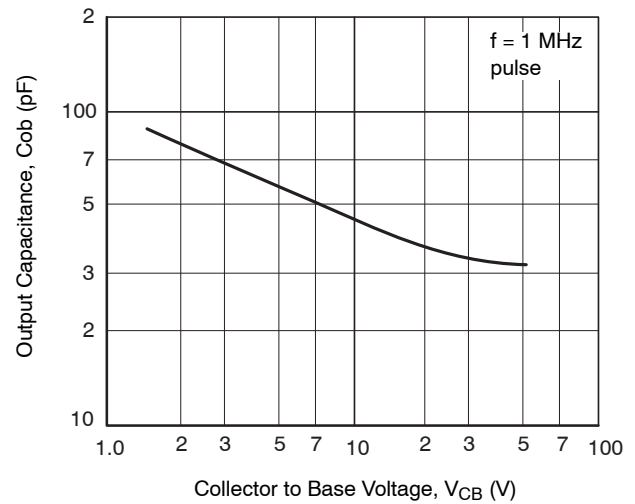


Figure 6. $C_{ob} - V_{CB}$

TYPICAL CHARACTERISTICS (continued)

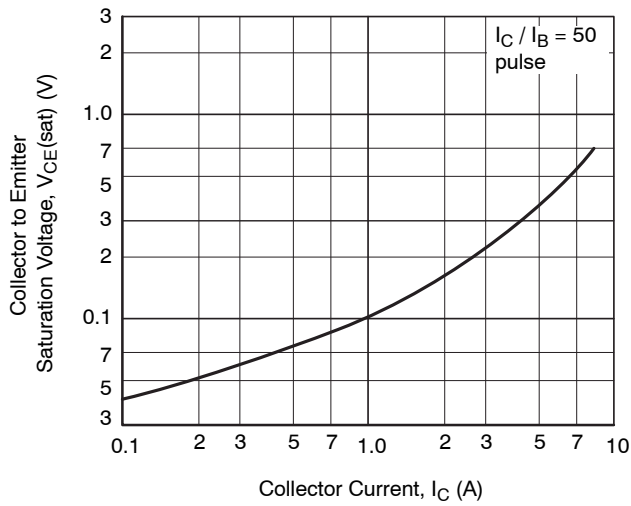


Figure 7. $V_{CE(sat)} - I_C$

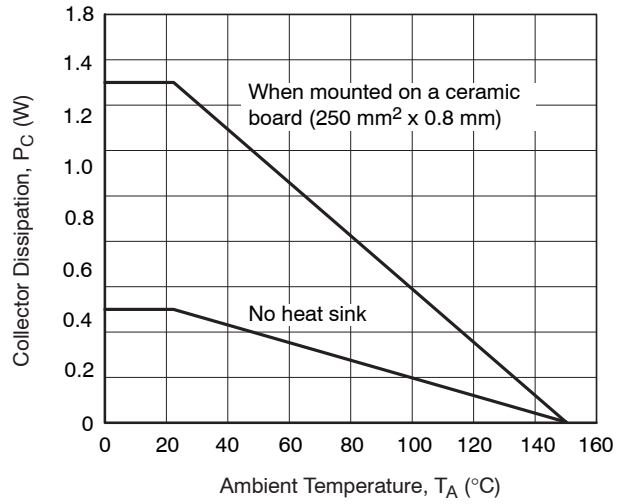


Figure 8. $P_C - T_A$

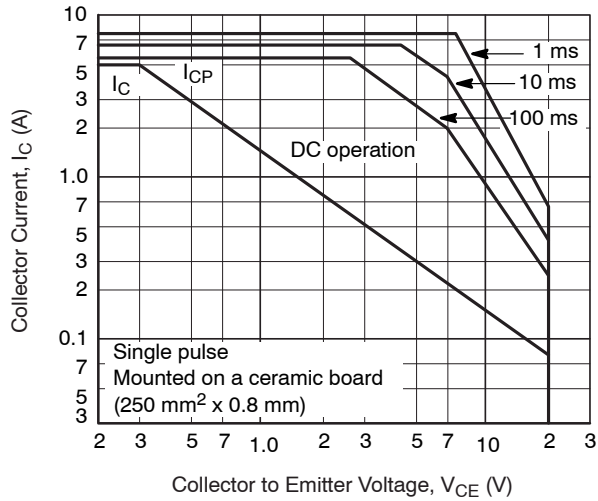
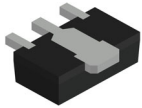
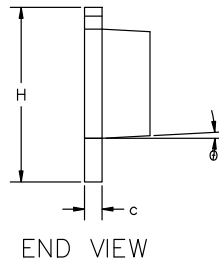
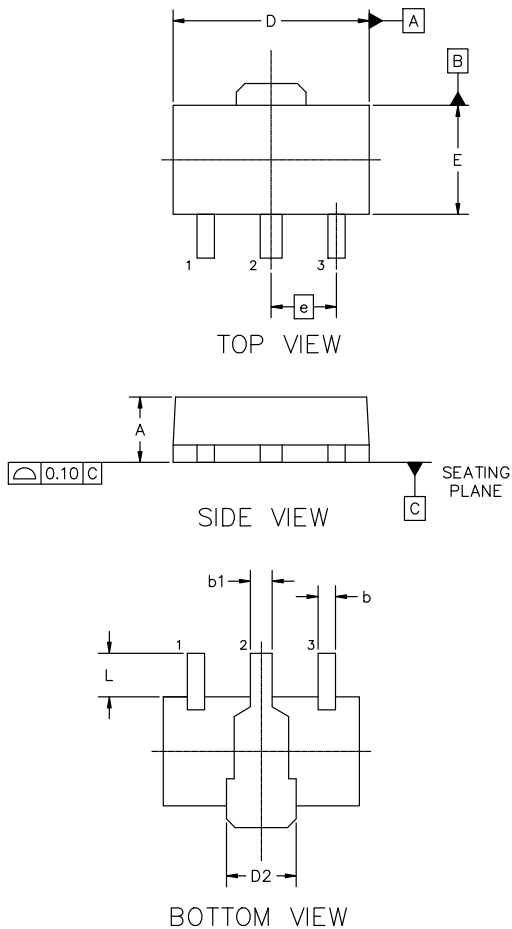


Figure 9. SOA



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

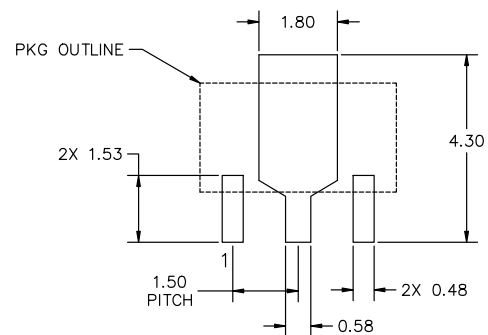
DATE 21 MAY 2025



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS INCLUDES LEAD FINISH.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

MILLIMETERS			
DIM	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.35	0.40	0.48
b1	0.40	0.50	0.55
c	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
e	1.50 BSC		
H	3.80	4.00	4.20
L	0.80	1.00	1.20
Ø	0°	---	3°



RECOMMENDED MOUNTING FOOTPRINT

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

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

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