

BCP5316Q

80V PNP MEDIUM POWER TRANSISTOR IN SOT223

Description

This Bipolar Junction Transistor (BJT) has been designed to meet the stringent requirements of automotive applications.

Features

- BV_{CEO} > -80V
- I_C = -1A High Continuous Collector Current
- I_{CM} = -2A Peak Pulse Current
- 2W Power Dissipation
- Low Saturation Voltage V_{CE(sat)} < -500mV @ -0.5A
- Complementary NPN type: BCP5616Q
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The BCP5316Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

https://www.diodes.com/quality/product-definitions/

Applications

- Medium Power Switching or Amplification Applications
- AF Driver and Output Stages

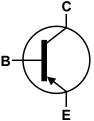
Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound.
 UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 ⁽³⁾
- Weight: 0.112 grams (approximate)

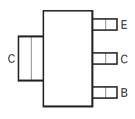




Top View



Device Symbol



Top View Pin-Out

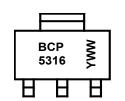
Ordering Information (Note 4)

Ī	Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
	BCP5316QTA	Automotive	BCP 5316	7	12	1,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/

Marking Information



BCP = Product Type Marking Code, Line 1 5316 = Product Type Marking Code, Line 2 YWW = Date Code Marking Y = Last Digit of the Year (ex: 1 = 2021) WW = Week Code 01-52



Absolute Maximum Ratings (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-80	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	Ic	-1	A
Peak Pulse Collector Current	I _{CM}	-2	A
Continuous Base Current	I _B	-100	mA
Peak Pulse Base Current	I _{BM}	-200	mA

Thermal Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Power Dissipation	(Note 5)	P _D	2	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction to Leads	(Note 6)	$R_{ heta JL}$	19.4	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C	

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

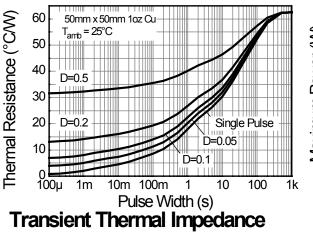
Notes:

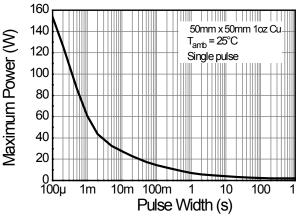
 ^{5.} For a device mounted with the collector lead on 50mm x 50mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
 6. Thermal resistance from junction to solder-point (at the end of the collector lead).

^{7.} Refer to JEDEC specification JESD22-A114 and JESD22-A115.

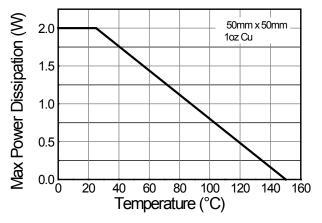


Thermal Characteristics and Derating Information





Pulse Power Dissipation



Derating Curve

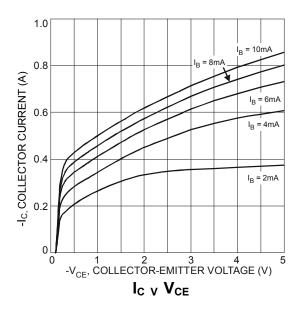


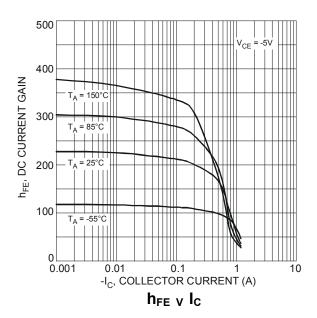
Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-100	_	1	V	$I_C = -100 \mu A$
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	-80	_	_	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	_	_	V	I _E = -100μA
Collector Cut-off Current	I _{CBO}	_	_	-0.1 -20	μΑ	V _{CB} = -30V V _{CB} = -30V, T _A = +150°C
Emitter Cut-off Current	I _{EBO}	_	_	-20	nA	V _{EB} = -4V
DC Current Gain (Note 8)	h _{FE}	25 100 25	_ _ _	_ 250 _	_	I_C = -5mA, V_{CE} = -2V I_C = -150mA, V_{CE} = -2V I_C = -500mA, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	_	_	-0.5	V	I _C = -500mA, I _B = -50mA
Base-Emitter Turn-On Voltage (Note 8)	V _{BE(on)}	_	_	-1.0	V	I _C = -500mA, V _{CE} = -2V
Transition Frequency	f⊤	150	_		MHz	$I_C = -50$ mA, $V_{CE} = -10$ V $f = 100$ MHz
Output Capacitance	Cobo	_	_	25	pF	V _{CB} = -10V, f = 1MHz

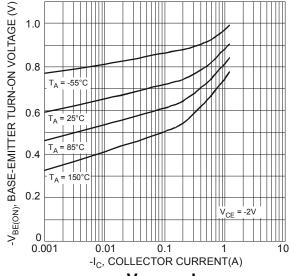
Note:

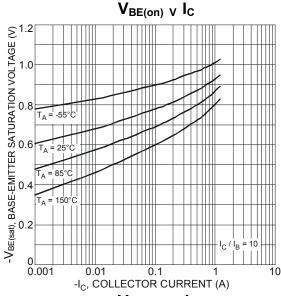
8. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.

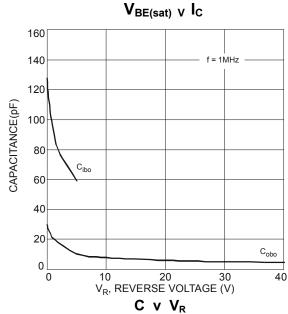


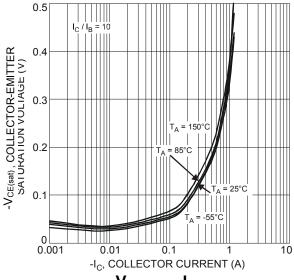


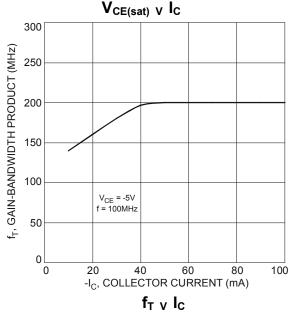










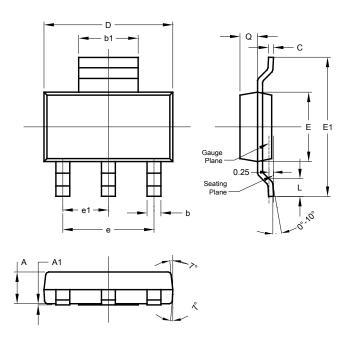




Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223

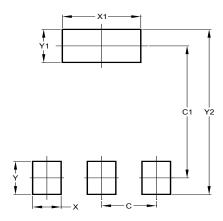


SOT223						
Dim	Min	Max	Тур			
Α	1.55	1.65	1.60			
A 1	0.010	0.15	0.05			
b	0.60	0.80	0.70			
b1	2.90	3.10	3.00			
С	0.20	0.30	0.25			
D	6.45	6.55	6.50			
Е	3.45	3.55	3.50			
E1	6.90	7.10	7.00			
е	-	-	4.60			
e1	-	-	2.30			
L	0.85	1.05	0.95			
Q	0.84	0.94	0.89			
All Dimensions in mm						

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223



Dimensions	Value (in mm)
С	2.30
C1	6.40
Х	1.20
X1	3.30
Υ	1.60
Y1	1.60
V2	0.00



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