



BCP5316Q

80V PNP MEDIUM POWER TRANSISTORS 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)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

Applications

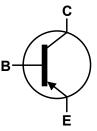
- Medium Power Switching or Amplification Applications
- AF Driver and Output Stages

Mechanical Data

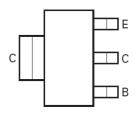
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound.
 UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.112 grams (approximate)







Device Symbol



Top View Pin-Out

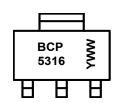
Ordering Information (Note 5)

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) compliant.
- 2. See http://www.diodes.com/quality/lead_free.html 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product compliance definitions/.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html

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: 2 = 2012 WW = Week Code 01-52



Absolute Maximum Ratings (@TA = +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	lc	-1	۸	
Peak Pulse Collector Current	I _{CM}	-2	Α	
Continuous Base Current	I _B	-100	m Λ	
Peak Pulse Base Current	I _{BM}	-200	mA	

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

Characteristic	Symbol	Value	Unit	
Power Dissipation	(Note 6)	P _D	2	W
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction to Leads (Note 7)		R _{θJL}	19.4	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-65 to +150	°C

ESD Ratings (Note 8)

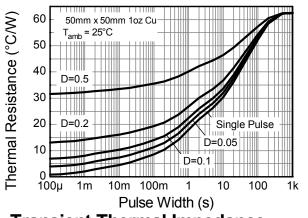
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

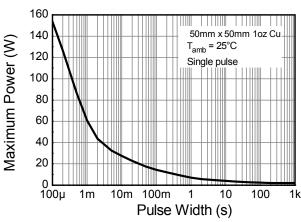
Notes:

^{6.} 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.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



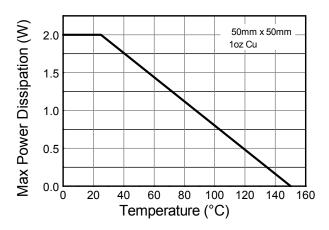
Thermal Characteristics and Derating Information





Transient Thermal Impedance

Pulse Power Dissipation



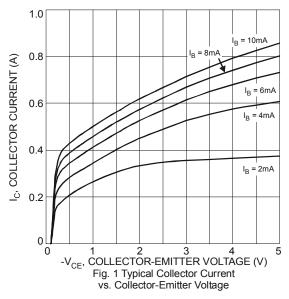
Derating Curve

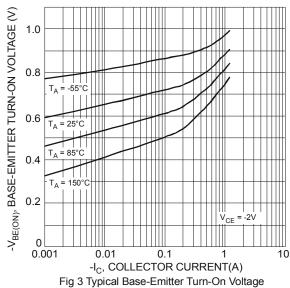


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	ı	-	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-80	_	_	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	ı	-	V	I _E = -10μA
Collector Cut-off Current	I _{CBO}			-0.1 -20	μA	V _{CB} = -30V V _{CB} = -30V, T _A = +150°C
Emitter Cut-off Current	I _{EBO}	_	_	-20	nA	V _{EB} = -4V
Static Forward Current Transfer Ratio (Note 9)	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 9)	V _{CE(sat)}	l	1	-0.5	V	I _C = -500mA, I _B = -50mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	l	1	-1.0	V	$I_C = -500$ mA, $V_{CE} = -2V$
Transition Frequency	f⊤	150			MHz	$I_C = -50 \text{mA}, V_{CE} = -10 \text{V}$ f = 100MHz
Output Capacitance	Cobo		_	25	pF	V _{CB} = -10V, f = 1MHz

Notes: 9. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.





vs. Collector Current

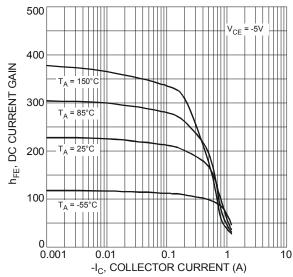


Fig. 2 Typical DC Current Gain vs. Collector Current

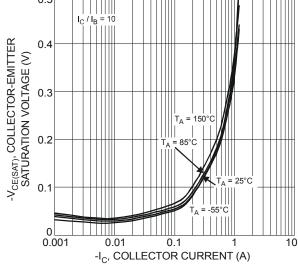
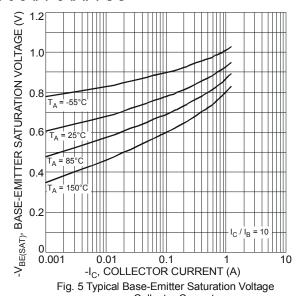
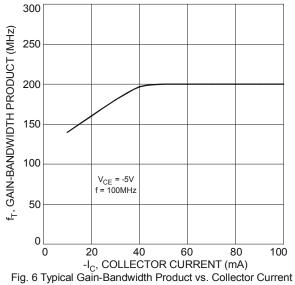
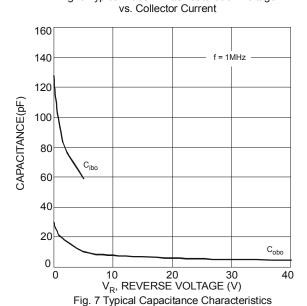


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current



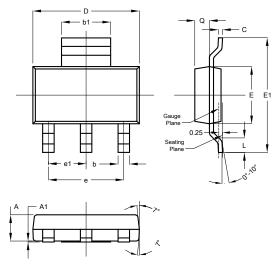






Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

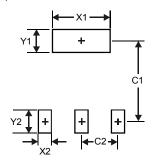


SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
С	0.20	0.30	0.25		
D	6.45	6.55	6.50		
E	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	ı	4.60		
e1	-	ı	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
All [All Dimensions in mm				



Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



-	
Dimensions	Value (in mm)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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