



NPN MEDIUM POWER TRANSISTOR

Features

- $BV_{CEO} > 80V$
- I_C = 1A High Continuous Collector Current
- I_{CM} = 2A Peak Pulse Current
- 520mW Power Dissipation
- Low Saturation Voltage V_{CE(sat)} < 500mV @ 0.5A
- Complementary PNP Type: BC53-16PA
- 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

Mechanical Data

- Case: U-DFN2020-3 (Type B)
- 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: 0.01 grams (Approximate)

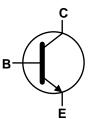
Applications

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

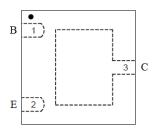
U-DFN2020-3 (Type B)







Device Symbol



Top View Pin-Out

Ordering Information (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BC56-16PA-7	AEC-Q101	BL	7	12	3,000

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"
- 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 http://www.diodes.com/products/packages.html.

Marking Information



BL = Product Type Marking Code YM = Date Code Marking Y = Year (ex: C = 2015)M = Month (ex: 9 = September)

Date Code Key

Year	2015		2016	2017		2018	2019		2020	2021		2022
Code	C		D	Е		F	G		Н			J
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

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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}	7	V	
Continuous Collector Current	Ic	1	Λ.	
Peak Pulse Collector Current	I _{CM}	2		
Continuous Base Current	I _B	100	m^	
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}	520	mW
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	240	°C /W
Thermal Resistance, Junction to Leads	(Note 6)	$R_{\theta JL}$	20	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-65 to +150	°C

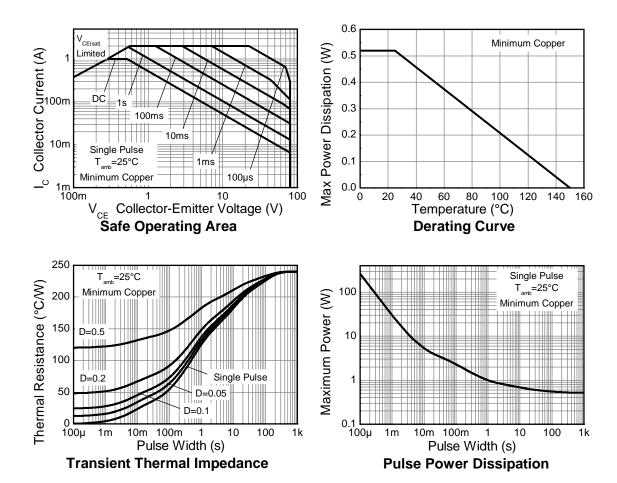
ESD Ratings (Note 7)

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

5. For a device mounted on minimum recommended pad layout FR4 PCB single sided 1oz copper; device is measured under still air conditions while operating at a 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



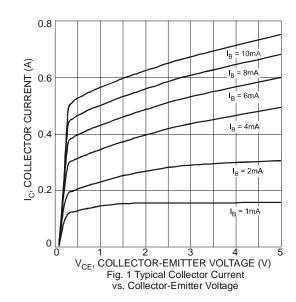


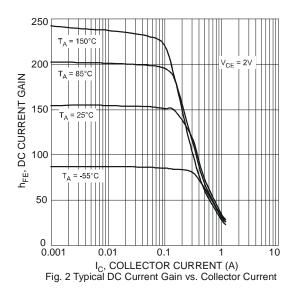
Electrical Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	100	-	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	80	-	-	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	-	-	V	I _E = 100μA
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}	1	-	20	nA	$V_{EB} = 4V$
Static Forward Current Transfer Ratio (Note 8)	h _{FE}	25 100 25	- - -	- 250 -	-	$\begin{split} I_{C} &= 5\text{mA}, \ V_{CE} = 2V \\ I_{C} &= 150\text{mA}, \ V_{CE} = 2V \\ I_{C} &= 500\text{mA}, \ V_{CE} = 2V \end{split}$
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	-	-	0.5	V	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
Base-Emitter Turn-On Voltage (Note 8)	V _{BE(on)}	1	-	1.0	V	$I_C = 500 \text{mA}, V_{CE} = 2 \text{V}$
Transition Frequency	fτ	-	125	-	MHz	$I_C = 50$ mA, $V_{CE} = 10$ V f = 100MHz
Output Capacitance	Cobo	-	-	25	pF	$V_{CB} = 10V$, $f = 1MHz$

Note:

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





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^{8.} Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%.



Typical Electrical Characteristics (continued)

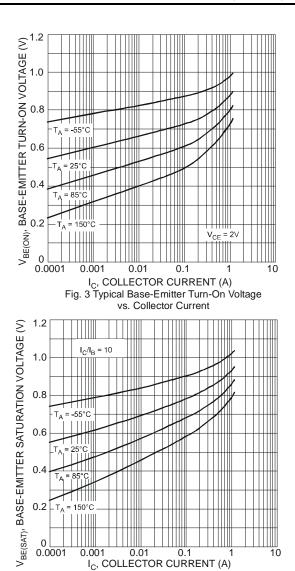


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

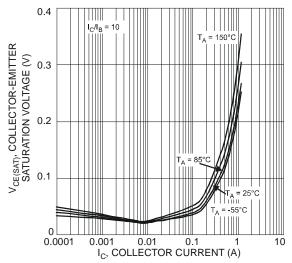


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

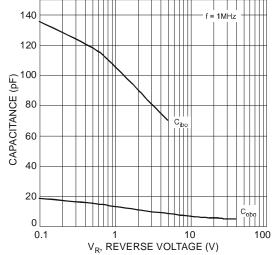
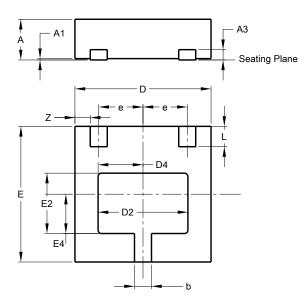


Fig. 6 Typical Capacitance Characteristics



Package Outline Dimensions

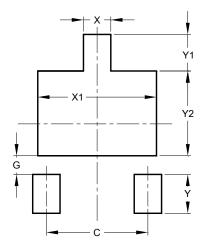
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.



	U-DFN2020-3 (Type B)						
Dim	Min	Max	Тур				
Α	0.57	0.63	0.60				
A1	0.00	0.05	0.02				
A3		_	0.152				
b	0.20	0.30	0.25				
D	1.950	2.075	2.00				
D2	1.22	1.42	1.32				
D4	0.56	0.76	0.66				
E	1.950	2.075	2.00				
E2	0.79	0.99	0.89				
E4	0.48	0.68	0.58				
е	_		0.65				
L	0.25	0.35	0.30				
Z			0.225				
All	All Dimensions in mm						

Suggested Pad Layout

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



Dimensions	Value			
Dilliensions	(in mm)			
С	1.300			
G	0.240			
Х	0.350			
X1	1.520			
X2	1.700			
Υ	0.500			
Y1	0.470			
Y2	1.090			

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.



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