



450V NPN HIGH VOLTAGE POWER TRANSISTOR

Features

- BV_{CEO} > 450V
- BV_{CES} > 700V
- BV_{EBO} > 9V
- I_C = 0.8A high Continuous Collector Current
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

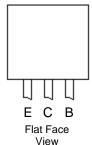
- Case: TO92
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 ³
- Weight: TO92: 200mg (Approximate)

Applications

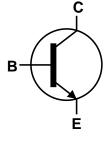
Low power AC-DC SMPS for:

- Battery Chargers for Mobile Phone / Tablets / Smartphones
- Power Supply for DVD / STB
- LED lighting









Device Schematic

Pin-Out

Ordering Information (Note 4)

Product	Package	Marking	Quantity
APT13003LZTR-G1	TO92 (Joggled Legs)	13003LZ-G1	2,000 Taped, per Ammo Box

Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 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. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



= Manufacturers' code marking 13003LZ-G1 = Product Type Marking ID YWW = Date Code Marking e.g. 312 = Year 2013, Week 12 8 = Assembly site code XX = Batch Number





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

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage (V _{BE} = 0V)	V _{CES}	700	V
Collector-Emitter Voltage	V _{CEO}	450	V
Emitter-Base Voltage	V _{EBO}	9	V
Continuous Collector Current	Ic	0.8	A
Peak Pulse Collector Current	I _{CM}	1.6	A
Continuous Base Current	I _B	0.4	Α
Peak Pulse Base Current	I _{BM}	0.8	A

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

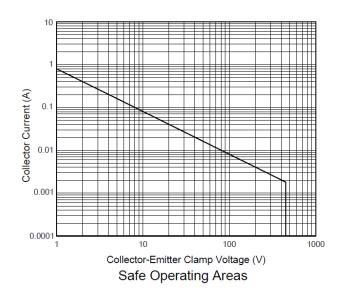
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	0.8	W
Thermal Resistance, Junction to Ambient Air	R _{θJA}	156.25	°C/W
Operating and Storage Temperature Range	T_{J} , T_{STG}	-55 to +150	°C

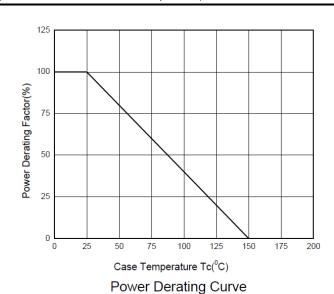
ESD Ratings (Note 5)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	С

Note: 5. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Safe Operating Area and Derating Information (@T_A = +25°C, unless otherwise specified.)





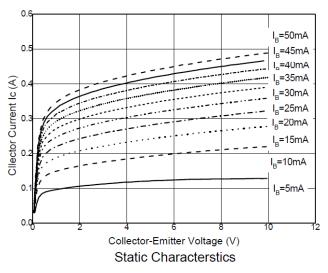


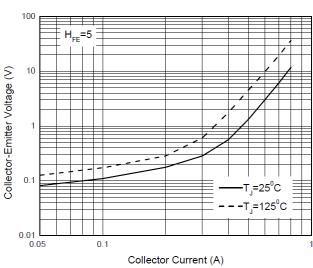
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Emitter Voltage	BV _{CES}	700	_	_	V	$I_C = 100 \mu A, V_{BE} = 0 V$
Collector-Emitter Breakdown Voltage	BV _{CEO}	450	_	_	V	$I_{C} = 100 \mu A$
Emitter-Base Breakdown Voltage	BV _{EBO}	9	_	_	V	$I_E = 100\mu A$
Collector Cutoff Current	I _{CEV}	_	_	10	μA	V _{CE} = 700V, V _{BE} = -1.5V
DC current transfer Static ratio (Note 6)	h _{FE}	15	23	40	_	I _C = 100mA, V _{CE} = 10V
Content transfer Static ratio (Note o)		6	15	30	ı	$I_C = 300 \text{mA}, V_{CE} = 10 \text{V}$
Collector-Emitter Saturation Voltage (Note 6)	V _{CE(sat)}		_	0.5	V	$I_C = 200 \text{mA}, I_B = 40 \text{mA}$

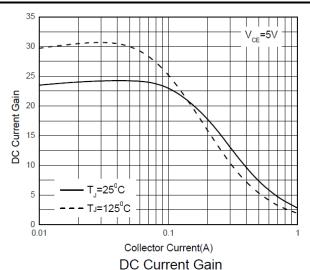
Note:

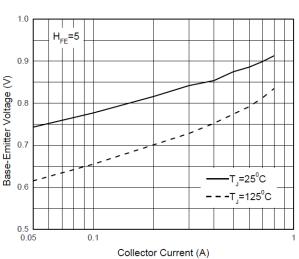
Typical Electrical Characteristics (@TA = +25°C, unless otherwise specified.)





Collector-Emitter Saturation Region





Base-Emitter Saturation Voltage

^{6.} Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.

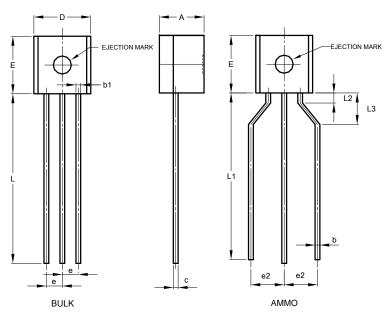




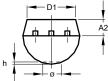
Package Outline Dimensions

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

TO92 Type C



TO92 Type C						
Dim	Min	Max	Тур			
Α	3.30	3.70	-			
A2	1.10	1.40	-			
b	0.38	0.55	-			
C	0.36	0.51	-			
D	4.40	-				
D1	3.430	-	-			
Е	4.30	4.70	-			
е	-	-	1.27			
e2	2.440	2.640	-			
h	0.00	0.38	-			
L	14.10	14.50	-			
L1	12.50	14.50	-			
L3	.3 2.50 3		-			
Ø	-	1.60	-			
All Dimensions in mm						



Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to voltage spacing between terminals.



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Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru_6 moschip.ru 4 moschip.ru 9