APT27

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

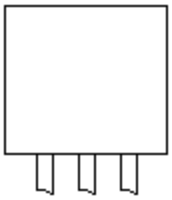
- Case: TO92
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 e3
- Weight: TO92: 200mg (Approximate)

Application

Low Power AC-DC SMPS for:

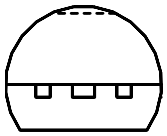
- Battery Chargers for Mobile Phone / Tablets / Smartphones
- Power Supply for DVD / STB
- LED Lighting

TO92



E C B

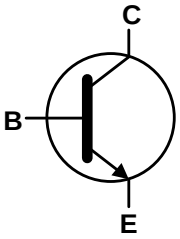
Flat Face View



B C E

Bottom View

Pin-Out



Device Schematic

Ordering Information (Note 4)

Product	Package	Marking	Quantity
APT27ZTR-G1	TO92 (Joggled Legs)	APT27Z-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

Flat Face View

= Manufacturers' code marking
APT27Z-G1 = Product Type Marking ID
YWW = Date Code Marking
e.g 312 = Year 2013, Week 12
8 = Assembly site code
XX = Batch Number

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Absolute Maximum Ratings (@T_A = +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	I_C	0.8	A
Peak Pulse Collector Current	I_{CM}	1.6	A
Continuous Base Current	I_B	0.4	A
Peak Pulse Base Current	I_{BM}	0.8	A

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

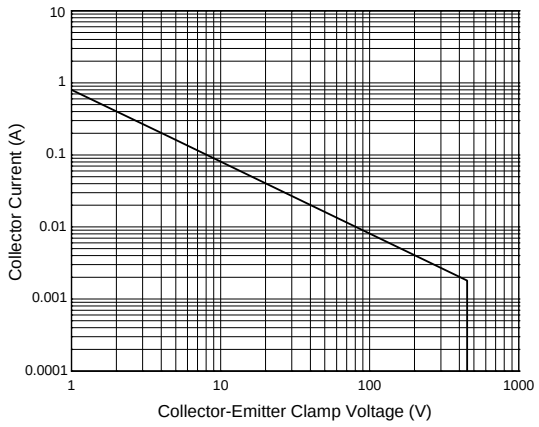
Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	0.8	W
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	156.25	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 5)

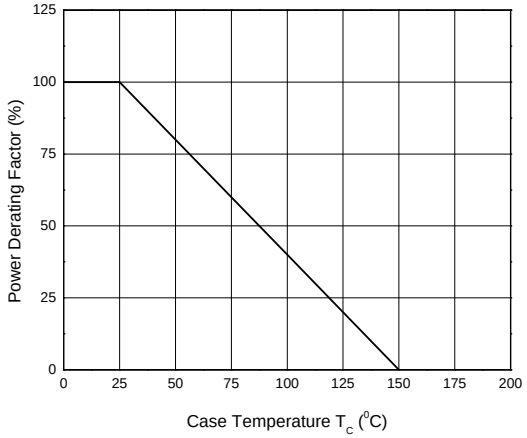
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

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

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



Safe Operating Areas



Power Derating Curve

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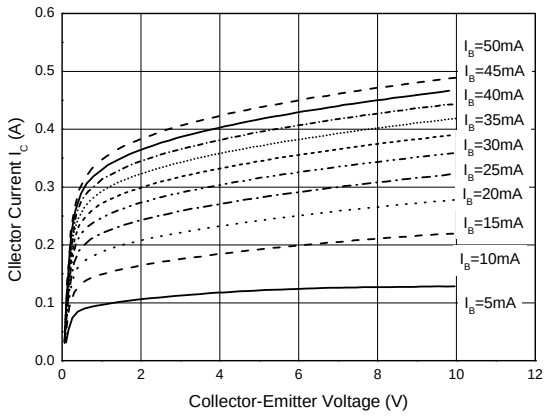
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

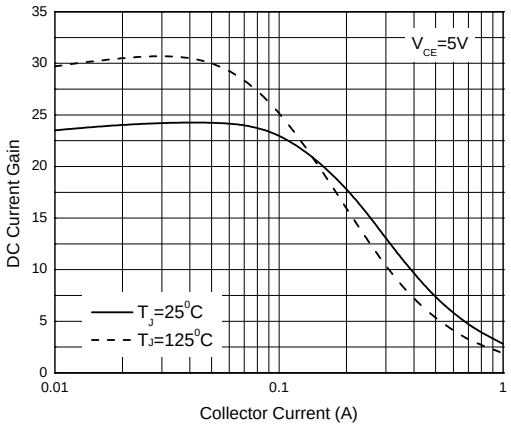
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage	BV_{CES}	700	—	—	V	I_C = 100μA, V_{BE} = 0V
Collector-Emitter Breakdown Voltage	BV_{CEO}	450	—	—	V	I_C = 100μA
Emitter-Base Breakdown Voltage	BV_{EBO}	9	—	—	V	I_E = 100μA
Collector Cutoff Current	I_{CEV}	—	—	10	μA	V_{CE} = 700V, V_{BE} = -1.5V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.5	V	I_C = 200mA, I_B = 40mA
DC Current Transfer Static Ratio (Note 6)	h_{FE}	15 6	23 15	40 30	— —	I_C = 100mA, V_{CE} = 10V I_C = 300mA, V_{CE} = 10V

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

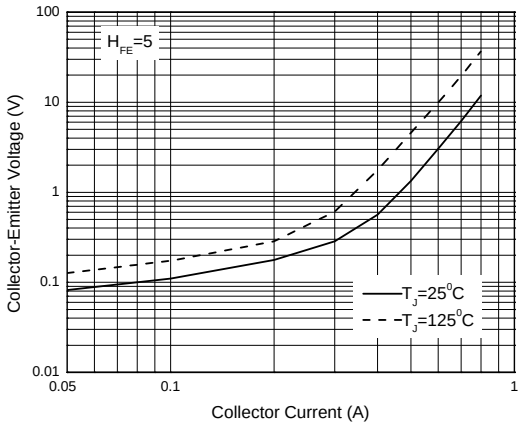
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



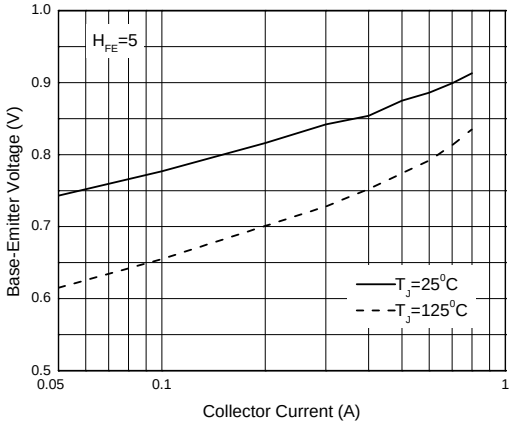
Static Characteristics



DC Current Gain



Collector-Emitter Saturation Region



Base-Emitter Saturation Voltage

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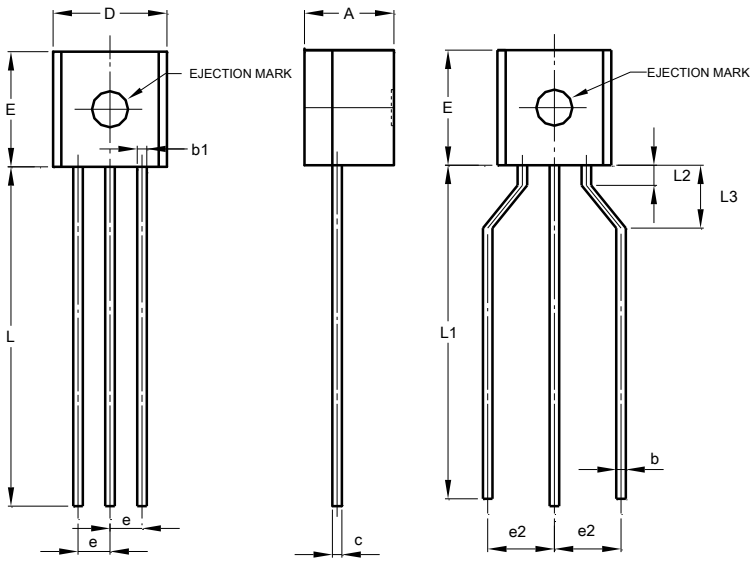
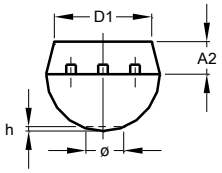
Package Outline Dimensions

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

(1) Package Type: TO92 Type C





TO92 Type C			
Dim	**Min**	**Max**	**Typ**
A	3.30	3.70	-
A2	1.10	1.40	-
b	0.38	0.55	-
c	0.36	0.51	-
D	4.40	4.70	-
D1	3.430	-	-
E	4.30	4.70	-
e	-	-	1.27
e2	2.440	2.640	-
h	0.00	0.38	-
L	14.10	14.50	-
L1	12.50	14.50	-
L3	2.50	3.50	-
ø	-	1.60	-
All Dimensions in mm			

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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