

**480V NPN HIGH VOLTAGE POWER TRANSISTOR**
**Features**

- $BV_{CEO} > 480V$
- $BV_{CES} > 700V$
- $BV_{EBO} > 10V$
- $I_C = 50mA$  High Collector Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

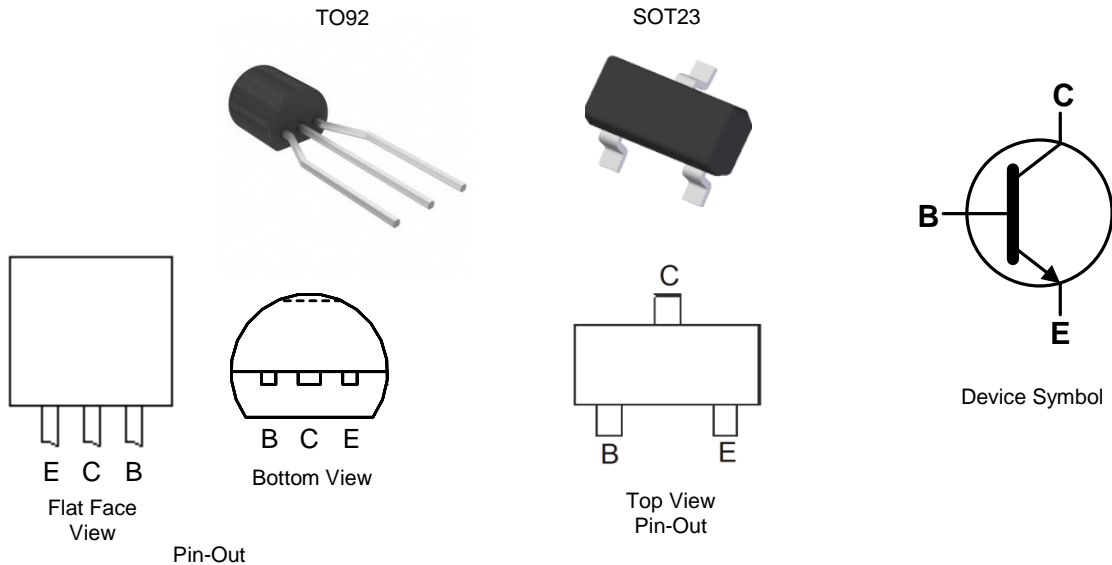
**Application**

Low Power AC-DC SMPS for:

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

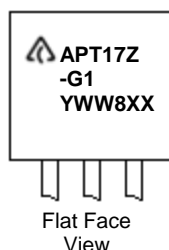
**Mechanical Data**


- Case: TO92 or SOT23
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208e3
- Weight: TO92: 200mg (Approximate)  
SOT23: 8mg (Approximate)

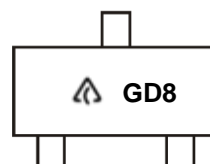

**Ordering Information** (Note 4)


Product	Package	Marking	Quantity
APT17ZTR-G1	TO92 (Joggled Legs)	APT17Z-G1	2,000 Taped, per Ammo Box
APT17NTR-G1	SOT23	GD8	3,000 Taped, per 7" reel

- 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](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  
 APT17Z-G1 = Product Type Marking ID  
 YWW = Date Code Marking  
     e.g. 312 = Year 2013, Week 12  
 8 = Assembly site code  
 XX = Batch Number



 = Manufacturers' code marking  
 GD8 = Product Type Marking ID

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage (V <sub>BE</sub> = 0V)	V <sub>CES</sub>	700	V
Collector-Emitter Voltage	V <sub>CEO</sub>	480	V
Emitter-Base Voltage	V <sub>EBO</sub>	10	V
Continuous Collector Current	I <sub>C</sub>	50	mA
Peak Pulse Collector Current	I <sub>CM</sub>	100	mA
Continuous Base Current	I <sub>B</sub>	25	mA
Peak Pulse Base Current	I <sub>BM</sub>	50	mA

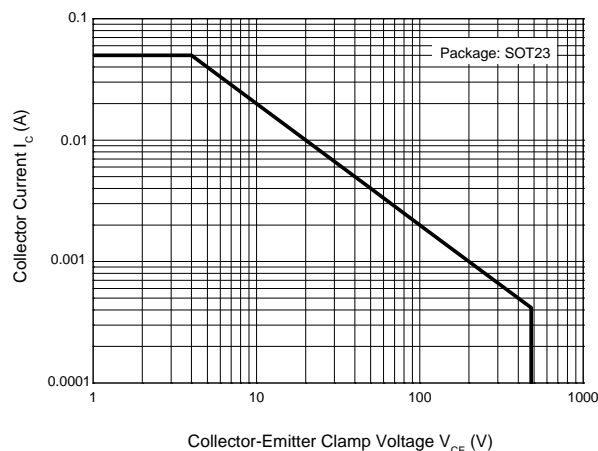
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	0.5	W
		0.2	
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	250	°C/W
		625	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

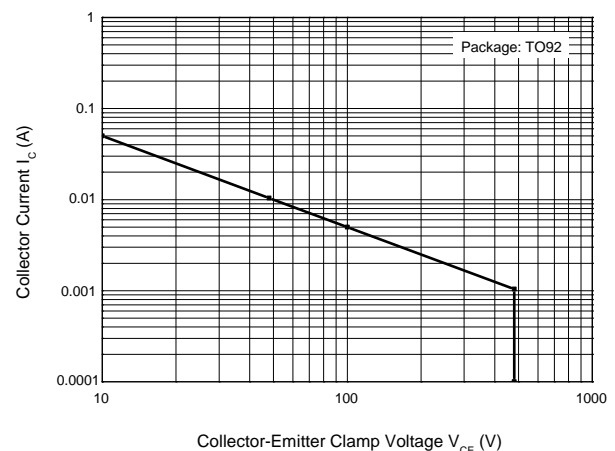
**ESD Ratings** (Note 5)

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** (@T<sub>A</sub> = +25°C, unless otherwise specified.)


Safe Operating Areas



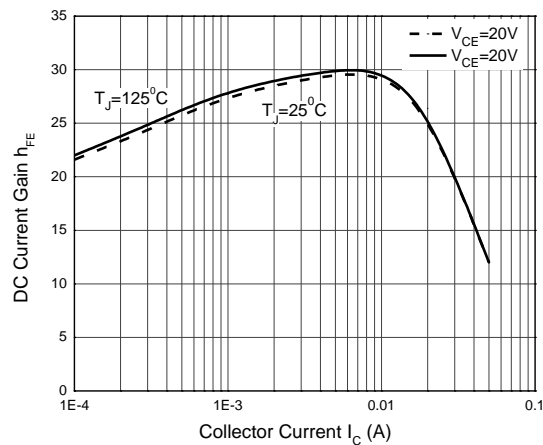
Safe Operating Areas

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

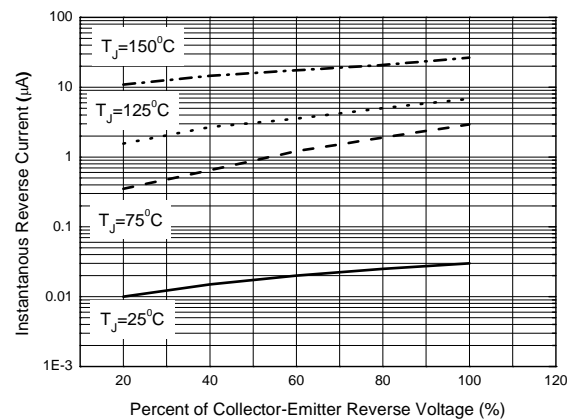
Characteristic	Symbol	Min	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage	BV <sub>CES</sub>	700	—	V	I <sub>C</sub> = 100μA, V <sub>BE</sub> = 0V
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	480	—	V	I <sub>C</sub> = 300μA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	10	—	V	I <sub>E</sub> = 100μA
Collector Cutoff Current	I <sub>CEV</sub>	—	10	μA	V <sub>CE</sub> = 700V, V <sub>BE</sub> = -1.5V
DC Current Transfer Static Ratio (Note 6)	h <sub>FE</sub>	21	36.5	—	I <sub>C</sub> = 100μA, V <sub>CE</sub> = 20V
		24.5	35.5	—	I <sub>C</sub> = 500μA, V <sub>CE</sub> = 20V
		20	45.5	—	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 20V

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

## Typical Electrical Characteristics



DC Current Gain

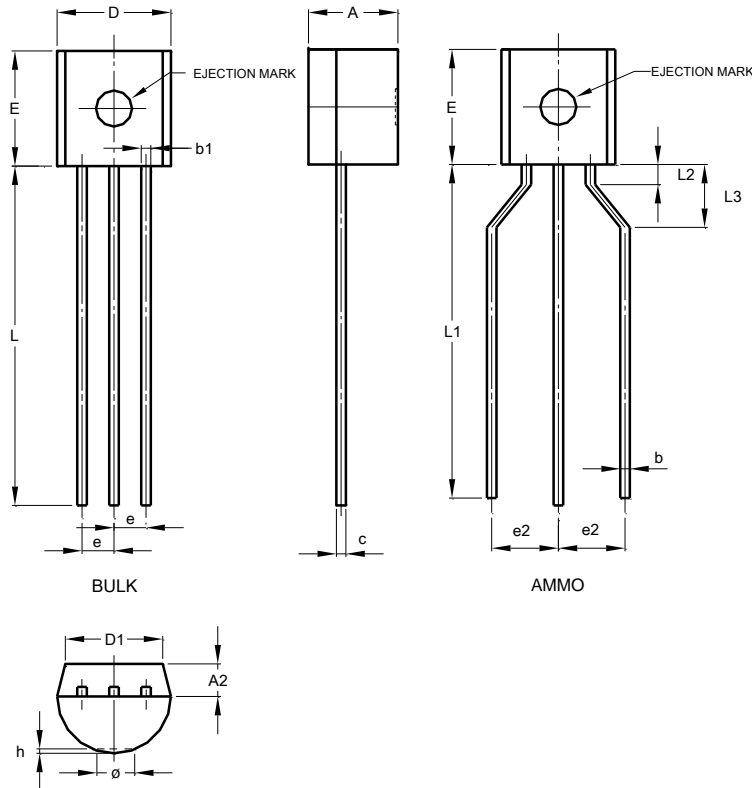


Typical Reverse Characteristics

## Package Outline Dimensions

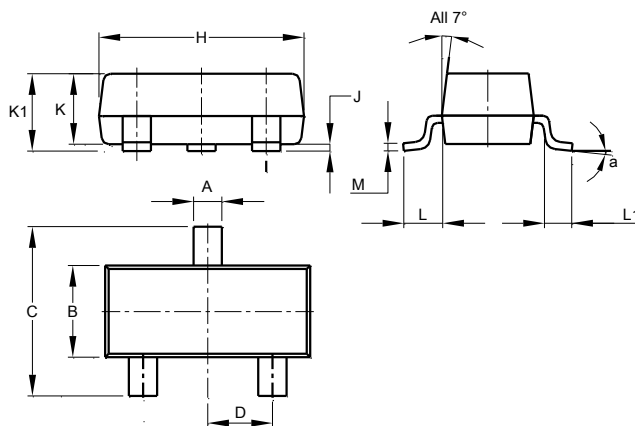
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

### (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			

### (2) Package Type: SOT23

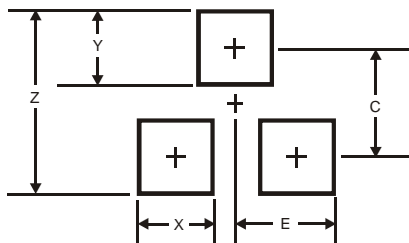


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

## Suggested Pad Layout

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

### (1) Package Type: SOT23



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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

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