

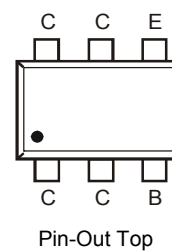
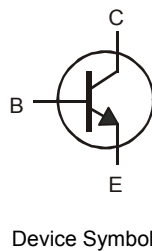
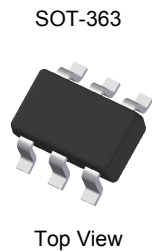
**100V NPN LOW SATURATION TRANSISTOR IN SOT363**

**Features**

- $BV_{CEO} > 100V$
- $I_C = 1A$  high Continuous Collector Current
- $I_{CM} = 3A$  Peak Pulse Current
- $R_{CE(sat)} = 200m\Omega$  for a Low Equivalent On-Resistance
- Low Saturation Voltage  $V_{CE(sat)} < 200mV @ 1A$
- Complementary PNP Type Available (DSS9110Y)
- **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: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification 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: 0.006 grams (approximate)

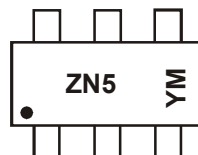


**Ordering Information** (Note 4)

| Product    | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|------------|---------|--------------------|-----------------|-------------------|
| DSS8110Y-7 | ZN5     | 7                  | 8               | 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](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**



ZN5 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: X = 2010)  
 M = Month (ex: 9 = September)

Date Code Key

|              |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Year</b>  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| <b>Code</b>  | X    | Y    | Z    | A    | B    | C    | D    | E    | F    | G    | H    | I    |
| <b>Month</b> | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| <b>Code</b>  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | O    | N    | D    |

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

| Characteristic                 | Symbol           | Value | Unit |
|--------------------------------|------------------|-------|------|
| Collector-Base Voltage         | V <sub>CBO</sub> | 120   | V    |
| Collector-Emitter Voltage      | V <sub>CEO</sub> | 100   | V    |
| Emitter-Base Voltage           | V <sub>EBO</sub> | 5     | V    |
| Collector Current - Continuous | I <sub>C</sub>   | 1     | A    |
| Peak Pulse Collector Current   | I <sub>CM</sub>  | 3     | A    |
| Base Current – Continuous      | I <sub>B</sub>   | 0.3   | A    |

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

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                       | P <sub>D</sub>                    | 625         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 200         | °C/W |
| Thermal Resistance, Junction to Lead (Note 6)    | R <sub>θJL</sub>                  | 81          | °C/W |
| Operating and Storage Temperature Range          | T <sub>J</sub> , T <sub>STG</sub> | -55 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    | C           |

- Notes:
5. For a device mounted on minimum recommended pad layout that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Thermal resistance from junction to solder-point (at the end of collector lead).
  7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

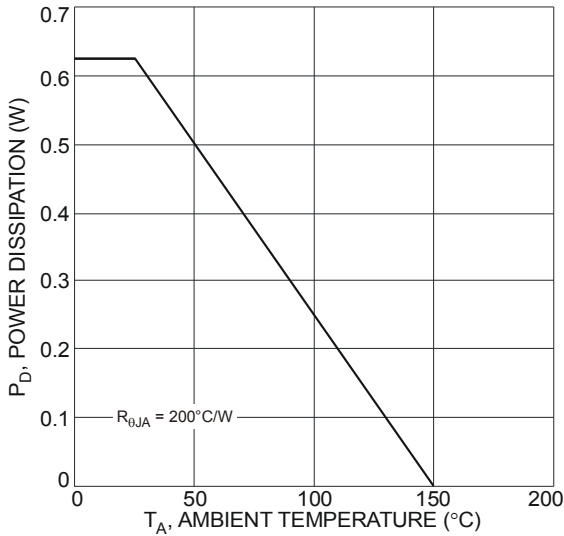


Fig. 1 Power Dissipation vs. Ambient Temperature

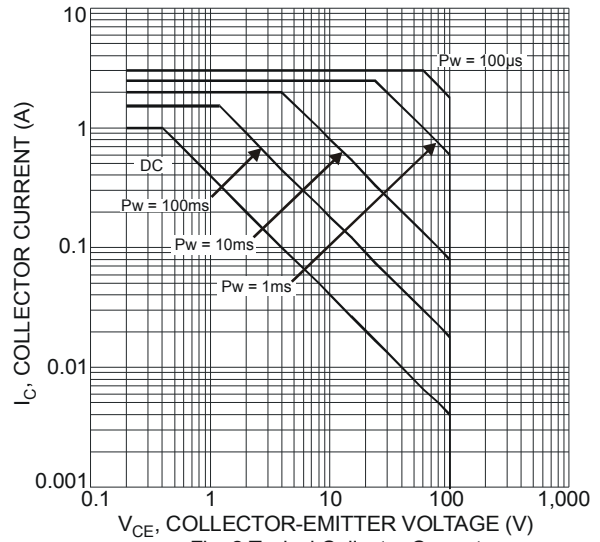


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

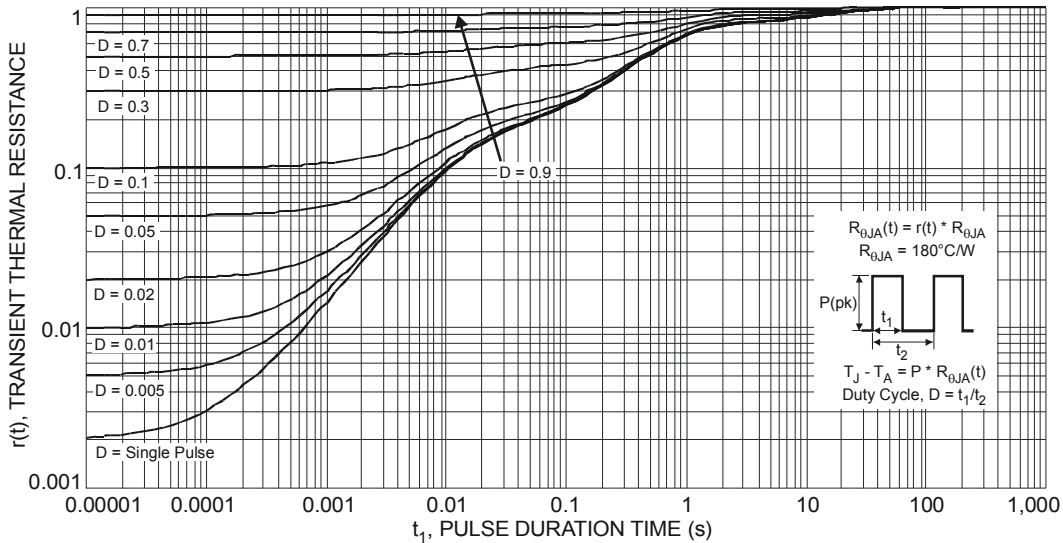


Fig. 3 Transient Thermal Response

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

| Characteristic                          | Symbol               | Min | Typ | Max  | Unit | Test Condition  |
|---|----------------------|-----|-----|------|------|---|
| <b>OFF CHARACTERISTICS (Note 8)</b>     |                      |     |     |      |      |   |
| Collector-Base Breakdown Voltage        | BV <sub>CBO</sub>    | 120 | —   | —    | V    | I <sub>C</sub> = 100μA, I <sub>E</sub> = 0                        |
| Collector-Emitter Breakdown Voltage     | BV <sub>CEO</sub>    | 100 | —   | —    | V    | I <sub>C</sub> = 10mA, I <sub>B</sub> = 0                         |
| Emitter-Base Breakdown Voltage          | BV <sub>EBO</sub>    | 5   | —   | —    | V    | I <sub>E</sub> = 100μA, I <sub>C</sub> = 0                        |
| Collector Cutoff Current                | I <sub>CBO</sub>     | —   | —   | 100  | nA   | V <sub>CB</sub> = 80V, I <sub>E</sub> = 0                         |
| Collector Cutoff Current                | I <sub>CES</sub>     | —   | —   | 50   | μA   | V <sub>CB</sub> = 80V, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C |
| Collector Cutoff Current                | I <sub>CES</sub>     | —   | —   | 100  | nA   | V <sub>CE</sub> = 80V, V <sub>BE</sub> = 0                        |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | —   | —   | 100  | nA   | V <sub>EB</sub> = 4V, I <sub>C</sub> = 0                          |
| <b>ON CHARACTERISTICS (Note 8)</b>      |                      |     |     |      |      |   |
| DC Current Gain                         | h <sub>FE</sub>      | 150 | —   | —    | V    | V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA                       |
|   |                      | 150 | —   | 500  |      | V <sub>CE</sub> = 10V, I <sub>C</sub> = 250mA                     |
|   |                      | 100 | —   | —    |      | V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA                     |
|   |                      | 80  | —   | —    |      | V <sub>CE</sub> = 10V, I <sub>C</sub> = 1A                        |
| Collector-Emitter Saturation Voltage    | V <sub>CE(sat)</sub> | —   | —   | 40   | mV   | I <sub>C</sub> = 100mA, I <sub>B</sub> = 10mA                     |
|   |                      | —   | —   | 120  |      | I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA                     |
|   |                      | —   | —   | 200  |      | I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA                       |
| Collector-Emitter Saturation Resistance | R <sub>CE(sat)</sub> | —   | —   | 200  | mΩ   | I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA                       |
| Base-Emitter Saturation Voltage         | V <sub>BE(sat)</sub> | —   | —   | 1.05 | V    | I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA                       |
| Base-Emitter Turn On Voltage            | V <sub>BE(on)</sub>  | —   | —   | 0.9  | V    | V <sub>CE</sub> = 10V, I <sub>C</sub> = 1A                        |
| <b>SMALL SIGNAL CHARACTERISTICS</b>     |                      |     |     |      |      |   |
| Output Capacitance                      | C <sub>obo</sub>     | —   | —   | 7.5  | pF   | V <sub>CB</sub> = 10V, f = 1.0MHz                                 |
| Current Gain-Bandwidth Product          | f <sub>T</sub>       | 100 | —   | —    | MHz  | V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA, f = 100MHz          |

Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

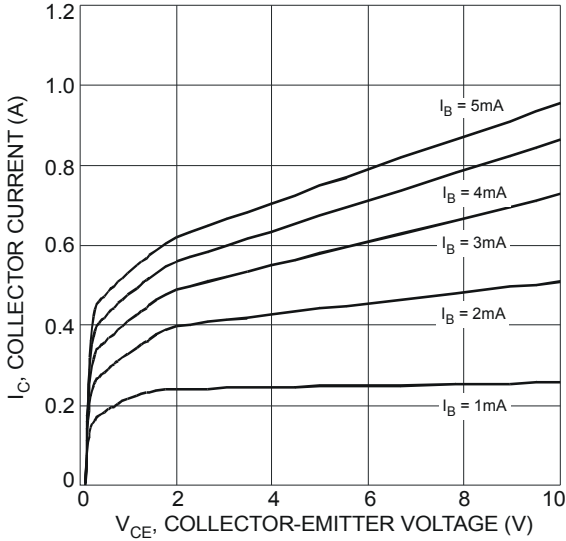


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

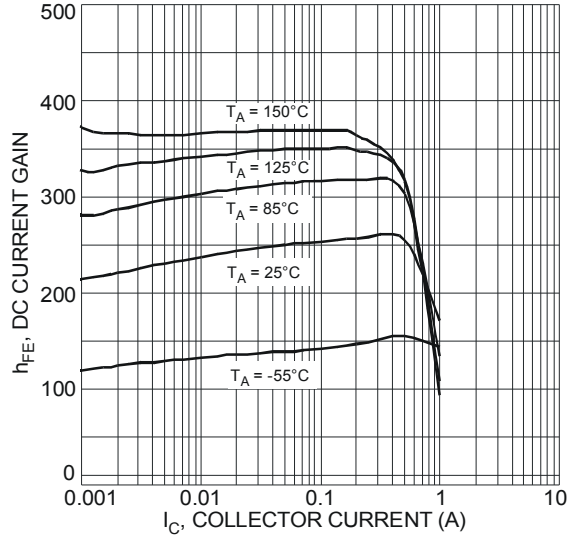


Fig. 5 Typical DC Current Gain vs. Collector Current

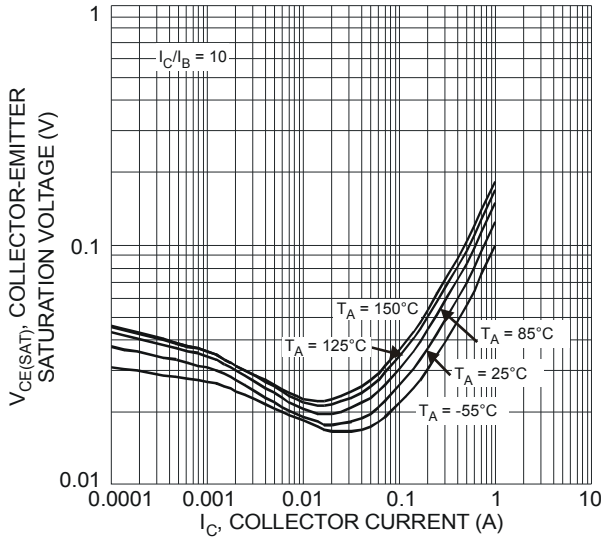


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

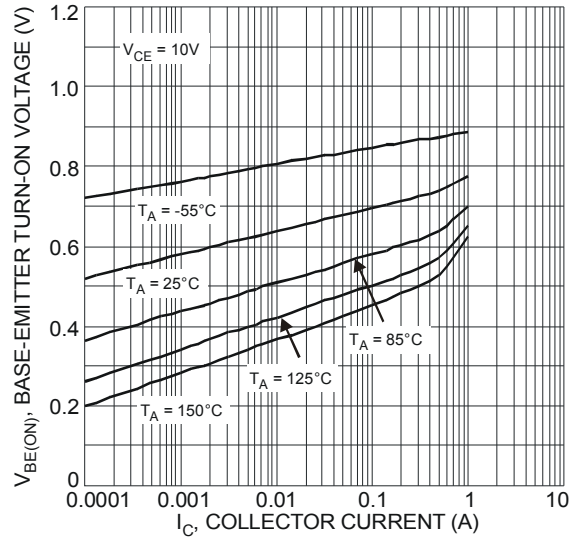


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

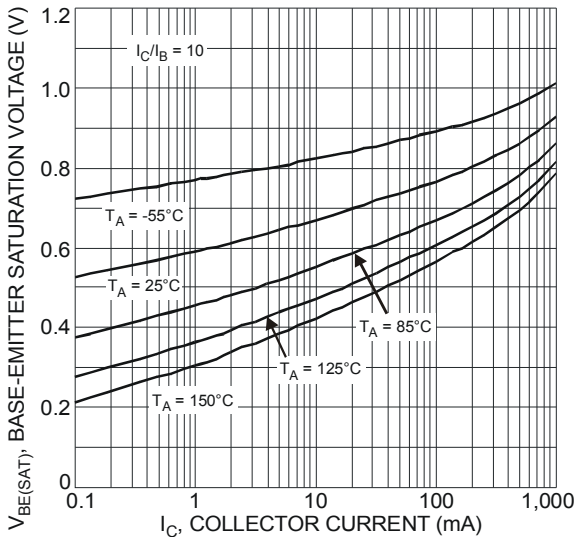
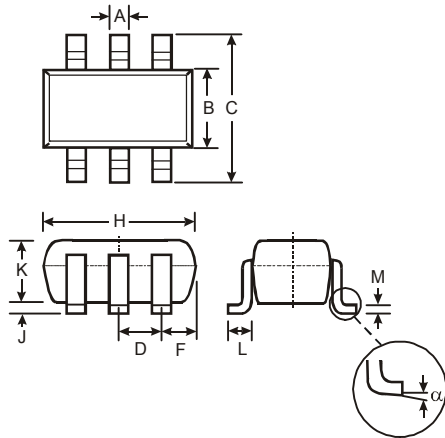


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

**Package Outline Dimensions**

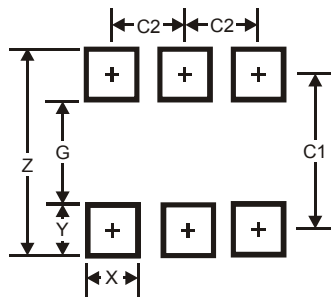
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT363               |          |      |       |
|----------------------|----------|------|-------|
| Dim                  | Min      | Max  | Typ   |
| A                    | 0.10     | 0.30 | 0.25  |
| B                    | 1.15     | 1.35 | 1.30  |
| C                    | 2.00     | 2.20 | 2.10  |
| D                    | 0.65 Typ |      |       |
| F                    | 0.40     | 0.45 | 0.425 |
| H                    | 1.80     | 2.20 | 2.15  |
| J                    | 0        | 0.10 | 0.05  |
| K                    | 0.90     | 1.00 | 1.00  |
| L                    | 0.25     | 0.40 | 0.30  |
| M                    | 0.10     | 0.22 | 0.11  |
| α                    | 0°       | 8°   | -     |
| 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) |
|------------|---------------|
| Z          | 2.5           |
| G          | 1.3           |
| X          | 0.42          |
| Y          | 0.6           |
| C1         | 1.9           |
| C2         | 0.65          |

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