

## Features

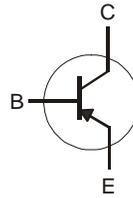
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Ultra Small Surface Mount Package
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free, "Green Device" (Note 2)
- ESD rating: 400V-MM, 8KV-HBM

## Mechanical Data

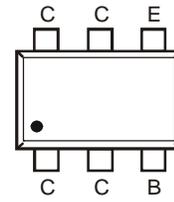
- Case: SOT-363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper Plated Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)



Top View



Device Symbol



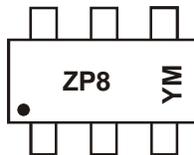
Top View  
Pin Out Configuration

## Ordering Information (Note 3)

| Product    | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|------------|---------|--------------------|-----------------|-------------------|
| DSS5240Y-7 | ZP8     | 7                  | 8mm             | 3,000             |

- Notes:
1. No purposefully added lead.
  2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
  3. For packaging details, go to our website at <http://www.diodes.com>

## Marking Information



ZP8 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: W = 2009)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------|------|------|------|------|------|------|------|------|
| Code | W    | X    | Y    | Z    | A    | B    | C    | D    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                 | Symbol    | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector-Base Voltage         | $V_{CBO}$ | -40   | V    |
| Collector-Emitter Voltage      | $V_{CEO}$ | -40   | V    |
| Emitter-Base Voltage           | $V_{EBO}$ | -5    | V    |
| Collector Current - Continuous | $I_C$     | -2    | A    |
| Peak Pulse Collector Current   | $I_{CM}$  | -3    | A    |
| Base Current (DC)              | $I_B$     | -300  | mA   |
| Peak Base Current              | $I_{BM}$  | -1    | A    |

**Thermal Characteristics**

| Characteristic  | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 4) @ $T_A = 25^\circ\text{C}$                       | $P_D$           | 625         | mW                 |
| Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ | 200         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                                     | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

Notes: 4. Device mounted on FR-4 PCB, with minimum recommended pad layout.

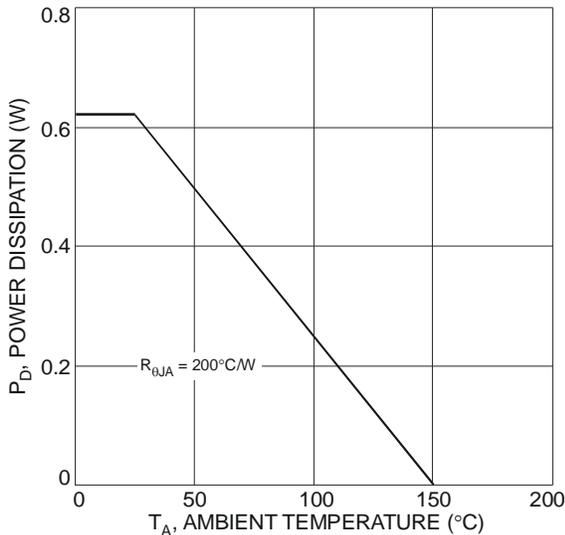


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

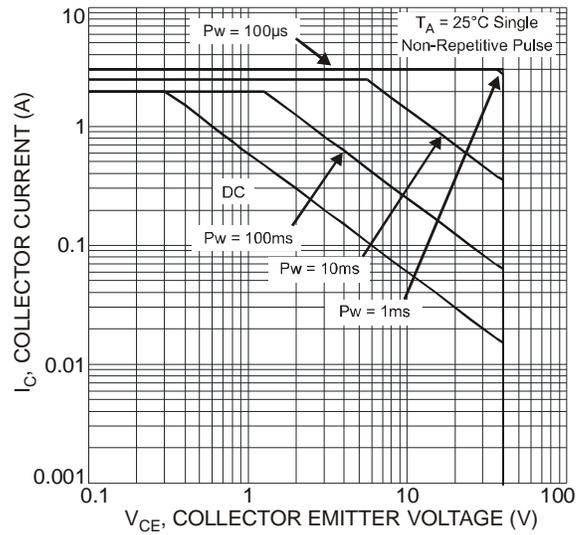


Fig. 2 Safe Operating Area

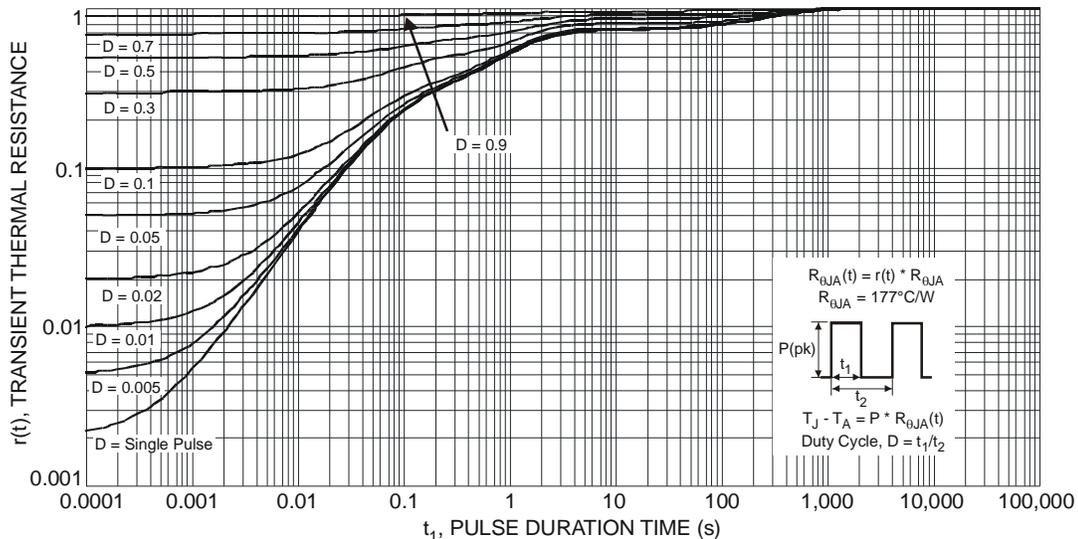


Fig. 3 Transient Thermal Response

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                                | Symbol        | Min | Typ   | Max   | Unit       | Test Condition   |
|---|---------------|-----|-------|-------|------------|--|
| Collector-Base Breakdown Voltage              | $BV_{CBO}$    | -40 | —     | —     | V          | $I_C = -100\mu\text{A}, I_E = 0$   |
| Collector-Emitter Breakdown Voltage (Note 5)  | $BV_{CEO}$    | -40 | —     | —     | V          | $I_C = -10\text{mA}, I_B = 0$  |
| Emitter-Base Breakdown Voltage                | $BV_{EBO}$    | -5  | —     | —     | V          | $I_E = -100\mu\text{A}, I_C = 0$   |
| Collector Cutoff Current                      | $I_{CBO}$     | —   | —     | -100  | nA         | $V_{CB} = -30\text{V}, I_E = 0$  |
| Emitter Cutoff Current                        | $I_{EBO}$     | —   | —     | -100  | nA         | $V_{EB} = -4\text{V}, I_C = 0$   |
| DC Current Gain (Note 5)                      | $h_{FE}$      | 300 | 450   | —     | —          | $V_{CE} = -2\text{V}, I_C = -100\text{mA}$                                   |
|   |               | 260 | 380   | —     |            | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$                                   |
|   |               | 210 | 325   | —     |            | $V_{CE} = -2\text{V}, I_C = -1\text{A}$                                      |
|   |               | 100 | 210   | —     |            | $V_{CE} = -2\text{V}, I_C = -2\text{A}$                                      |
| Collector-Emitter Saturation Voltage (Note 5) | $V_{CE(sat)}$ | —   | —     | -100  | mV         | $I_C = -100\text{mA}, I_B = -1\text{mA}$                                     |
|   |               | —   | —     | -110  |            | $I_C = -500\text{mA}, I_B = -50\text{mA}$                                    |
|   |               | —   | —     | -225  |            | $I_C = -750\text{mA}, I_B = -15\text{mA}$                                    |
|   |               | —   | —     | -225  |            | $I_C = -1\text{A}, I_B = -50\text{mA}$                                       |
|   |               | —   | —     | -350  |            | $I_C = -2\text{A}, I_B = -200\text{mA}$                                      |
| Collector-Emitter Saturation Resistance       | $R_{CE(sat)}$ | —   | —     | -220  | m $\Omega$ | $I_C = -500\text{mA}, I_B = -50\text{mA}$                                    |
| Base-Emitter Saturation Voltage (Note 5)      | $V_{BE(sat)}$ | —   | -1.0  | -1.1  | V          | $I_C = -2\text{A}, I_B = -200\text{mA}$                                      |
| Base-Emitter Turn On Voltage (Note 5)         | $V_{BE(on)}$  | —   | -0.67 | -0.75 | V          | $V_{CE} = -2\text{V}, I_C = -100\text{mA}$                                   |
| Output Capacitance                            | $C_{obo}$     | —   | 25    | 40    | pF         | $V_{CB} = -10\text{V}, f = 1.0\text{MHz}$                                    |
| Current Gain-Bandwidth Product                | $f_T$         | 100 | 220   | —     | MHz        | $V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$                |
| Turn-On Time                                  | $t_{on}$      | —   | 73    | —     | ns         | $V_{CC} = -10\text{V}$<br>$I_C = -1\text{A}, I_{B1} = I_{B2} = -50\text{mA}$ |
| Delay Time                                    | $t_d$         | —   | 27    | —     | ns         |  |
| Rise Time                                     | $t_r$         | —   | 46    | —     | ns         |  |
| Turn-Off Time                                 | $t_{off}$     | —   | 237   | —     | ns         |  |
| Storage Time                                  | $t_s$         | —   | 195   | —     | ns         |  |
| Fall Time                                     | $t_f$         | —   | 42    | —     | ns         |  |

Notes: 5. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

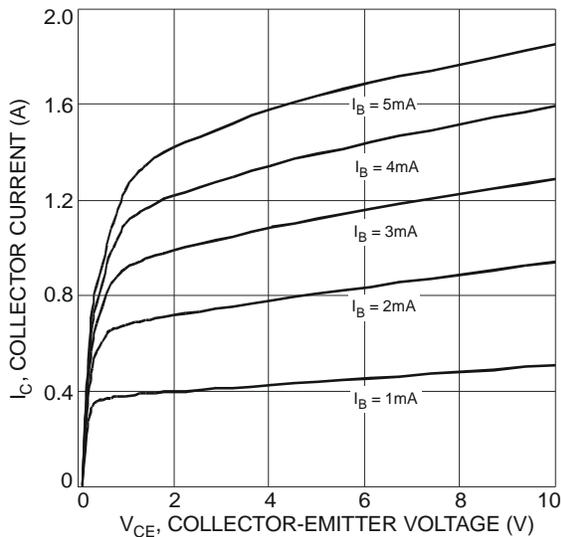


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

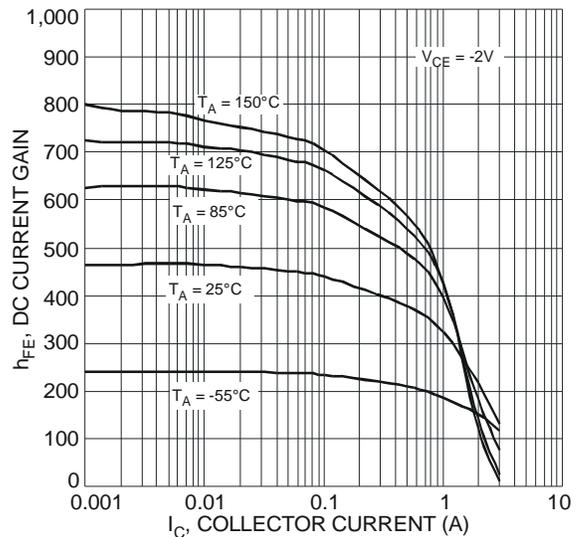


Fig. 5 Typical DC Current Gain vs. Collector Current

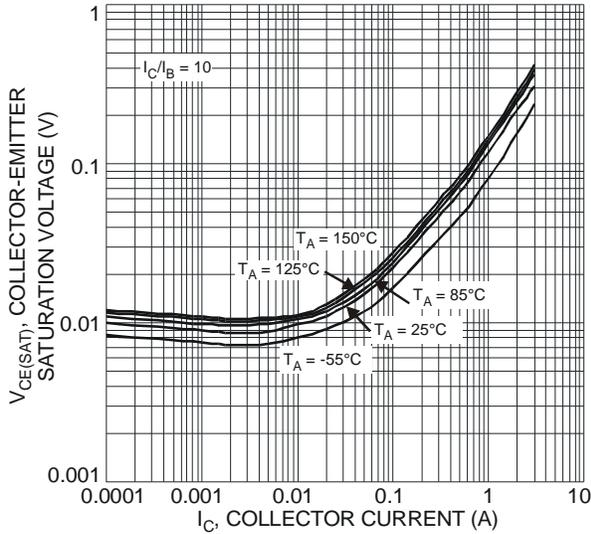


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

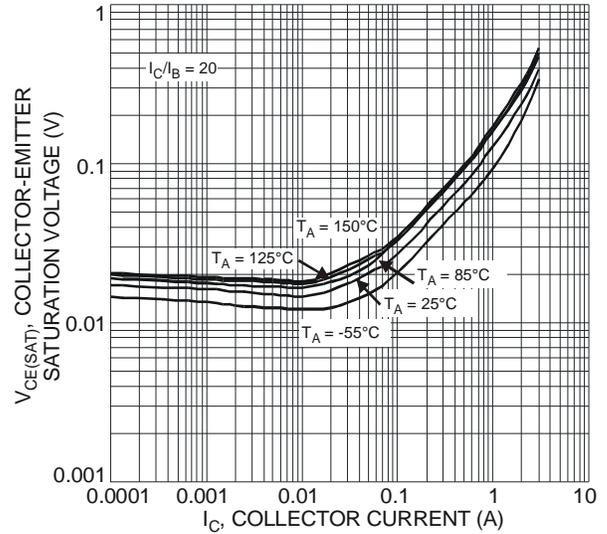


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

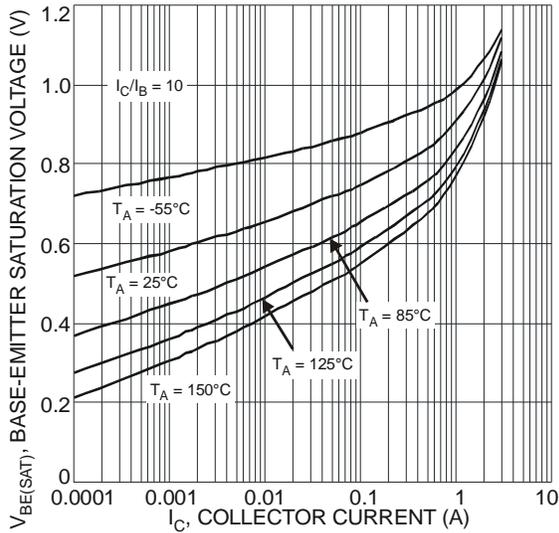


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

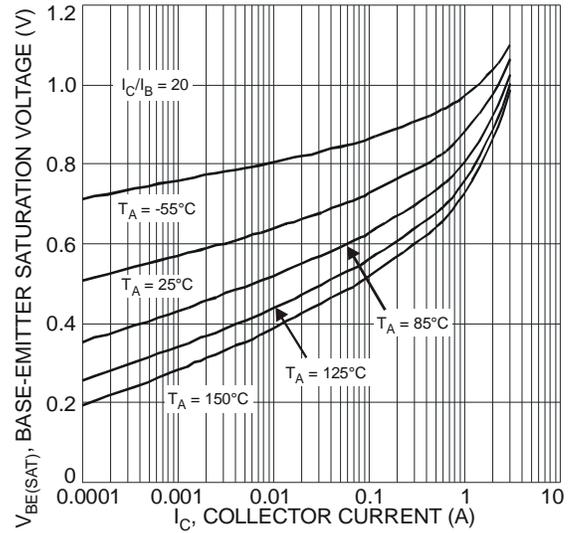


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

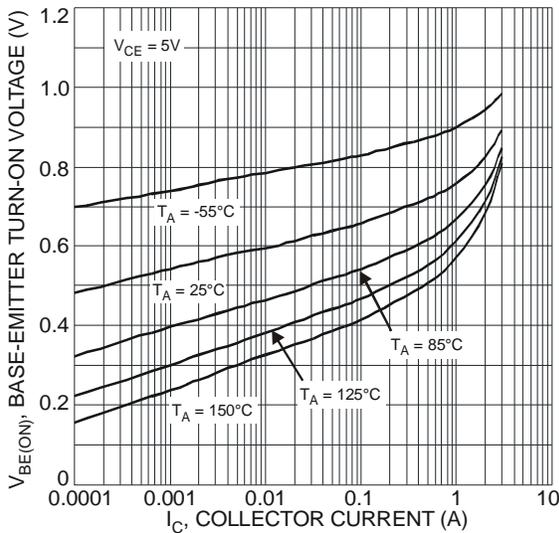
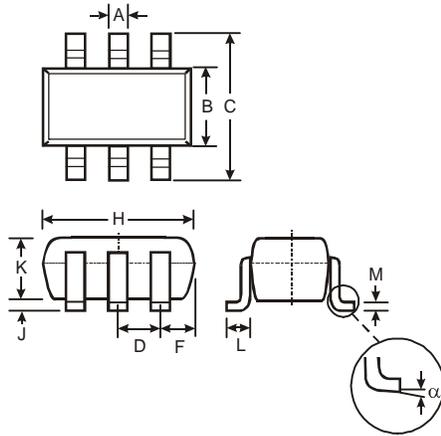


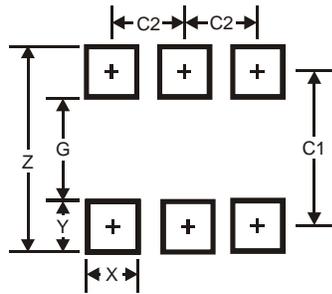
Fig. 10 Typical Base-Emitter Turn-On Voltage vs. Collector Current

**Package Outline Dimensions**



| SOT-363              |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 0.10     | 0.30 |
| B                    | 1.15     | 1.35 |
| C                    | 2.00     | 2.20 |
| D                    | 0.65 Typ |      |
| F                    | 0.40     | 0.45 |
| H                    | 1.80     | 2.20 |
| J                    | 0        | 0.10 |
| K                    | 0.90     | 1.00 |
| L                    | 0.25     | 0.40 |
| M                    | 0.10     | 0.22 |
| α                    | 0°       | 8°   |
| All Dimensions in mm |          |      |

**Suggested Pad Layout**



| 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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