

Features

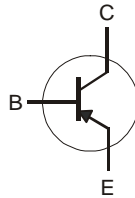
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Ultra Small Surface Mount Package
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free, "Green Device" (Note 2)
- ESD rating: 400V-MM, 8KV-HBM

Mechanical Data

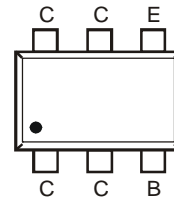
- Case: SOT-363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper Plated Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams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



Top View



Device Symbol

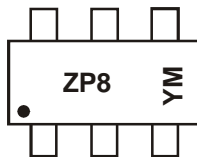

 Top View
Pin Out Configuration

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.

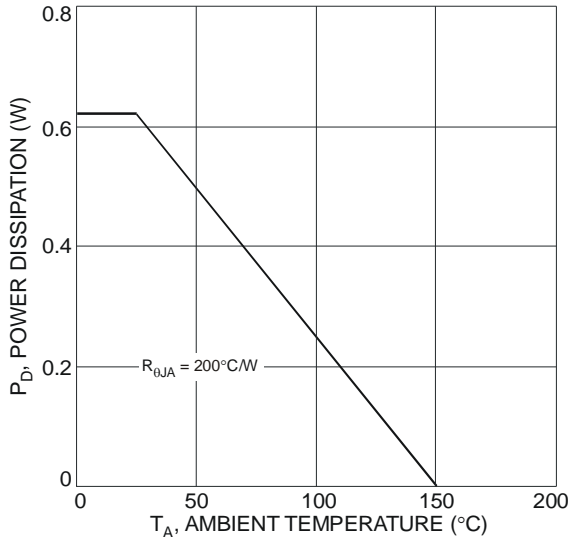


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

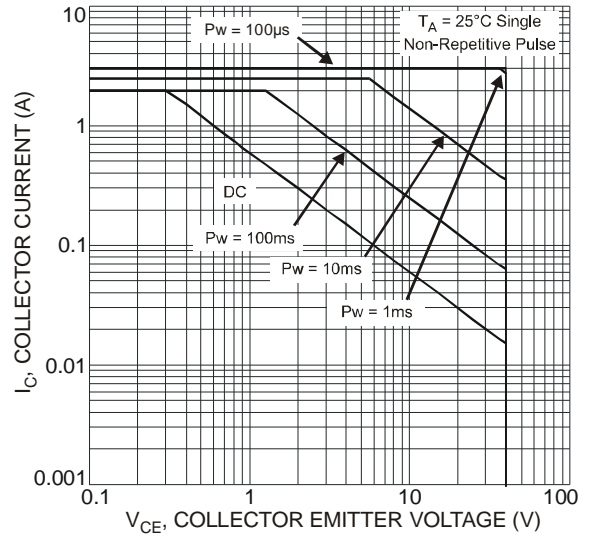


Fig. 2 Safe Operating Area

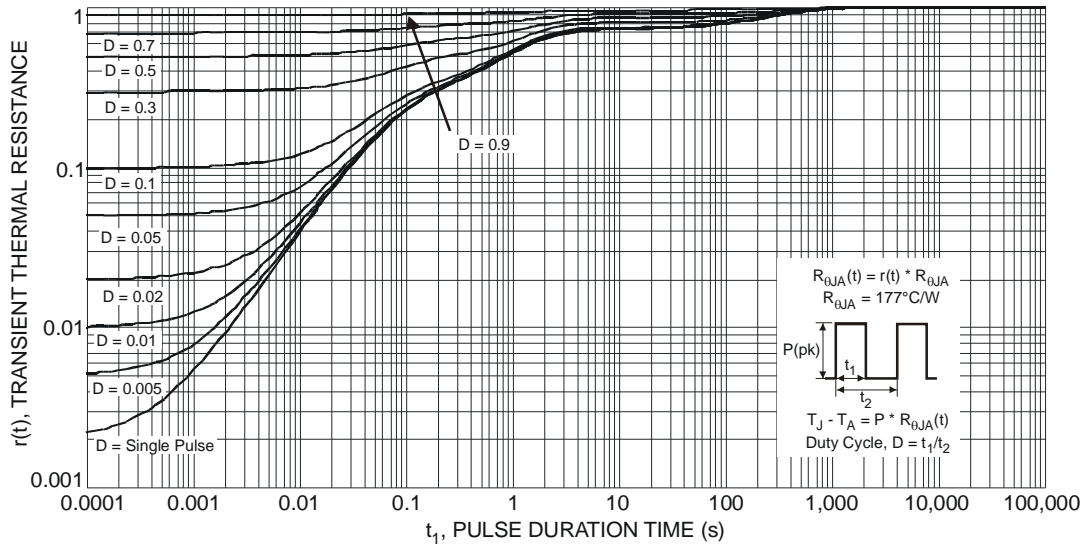


Fig. 3 Transient Thermal Response

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 Ω | $I_C = -500\text{mA}, I_B = -50\text{mA}$ |
| 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 | $V_{CC} = -10\text{V}$ $I_C = -1\text{A}, I_{B1} = I_{B2} = -50\text{mA}$ |
| 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 μs . Duty cycle $\leq 2\%$.

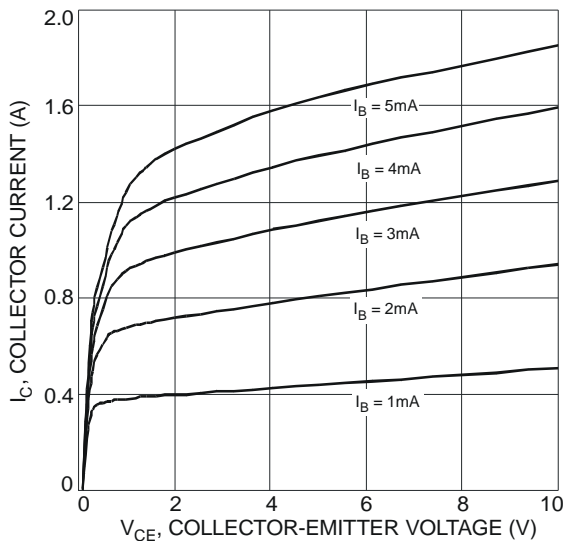


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

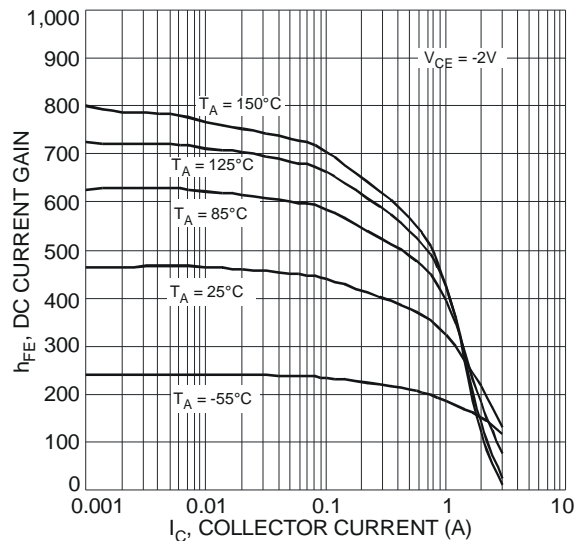


Fig. 5 Typical DC Current Gain vs. Collector Current

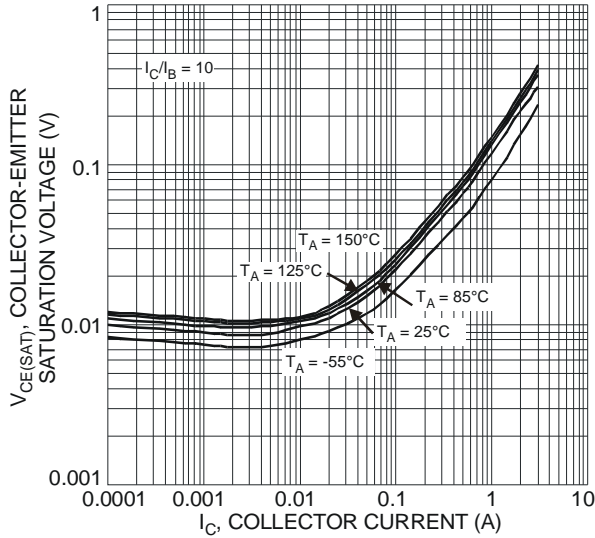


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

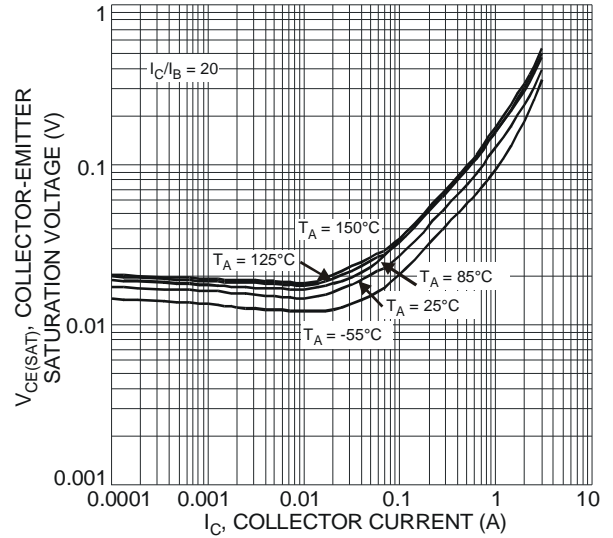


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

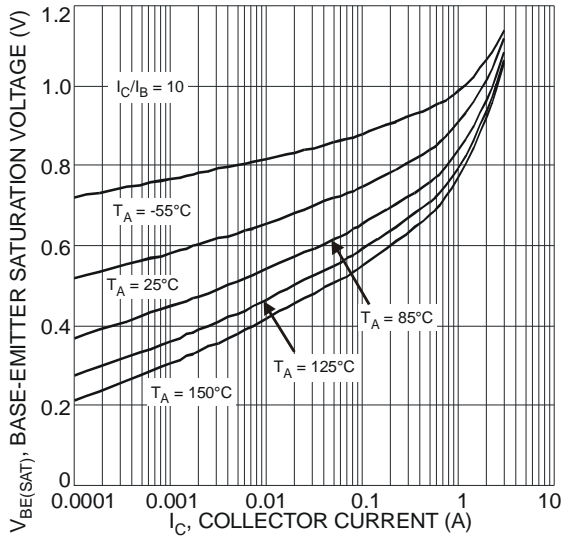


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

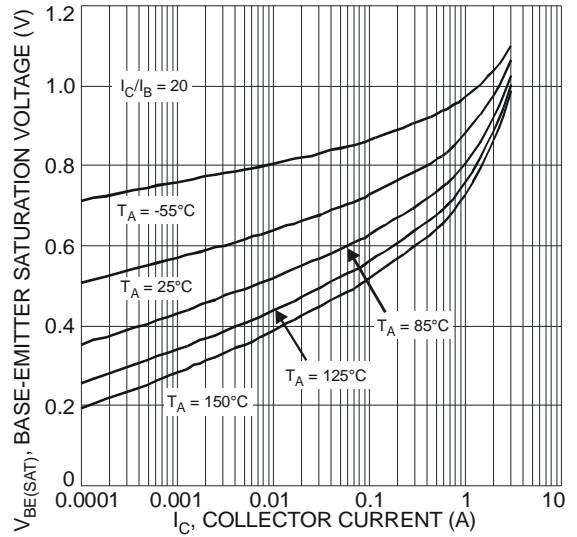


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

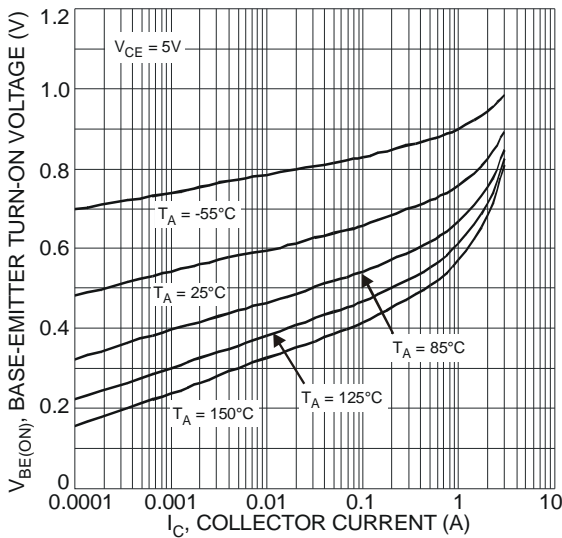
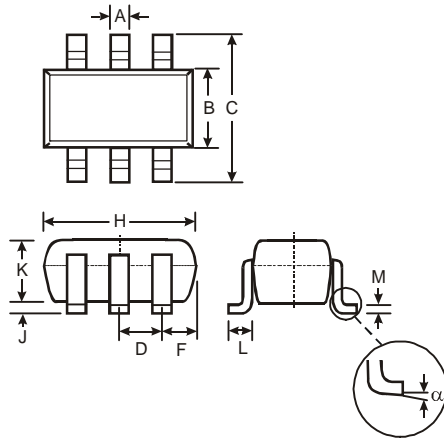


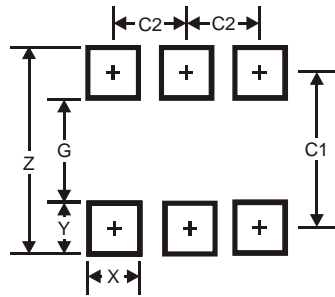
Fig. 10 Typical Base-Emitter Turn-On Voltage vs. Collector Current

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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