

Pb, ad-free Green

2DD2678

LOW V_{CE(SAT)} NPN SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)
- "Green" Device (Note 2)

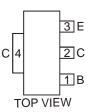
Mechanical Data

- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish Matte Tin annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



2,4





3 EMITTER Device Schematic

Pin Out Configuration

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

Top View

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | 15 | V |
| Collector-Emitter Voltage | V _{CEO} | 12 | V |
| Emitter-Base Voltage | V _{EBO} | 6 | V |
| Peak Pulse Current | I _{CM} | 6 | A |
| Continuous Collector Current | Ic | 3 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 3) @ T _A = 25°C | PD | 0.9 | W |
| Thermal Resistance, Junction to Ambient Air (Note 3) @ T _A = 25°C | $R_{	ext{	heta}JA}$ | 139 | °C/W |
| Power Dissipation (Note 4) @ T _A = 25°C | PD | 2 | W |
| Thermal Resistance, Junction to Ambient Air (Note 4) @ $T_A = 25^{\circ}C$ | $R_{	heta JA}$ | 62.5 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Тур | Max | Unit | Conditions |
|--|----------------------|-----|-----|-----|------|--|
| OFF CHARACTERISTICS | | | ÷ | | | |
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | 15 | — | _ | V | $I_{C} = 10 \mu A$, $I_{E} = 0$ |
| Collector-Emitter Breakdown Voltage (Note 5) | V _{(BR)CEO} | 12 | — | _ | V | $I_{\rm C} = 1$ mA, $I_{\rm B} = 0$ |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | 6 | _ | | V | $I_E = 10 \mu A, I_C = 0$ |
| Collector Cut-Off Current | Iсво | _ | _ | 0.1 | μΑ | $V_{CB} = 15V, I_E = 0$ |
| Emitter Cut-Off Current | I _{EBO} | _ | _ | 0.1 | μΑ | $V_{EB} = 6V, I_{C} = 0$ |
| ON CHARACTERISTICS (Note 5) | | | | | | - |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | 90 | 250 | mV | $I_{C} = 1.5A, I_{B} = 30mA$ |
| DC Current Gain | h _{FE} | 270 | _ | 680 | _ | $V_{CE} = 2V, I_{C} = 500 \text{mA}$ |
| SMALL SIGNAL CHARACTERISTICS | | | ÷ | | | · |
| Output Capacitance | C _{obo} | _ | 26 | — | pF | $V_{CB} = 10V, I_E = 0,$ f = 1MHz |
| Current Gain-Bandwidth Product | fT | | 170 | _ | MHz | $V_{CE} = 2V, I_C = 100mA, f = 100MHz$ |

Notes: 1. No purposefully added lead.

2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

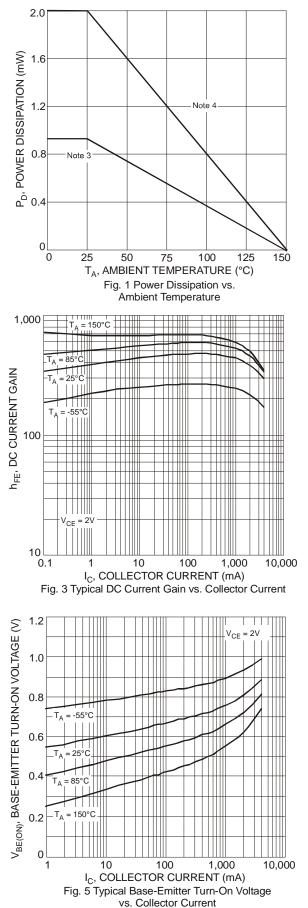
3. Device mounted on FR-4 PCB with minimum recommended pad layout.

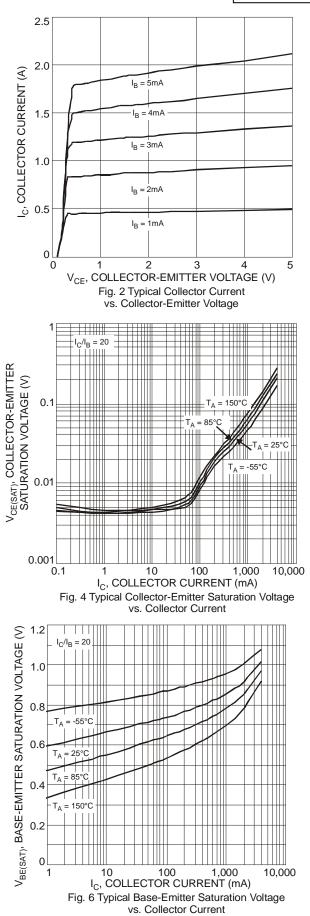
4. Device mounted on FR-4 PCB with 1 inch² copper pad layout.

5. Measured under pulsed conditions. Pulse width = 300μ s. Duty cycle $\leq 2\%$.



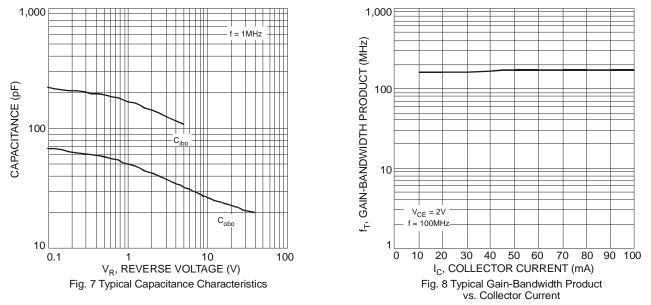








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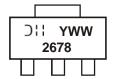


Ordering Information (Note 6)

| Part Number | Case | Packaging |
|-------------|----------|------------------|
| 2DD2678-13 | SOT89-3L | 2500/Tape & Reel |

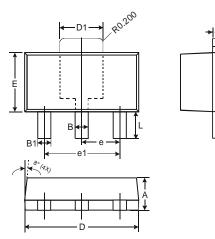
Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



 $\begin{array}{l} 2678 = \mbox{Product Type Marking Code} \\ \mbox{YWW} = \mbox{Date Code Marking} \\ \mbox{Y} = \mbox{Last digit of year (ex: 8 = 2008)} \\ \mbox{WW} = \mbox{Week code } (01 - 53) \end{array}$

Package Outline Dimensions

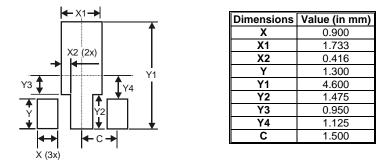


| SOT89-3L | | | |
|----------|----------------------|------|--|
| Dim | Min Max | | |
| Α | 1.40 | 1.60 | |
| В | 0.44 | 0.62 | |
| B1 | 0.35 | 0.54 | |
| С | 0.35 | 0.43 | |
| D | 4.40 | 4.60 | |
| D1 | 1.52 | 1.83 | |
| E | 2.29 | 2.60 | |
| е | 1.50 Typ | | |
| e1 | 3.00 Typ | | |
| Н | 3.94 | 4.25 | |
| L | 0.89 | 1.20 | |
| All D | All Dimensions in mm | | |



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Suggested Pad Layout



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