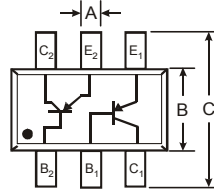


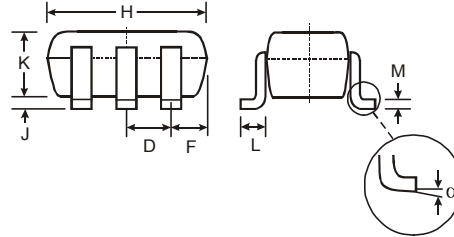
Features

- Epitaxial Planar Die Construction
- Intrinsically Matched PNP Pair (Note 1)
- Small Surface Mount Package
- 2% Matched Tolerance, h_{FE} , $V_{CE(SAT)}$, $V_{BE(SAT)}$
- **Lead Free/RoHS Compliant (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- "Green" Device (Note 4 and 5)



Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Information: K4B, See Page 4
- Ordering & Date Code Information: See Page 4
- Weight: 0.015 grams (approximate)



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

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} | -5.0 | V |
| Collector Current - Continuous | I_C | -200 | mA |
| Power Dissipation (Note 3) | P_d | 200 | mW |
| Thermal Resistance, Junction to Ambient (Note 3) | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_j, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

- Notes:
1. Built with adjacent die from a single wafer.
 2. No purposefully added lead.
 3. Device mounted on FR5 PCB: 1.0 x 0.75 x 0.62 in.; pad layout as shown on suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition | |
|--------------------------------------|----------------------|----------------------|-------|--------------------|---|--|
| OFF CHARACTERISTICS (Note 6) | | | | | | |
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | -40 | — | V | I _C = -10μA, I _E = 0 | |
| Collector-Emitter Breakdown Voltage | V _{(BR)CEO} | -40 | — | V | I _C = -1.0mA, I _B = 0 | |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -5.0 | — | V | I _E = -10μA, I _C = 0 | |
| Collector Cutoff Current | I _{CEX} | — | -50 | nA | V _{CE} = -30V, V _{EB(OFF)} = -3.0V | |
| Base Cutoff Current | I _{BL} | — | -50 | nA | V _{CE} = -30V, V _{EB(OFF)} = -3.0V | |
| ON CHARACTERISTICS (Note 6) | | | | | | |
| DC Current Gain | (Note 7) | h _{FE} | 60 | — | — | I _C = -100μA, V _{CE} = -1.0V |
| | | | 80 | — | | I _C = -1.0mA, V _{CE} = -1.0V |
| | | | 100 | 300 | | I _C = -10mA, V _{CE} = -1.0V |
| | | | 60 | — | | I _C = -50mA, V _{CE} = -1.0V |
| | | | 30 | — | | I _C = -100mA, V _{CE} = -1.0V |
| Collector-Emitter Saturation Voltage | (Note 7) | V _{CE(SAT)} | — | -0.25 -0.40 | V | I _C = -10mA, I _B = -1.0mA I _C = -50mA, I _B = -5.0mA |
| Base-Emitter Saturation Voltage | (Note 7) | V _{BE(SAT)} | -0.65 | -0.85 -0.95 | V | I _C = -10mA, I _B = -1.0mA I _C = -50mA, I _B = -5.0mA |
| Base-Emitter Voltage Matching | | ΔV _{BE} | — | -1 | mV | V _{CE} = -5V, I _C = -2mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C _{obo} | — | 4.5 | pF | V _{CB} = -5.0V, f = 1.0MHz, I _E = 0 | |
| Input Capacitance | C _{ibo} | — | 10 | pF | V _{EB} = -0.5V, f = 1.0MHz, I _C = 0 | |
| Input Impedance | h _{ie} | 2.0 | 12 | kΩ | V _{CE} = 10V, I _C = 1.0mA, f = 1.0kHz | |
| Voltage Feedback Ratio | h _{re} | 0.1 | 10 | x 10 ⁻⁴ | | |
| Small Signal Current Gain | h _{fe} | 100 | 400 | — | | |
| Output Admittance | h _{oe} | 3.0 | 60 | μS | | |
| Current Gain-Bandwidth Product | f _T | 250 | — | MHz | | V _{CE} = -20V, I _C = -10mA, f = 100MHz |
| Noise Figure | NF | — | 4.0 | dB | V _{CE} = -5.0V, I _C = -100μA, R _S = 1.0kΩ, f = 1.0kHz | |
| SWITCHING CHARACTERISTICS | | | | | | |
| Delay Time | t _d | — | 35 | ns | V _{CC} = -3.0V, I _C = -10mA, | |
| Rise Time | t _r | — | 35 | ns | V _{BE(off)} = 0.5V, I _{B1} = -1.0mA | |
| Storage Time | t _s | — | 225 | ns | V _{CC} = -3.0V, I _C = -10mA, | |
| Fall Time | t _f | — | 75 | ns | I _{B1} = I _{B2} = -1.0mA | |

- Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. The DC current gain, h_{FE}, (matched at I_C = -10mA and V_{CE} = -1.0V) Collector Emitter Saturation Voltage, V_{CE(SAT)}, and Base Emitter Saturation Voltage, V_{BE(SAT)} are matched with typical matched tolerances of 1% and maximum of 2%.

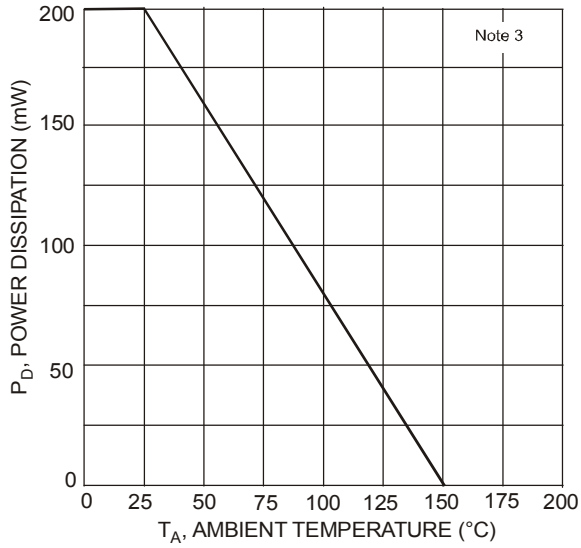


Fig. 1, Max Power Dissipation vs. Ambient Temperature

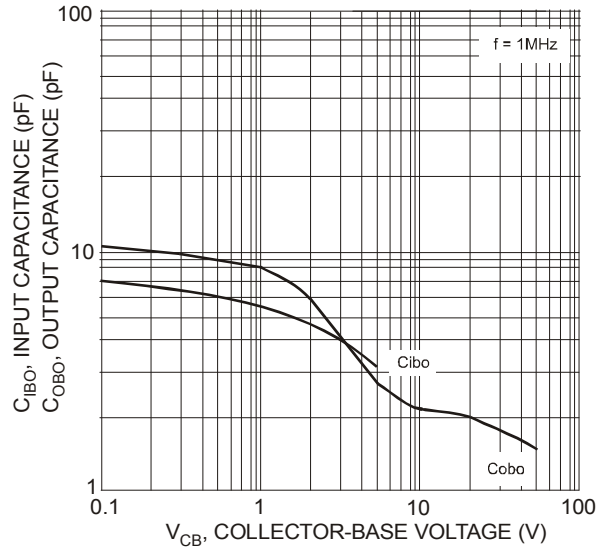


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

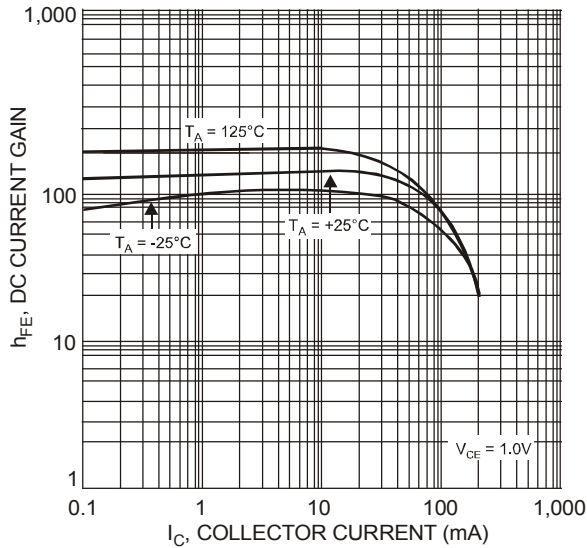


Fig. 3, Typical DC Current Gain vs. Collector Current

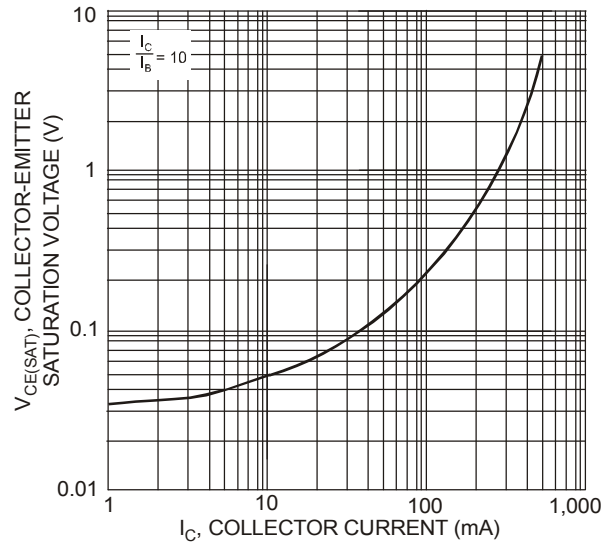


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

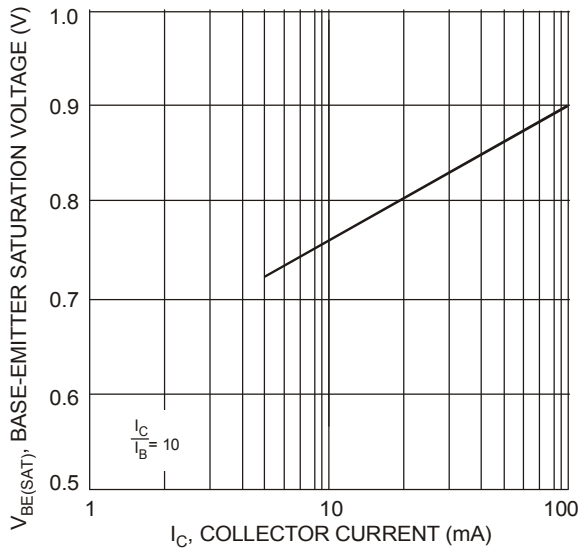


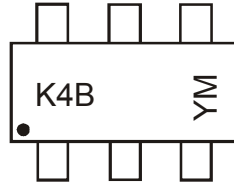
Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

Ordering Information (Note 8)

| Device | Packaging | Shipping |
|---------------|-----------|------------------|
| DMMT3906W-7-F | SOT-363 | 3000/Tape & Reel |

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K4B = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | N | P | R | S | T | U | V | W | X | Y | Z |

| 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 |

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