

25V DUAL PNP SMALL SIGNAL TRANSISTOR IN SOT363
Features

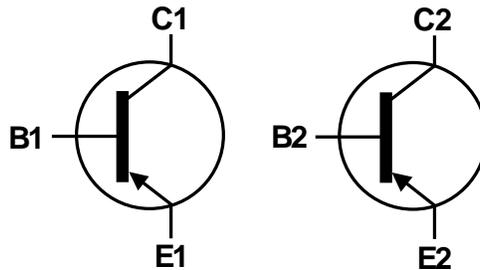
- Ultra-Small Surface Mount Package
- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

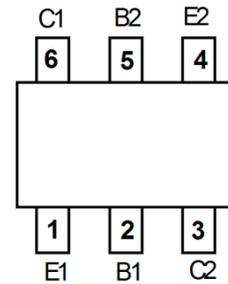
- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.006 grams (Approximate)



Top View



Device Symbol

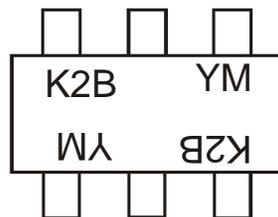


Top View Pin-Out

Ordering Information (Note 4)

| Part number | Status | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|--------------|--------|------------|---------|--------------------|-----------------|-------------------|
| MMDT4126-7-F | Active | AEC-Q101 | K2B | 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 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


K2B = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: D = 2016)
 M or \bar{M} = Month (ex: 9 = September)

Date Code Key

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | D | E | F | G | H | I | J | K | L | M | N | O |
| 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 |

Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CB0} | -25 | V |
| Collector-Emitter Voltage | V_{CEO} | -25 | V |
| Emitter-Base Voltage | V_{EBO} | -4.0 | V |
| Collector Current | I_C | -200 | mA |

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 5) | P_D | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 5) | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

ESD Ratings (Note 6)

| 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:
- For the device mounted on minimum recommended pad layout FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

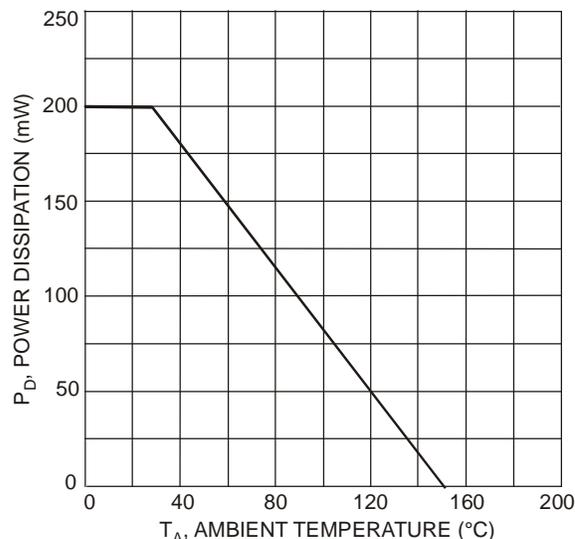
Thermal Characteristics and Derating Information


Figure 1 Power Derating Curve

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------|-----------|--------|----------|------|--|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV_{CBO} | -25 | — | — | V | $I_C = -10\mu\text{A}$, $I_B = 0$ |
| Collector-Emitter Breakdown Voltage (Note 7) | BV_{CEO} | -25 | — | — | V | $I_C = -10\text{mA}$, $I_B = 0$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -4.0 | — | — | V | $I_E = -10\mu\text{A}$, $I_C = 0$ |
| Collector Cutoff Current | I_{CBO} | — | — | -50 | nA | $V_{CB} = -20\text{V}$, $I_E = 0$ |
| Collector Cutoff Current | I_{EBO} | — | — | -50 | nA | $V_{EB} = -3\text{V}$, $I_C = 0$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| DC Current Gain | h_{FE} | 120 60 | — — | 300 — | — | $I_C = -2\text{mA}$, $V_{CE} = -1\text{V}$ $I_C = -50\text{mA}$, $V_{CE} = -1\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | — | — | -0.4 | V | $I_C = -50\text{mA}$, $I_B = -5\text{mA}$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | — | — | -0.95 | V | $I_C = -50\text{mA}$, $I_B = -5\text{mA}$ |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C_{OBO} | — | — | 4.5 | pF | $V_{CB} = -5\text{V}$, $f = 1\text{MHz}$, $I_E = 0$ |
| Input Capacitance | C_{IBO} | — | — | 10 | pF | $V_{EB} = -0.5\text{V}$, $f = 1\text{MHz}$, $I_C = 0$ |
| Small Signal Current Gain | h_{fe} | 120 | — | 480 | — | $V_{CE} = -1\text{V}$, $I_C = -2\text{mA}$, $f = 1\text{kHz}$ |
| Current Gain Bandwidth Product | f_T | 250 | — | — | MHz | $V_{CE} = -20\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$ |
| Noise Figure | NF | — | — | 4.0 | dB | $V_{CE} = -5\text{V}$, $I_C = -100\mu\text{A}$, $R_S = 1\text{k}\Omega$, $f = 1\text{kHz}$ |

Note: 7. Short duration pulse test used to minimize self-heating effect.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ unless otherwise specified.)

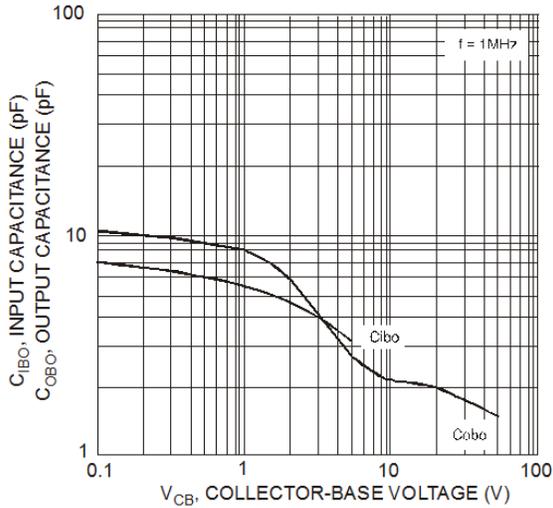


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

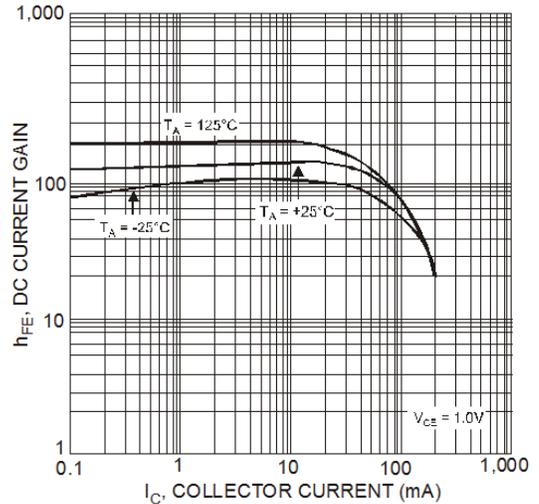


Fig. 3, Typical DC Current Gain vs. Collector Current

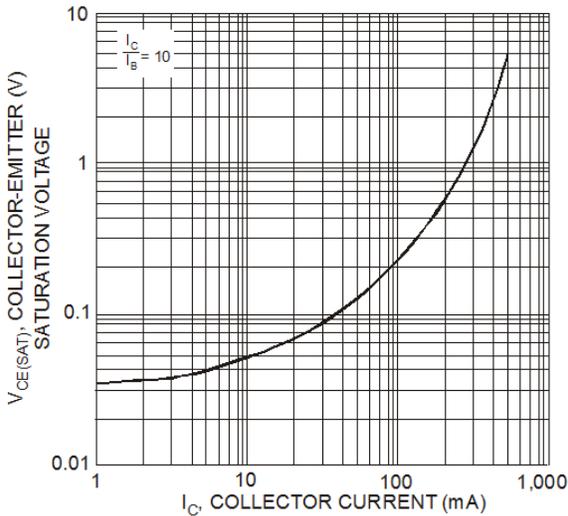


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

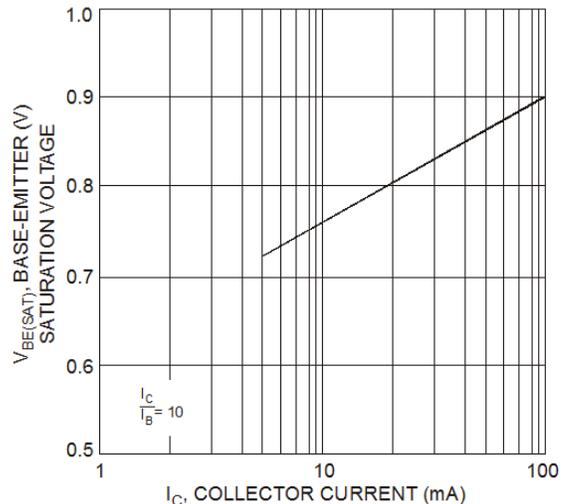
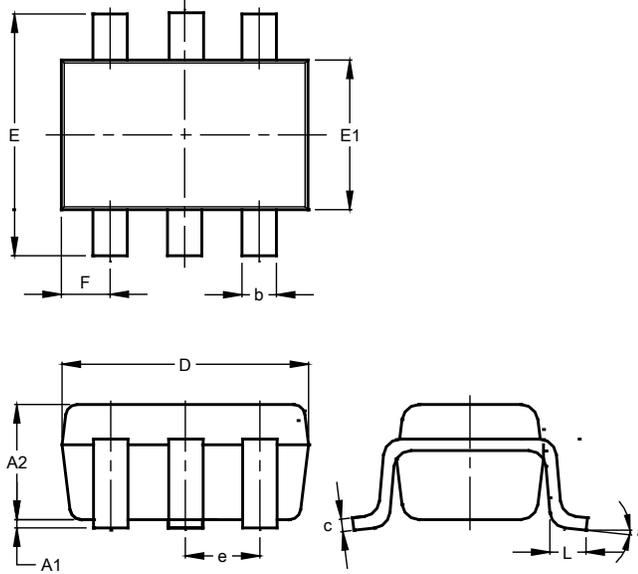


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT363

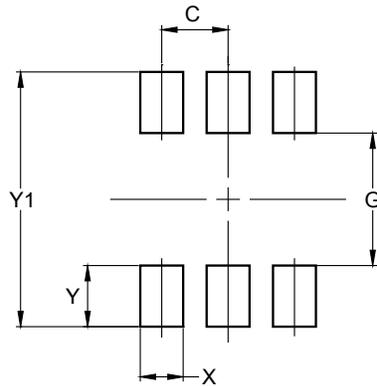


| SOT363 | | | |
|----------------------|-----------|------|-------|
| Dim | Min | Max | Typ |
| A1 | 0.00 | 0.10 | 0.05 |
| A2 | 0.90 | 1.00 | 1.00 |
| b | 0.10 | 0.30 | 0.25 |
| c | 0.10 | 0.22 | 0.11 |
| D | 1.80 | 2.20 | 2.15 |
| E | 2.00 | 2.20 | 2.10 |
| E1 | 1.15 | 1.35 | 1.30 |
| e | 0.650 BSC | | |
| F | 0.40 | 0.45 | 0.425 |
| L | 0.25 | 0.40 | 0.30 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT363



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.650 |
| G | 1.300 |
| X | 0.420 |
| Y | 0.600 |
| Y1 | 2.500 |

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