

ZXTP2041F

40V PNP SILICON PLANAR MEDIUM POWER TRANSISTOR

Features

- $V_{(BR)CEO} > -40V$
- High current capability $I_C = -1A$
- Low saturation voltage $V_{CE(sat)} < -500mV @ -1A$
- "Lead Free", RoHS Compliant (Note 1)

Application

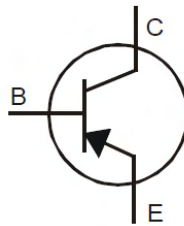
- Power MOSFET gate driving
- Low loss power switching

Mechanical Data

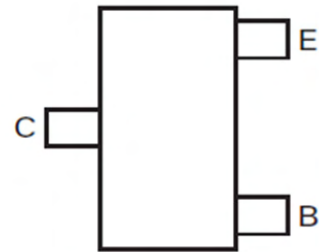
- Case: SOT23
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (Approximate)



Top View



Device symbol



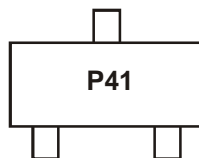
Pin-out Top

Ordering Information (Note 2)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|---------|--------------------|-----------------|-------------------|
| ZXTP2041FTA | P41 | 7 | 8 | 3,000 |

- Notes:
1. No purposefully added lead.
 2. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



P41 = Product Type Marking Code

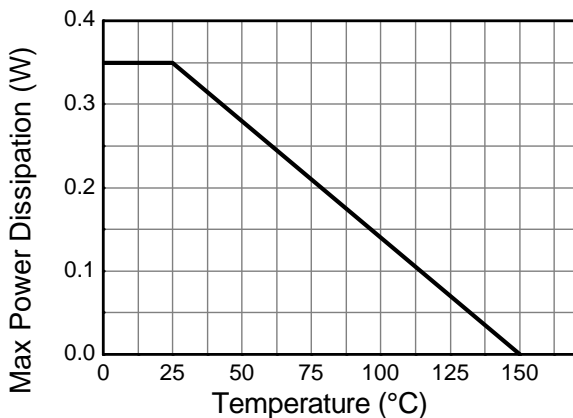
Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| 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 |
| Continuous Collector Current (Note 3) | I_C | -1 | A |
| Peak Pulse Current | I_{CM} | -2 | A |
| Peak Base Current | I_{BM} | -1 | A |

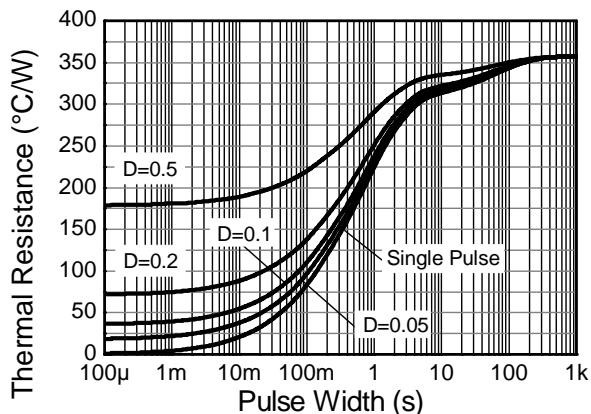
Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Collector Power Dissipation (Note 3) | P_D | 350 | mW |
| Thermal Resistance, Junction to Ambient (Note 3) | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

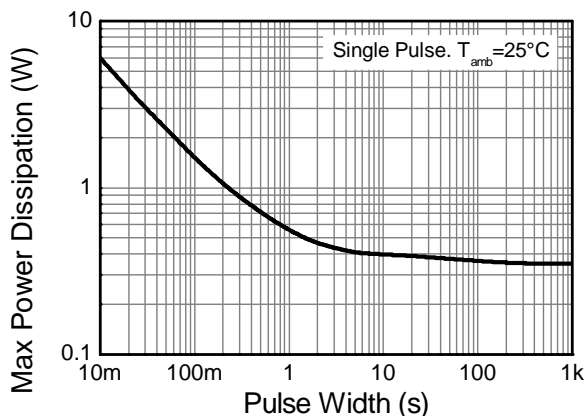
Notes: 3. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.



Derating Curve



Transient Thermal Impedance



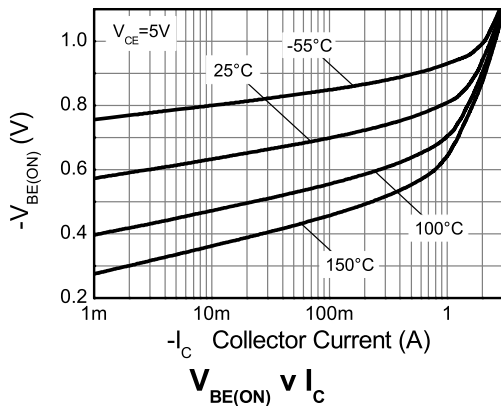
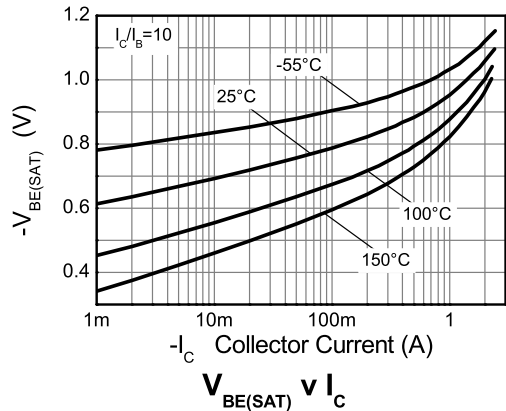
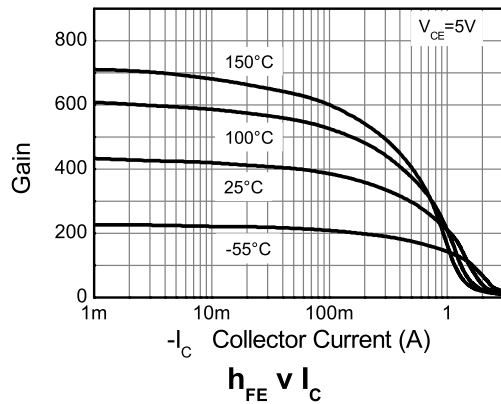
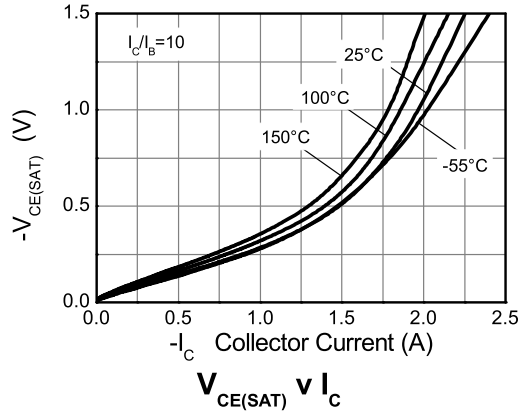
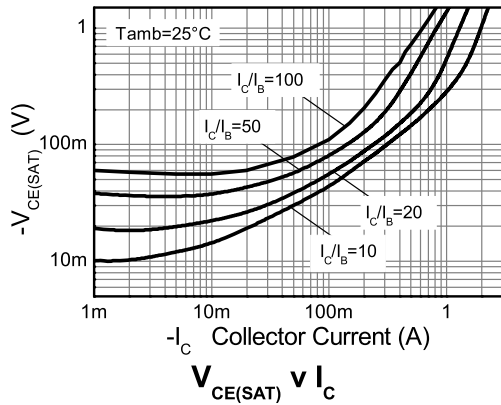
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

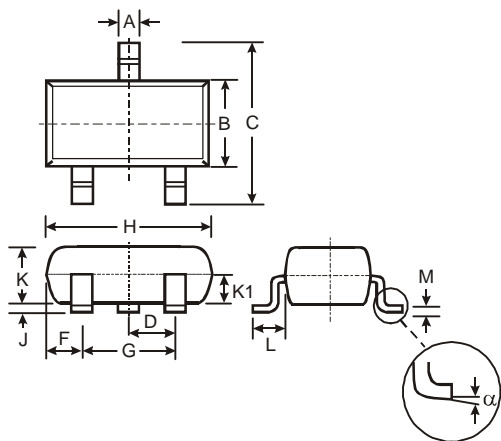
| Characteristic | Symbol | Min | Typ. | Max | Unit | Test Condition |
|---|----------------------|------------------|------|-------|------|--|
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | -40 | - | - | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 4) | V _{(BR)CEO} | -40 | - | - | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -5 | - | - | V | I _E = -100μA |
| Collector Cutoff Current | I _{CBO} | - | - | -100 | nA | V _{CB} = -30V |
| Emitter Cutoff Current | I _{EBO} | - | - | -100 | nA | V _{EB} = -4V |
| Emitter Cutoff Current | I _{CES} | - | - | -100 | nA | V _{CE} = -30V |
| DC current transfer Static ratio (Note 4) | h _{FE} | 300 | - | - | - | I _C = -1mA, V _{CE} = -5V |
| | | 300 | - | 800 | | I _C = -100mA, V _{CE} = -5V |
| | | 250 | - | - | | I _C = -500mA, V _{CE} = -5V |
| | | 160 | - | - | | I _C = -1A, V _{CE} = -5V |
| | | 30 | - | - | | I _C = -2A, V _{CE} = -5V |
| Collector-Emitter Saturation Voltage (Note 4) | V _{CE(sat)} | - | - | -0.20 | V | I _C = -100mA, I _B = -1mA |
| | | - | - | -0.35 | | I _C = -500mA, I _B = -20mA |
| | | - | - | -0.50 | | I _C = -1A, I _B = -100mA |
| Base-Emitter Saturation Voltage (Note 4) | V _{BE(sat)} | - | - | -1.1 | V | I _C = -1A, I _B = -100mA |
| Base-Emitter Turn-on Voltage (Note 4) | V _{BE(on)} | - | - | -1.0 | V | I _C = -1A, V _{CE} = -5V |
| Transitional Frequency | f _T | 150 | 300 | - | MHz | I _C = -50mA, V _{CE} = -10V, f = 100MHz |
| Output capacitance | C _{obo} | - | - | 10 | pF | V _{CB} = -10V, f = 1MHz, |
| Switching Time | Delay Time | t _(d) | - | 34.9 | ns | V _{CC} = -10V, I _C = -500mA, I _{B1} = -I _{B2} = 25mA |
| | Rise Time | t _(r) | - | 19.2 | | |
| | Storage Time | t _(s) | - | 249 | | |
| | Fall Time | t _(f) | - | 62 | | |

Notes: 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

Typical Characteristics

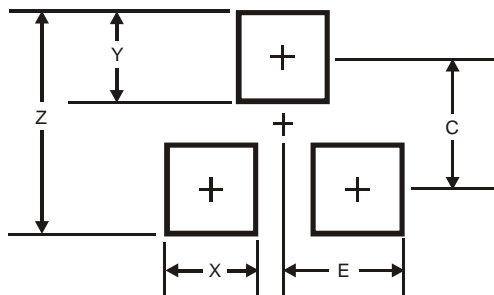


Package Outline Dimensions



| SOT23 | | | |
|----------------------|-------|------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 0.903 | 1.10 | 1.00 |
| K1 | - | - | 0.400 |
| L | 0.45 | 0.61 | 0.55 |
| M | 0.085 | 0.18 | 0.11 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

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