

ZXTN26070CV

70V NPN LOW SATURATION TRANSISTOR IN SOT-666

Features

- $BV_{ce0} = 70V$, $BV_{cbo} = 150V$
- I_c Cont. 2A
- 5A Peak Pulse Current
- Extremely Low Equivalent On Resistance; $R_{CE(sat)} = 130m\Omega$ at 1A
- **Lead, Halogen, and Antimony Free/RoHS Compliant (Note 1)**
- **“Green” Devices (Note 2)**

Applications

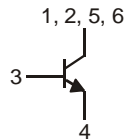
- DC-DC converter

Mechanical Data

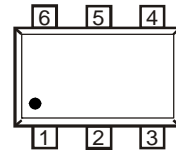
- Case: SOT-666
- Case material: Molded Plastic. “Green” Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.003 grams (Approximate)



Top View



Device Schematic



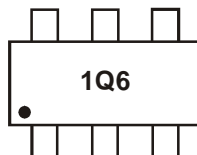
Pin Out Configuration

Ordering Information (Note 3)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|---------------|---------|--------------------|-----------------|-------------------|
| ZXTN26070CV-7 | 1Q6 | 7 | 8mm | 3000 |

- Notes:
1. No purposefully added lead. Halogen and Antimony free: <900ppm bromine, <900ppm chlorine (<1500ppm total) and <1000ppm antimony compounds.
 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/datasheets/ap02007.pdf>.

Marking Information



1Q6 = Product Type Marking Code

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

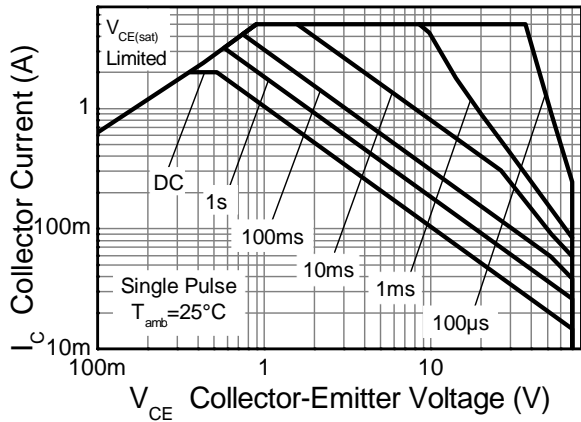
| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | 150 | V |
| Collector-Emitter Voltage | V_{CEO} | 70 | V |
| Emitter-Base Voltage | V_{EBO} | 7 | V |
| Continuous Collector Current | I_C | 2 | A |
| Peak Pulse Current | I_{CM} | 5 | A |
| Base Current | I_B | 500 | A |

Thermal Characteristics

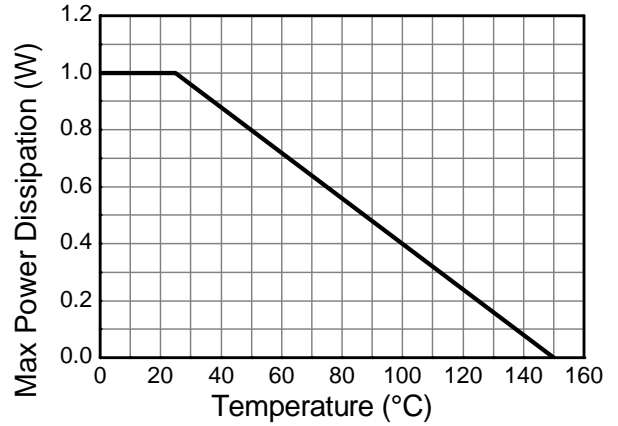
| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 4) | P_D | 0.6 | W |
| Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 5) | P_D | 1 | W |
| Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ | 208 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Ambient (Note 5) @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ | 121 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Lead (Note 6) | $R_{\theta JL}$ | 37 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

- Notes:
4. For a device surface mounted minimum recommended pad layout, in still air conditions
 5. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions.
 6. From Collector leads. Typical.

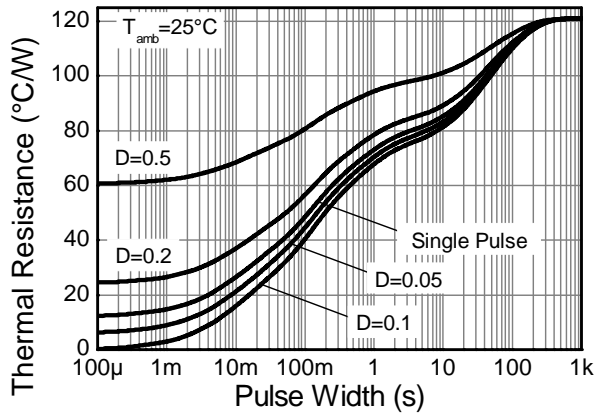
Thermal Characteristics and Derating Information



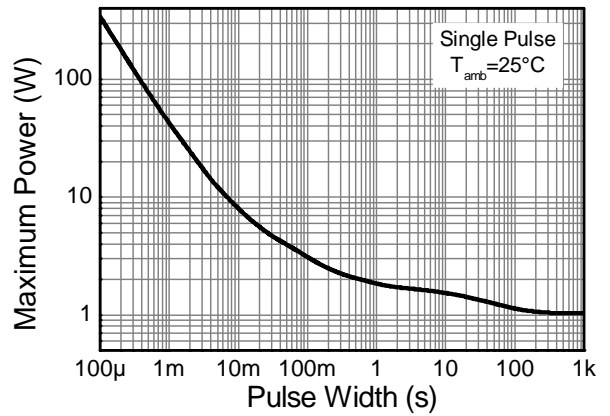
Safe Operating Area



Derating Curve



Transient Thermal Impedance



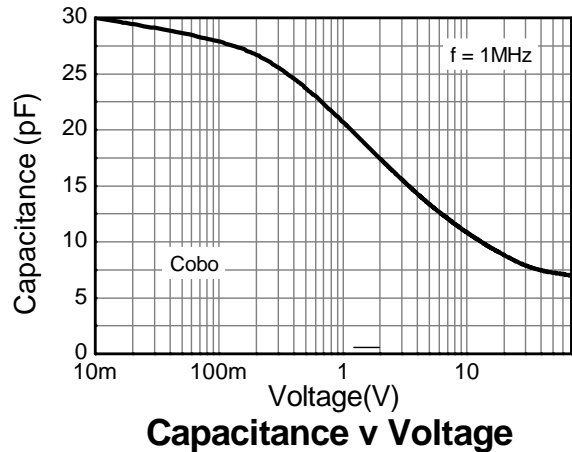
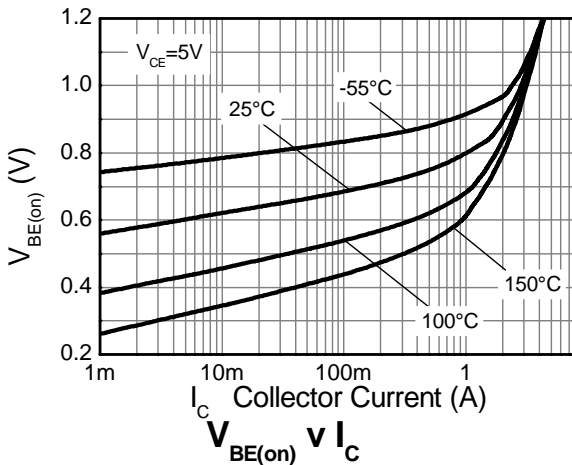
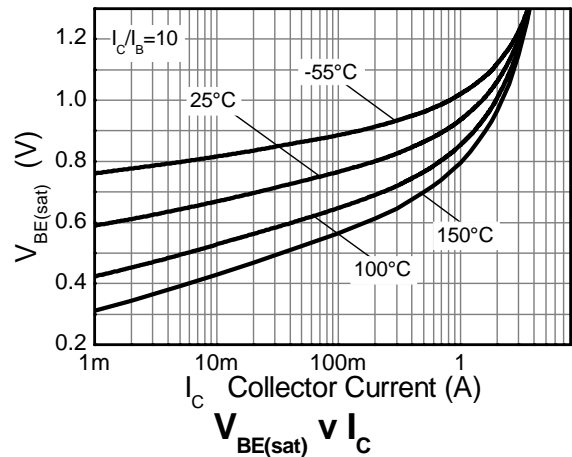
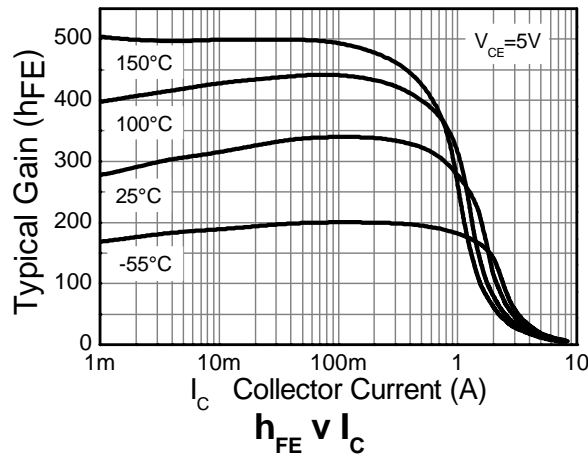
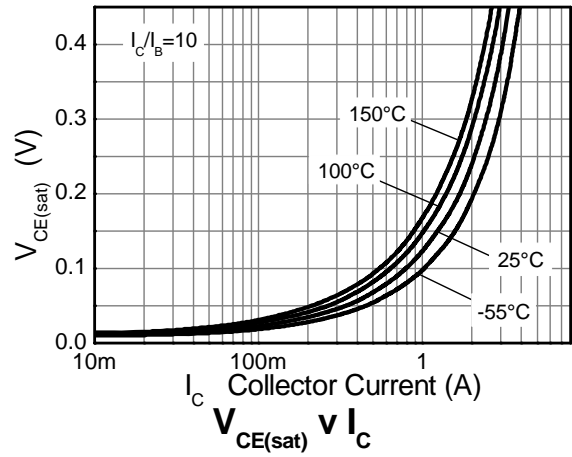
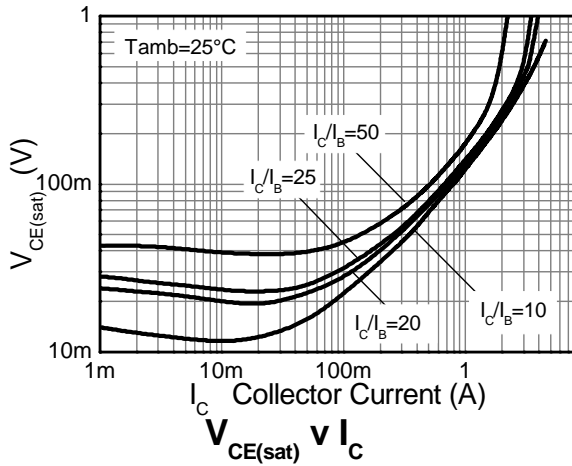
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|-------------------------------------|-----|------|-----|------|--|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | 150 | 190 | – | V | I _C = 100μA |
| Collector-Emitter Breakdown Voltage (Note 7) | V _{(BR)CEO} | 70 | 80 | – | V | I _C = 10mA |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | 7 | 8.3 | – | V | I _E = 100μA |
| Collector Cutoff Current | I _{CBO} , I _{CES} | – | – | 100 | nA | V _{CB} = 60V, V _{CES} = 60V |
| Emitter Cutoff Current | I _{EBO} | – | – | 100 | nA | V _{EB} = 5.6V |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| DC Current Gain | h _{FE} | 190 | 320 | – | – | I _C = 10mA, V _{CE} = 5V |
| | | 200 | 340 | – | | |
| | | 75 | 110 | – | | |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | – | 22 | 30 | V | I _C = 0.1A, I _B = 10mA |
| | | – | 110 | 150 | | I _C = 0.5A, I _B = 10mA |
| | | – | 147 | 200 | | I _C = 1A, I _B = 50mA |
| | | – | 135 | 165 | | I _C = 1A, I _B = 100mA |
| | | – | 265 | 330 | | I _C = 2A, I _B = 200mA |
| Base-Emitter Turn-On Voltage | V _{BE(ON)} | – | 0.85 | 1.0 | V | I _C = 1A, V _{CE} = 2V |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | – | 0.90 | 1.1 | V | I _C = 1A, I _B = 50mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C _{obo} | – | 10 | – | pF | V _{CB} = 10V, f = 1MHz |
| Current Gain-Bandwidth Product | f _T | – | 200 | – | MHz | V _{CE} = 10V, I _C = 50mA, f = 100MHz |
| SWITCHING CHARACTERISTICS | | | | | | |
| Turn-On Time | t _{on} | – | 46 | – | ns | V _{CE} = 10V, I _C = 0.5A |
| Turn-Off Time | t _{off} | – | 722 | – | ns | I _{B1} = -I _{B2} = 25mA |

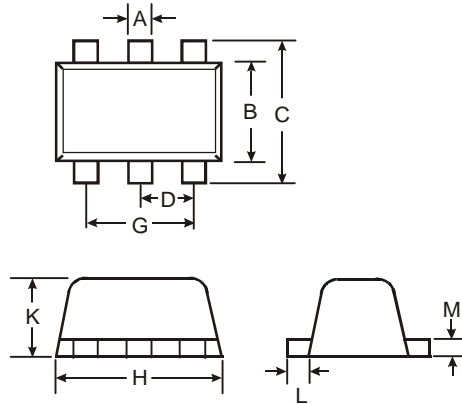
Notes: 7. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%

Typical Characteristics



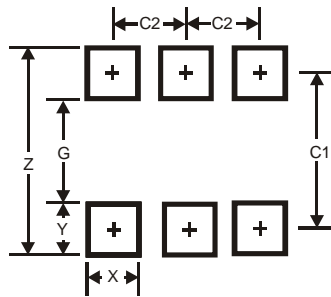
ZXTN26070CV

Package Outline Dimensions



| SOT-666 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.20 |
| B | 1.10 | 1.25 | 1.20 |
| C | 1.55 | 1.70 | 1.60 |
| D | - | - | 0.50 |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| K | 0.55 | 0.60 | 0.60 |
| L | 0.10 | 0.30 | 0.20 |
| M | 0.10 | 0.18 | 0.15 |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.2 |
| G | 1.2 |
| X | 0.375 |
| Y | 0.5 |
| C1 | 1.7 |
| C2 | 0.5 |

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