

**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)**

**Mechanical Data**

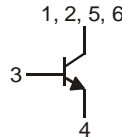
- Case: SOT-666
- Case material: Molded Plastic. “Green” Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.003 grams (Approximate)

**Applications**

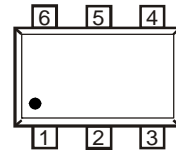
- DC-DC converter



Top View



Device Schematic



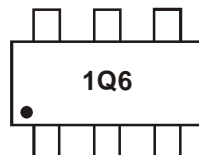
Pin Out Configuration

**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

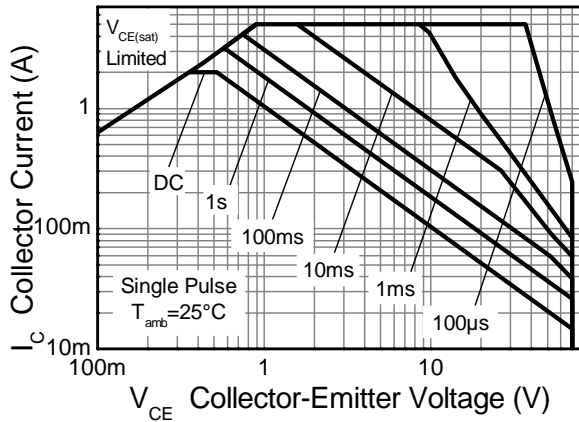
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	150	V
Collector-Emitter Voltage	$V_{CEO}$	70	V
Emitter-Base Voltage	$V_{EBO}$	7	V
Continuous Collector Current	$I_C$	2	A
Peak Pulse Current	$I_{CM}$	5	A
Base Current	$I_B$	500	A

**Thermal Characteristics**

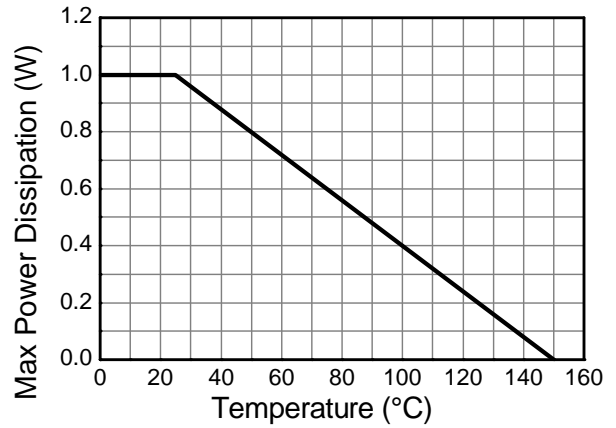
Characteristic	Symbol	Value	Unit
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 4)	$P_D$	0.6	W
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 5)	$P_D$	1	W
Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	208	$^\circ\text{C/W}$
Thermal Resistance, Junction 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.

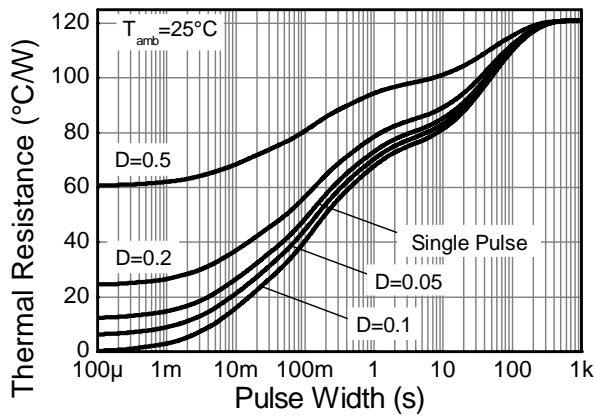
**Thermal Characteristics and Derating Information**



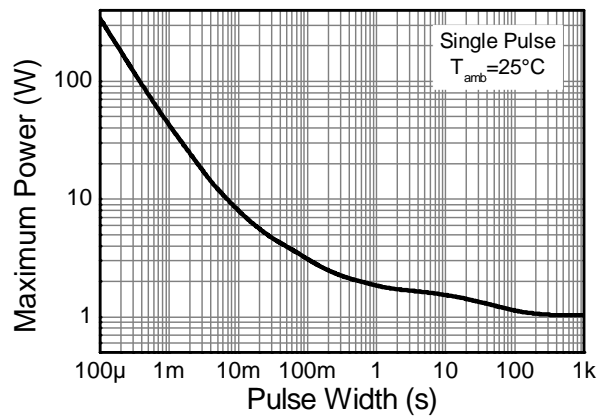
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



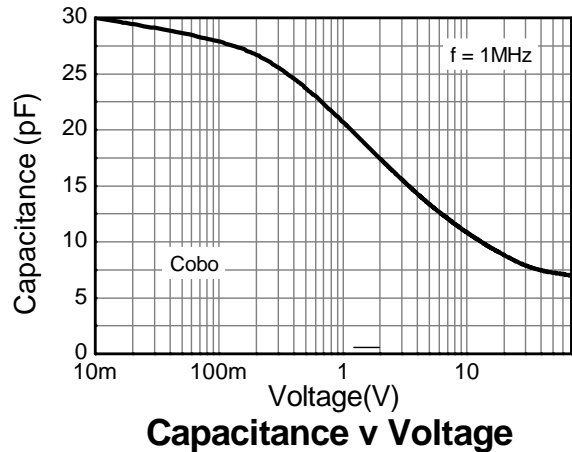
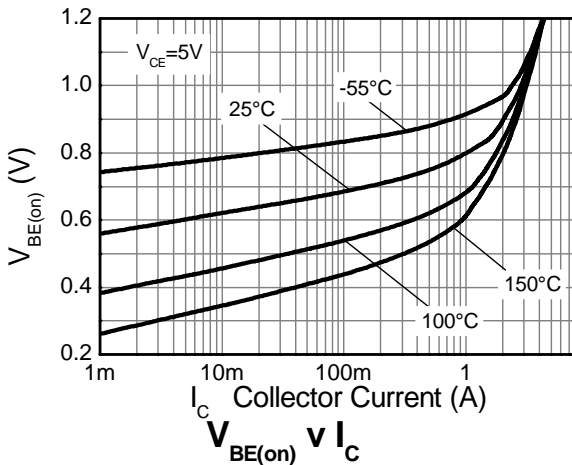
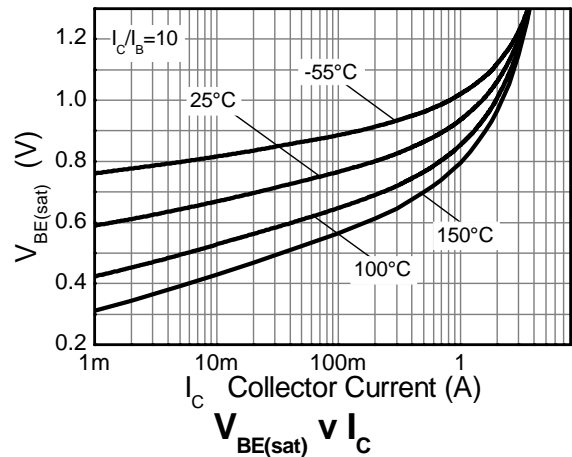
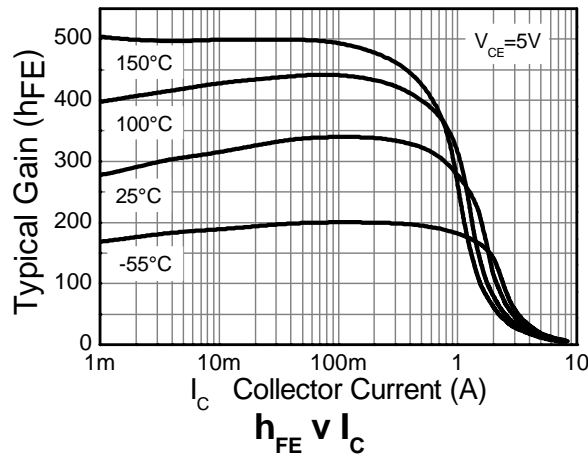
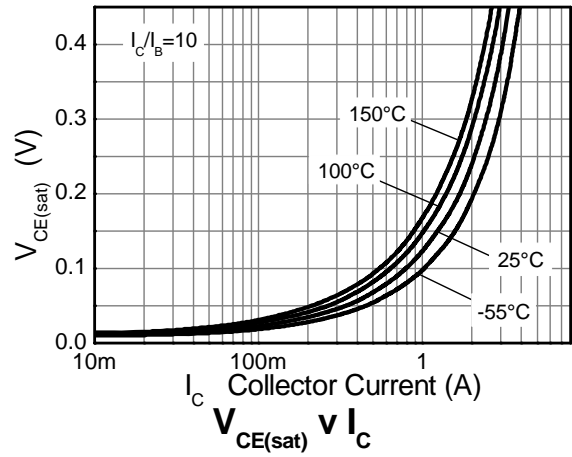
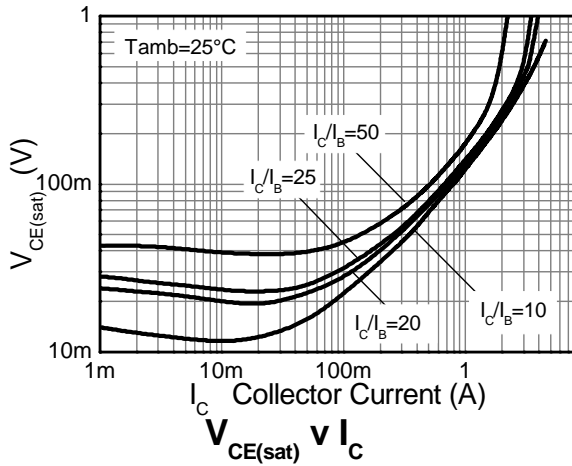
**Pulse Power Dissipation**

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

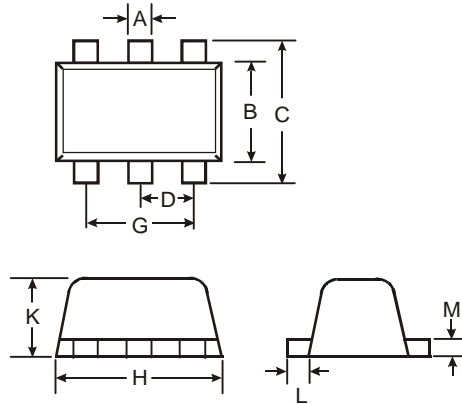
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	190	–	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 7)	$V_{(BR)CEO}$	70	80	–	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7	8.3	–	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	$I_{CBO}, I_{CES}$	–	–	100	nA	$V_{CB} = 60\text{V}, V_{CES} = 60\text{V}$
Emitter Cutoff Current	$I_{EBO}$	–	–	100	nA	$V_{EB} = 5.6\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
DC Current Gain	$h_{FE}$	190 200 75	320 340 110	– – –	–	$I_C = 10\text{mA}, V_{CE} = 5\text{V}$ $I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $I_C = 2\text{A}, V_{CE} = 5\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	– – – –	22 110 147 135 265	30 150 200 165 330	V	$I_C = 0.1\text{A}, I_B = 10\text{mA}$ $I_C = 0.5\text{A}, I_B = 10\text{mA}$ $I_C = 1\text{A}, I_B = 50\text{mA}$ $I_C = 1\text{A}, I_B = 100\text{mA}$ $I_C = 2\text{A}, I_B = 200\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	–	0.85	1.0	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	–	0.90	1.1	V	$I_C = 1\text{A}, I_B = 50\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	$C_{obo}$	–	10	–	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	–	200	–	MHz	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Time	$t_{on}$	–	46	–	ns	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$
Turn-Off Time	$t_{off}$	–	722	–	ns	$I_{B1} = -I_{B2} = 25\text{mA}$

Notes: 7. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

**Typical Characteristics**

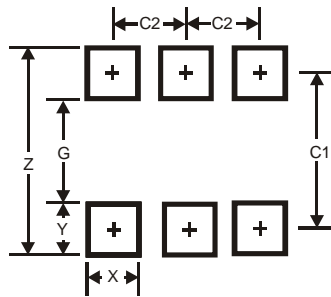


**Package Outline Dimensions**



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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