

ZXTD2090DE6

50V DUAL NPN LOW SATURATION SWITCHING TRANSISTOR IN SOT26

Features

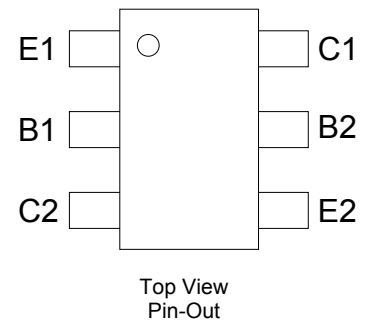
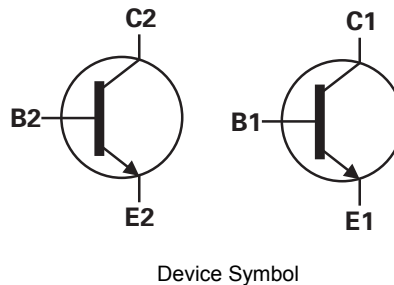
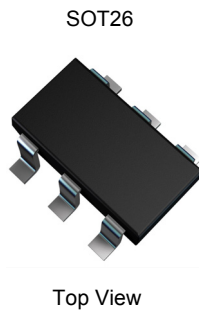
- $BV_{CEO} > 50V$
- $I_C = 1A$ High Continuous Current
- High Gain
- $R_{SAT} = 160m\Omega$ for Low Equivalent On Resistance
- Low Saturation Voltage $V_{CE(SAT)} < -270mV @ 1A$
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT26
- 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 Plated Leads, Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.015 grams (approximate)

Applications

- LCD Backlighting Inverter Circuits
- Boost Functions in DC-DC Converters

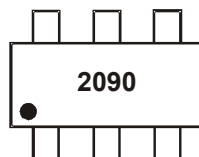


Ordering Information (Notes 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTD2090DE6TA	2090	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



2090 = Product Type Marking Code

Maximum Ratings – Q1 & Q2 Common (@T_A = +25°C, unless otherwise specified.)

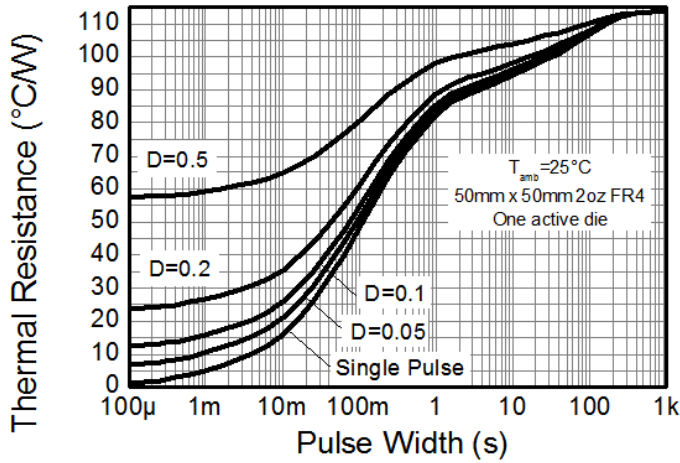
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current	I _{CM}	2	A
Base current	I _B	200	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

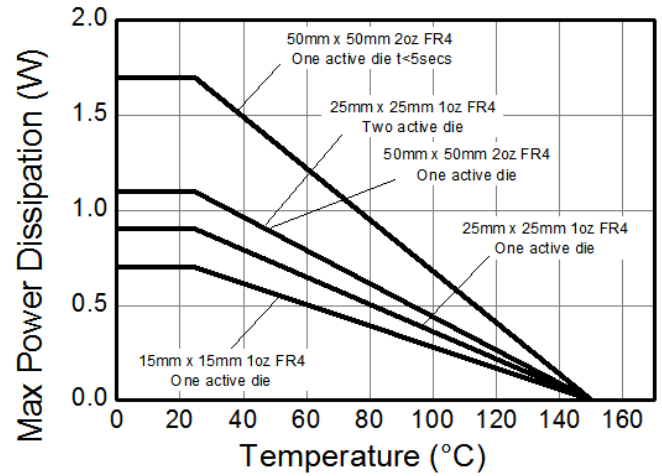
Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P _D	0.7	W mW/°C
		5.6	
		0.9	
		7.2	
		1.1	
		8.8	
Thermal Resistance, Junction to Ambient	R _{θJA}	179	°C/W
		139	
		113	
		113	
		73	
Thermal Resistance, Junction to Lead	R _{θJL}	95.50	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
5. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 6. Same as note (6), except the device is surface mounted on 25mm x 25mm 1oz copper.
 7. Same as note (6), except the device is surface mounted on 50mm x 50mm 2oz copper.
 8. Same as note (8), except the device is measured at t < 5 seconds.
 9. For device with one active die, both collectors attached to a common heatsink.
 10. For device with two active dice running at equal power, split heatsink 50% to each collector.
 11. Thermal resistance from junction to solder-point (at the end of the collector lead).

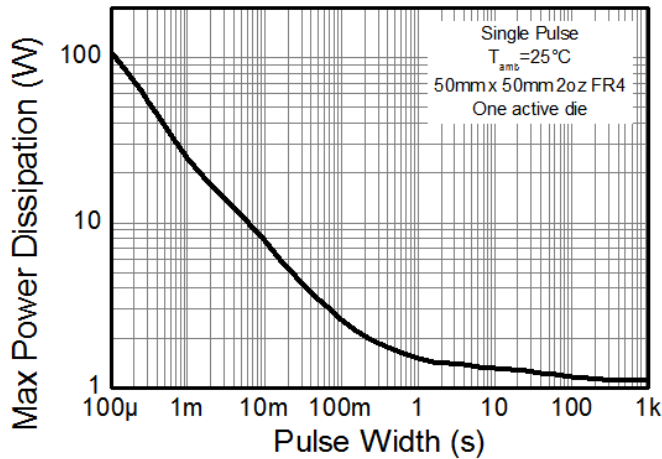
Thermal Characteristics and Derating Information



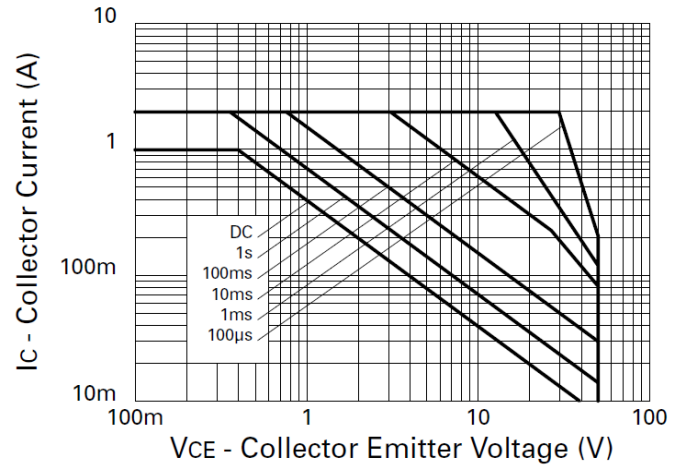
Transient Thermal Impedance



Derating Curve



Pulse Power Dissipation



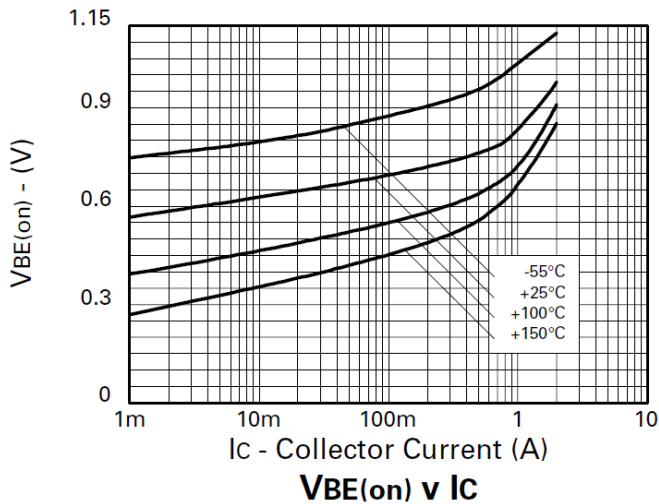
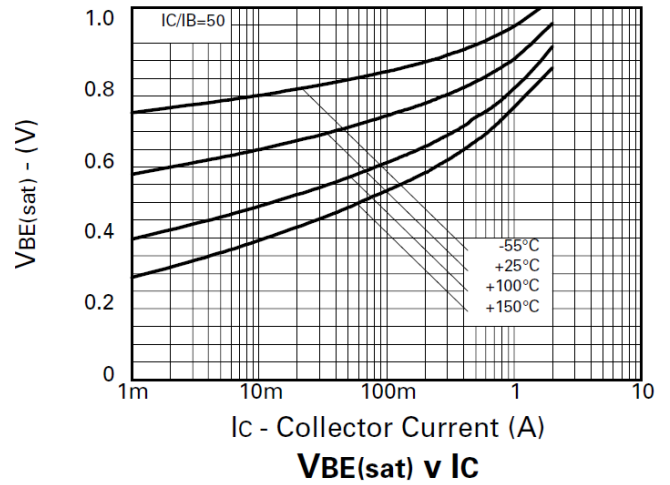
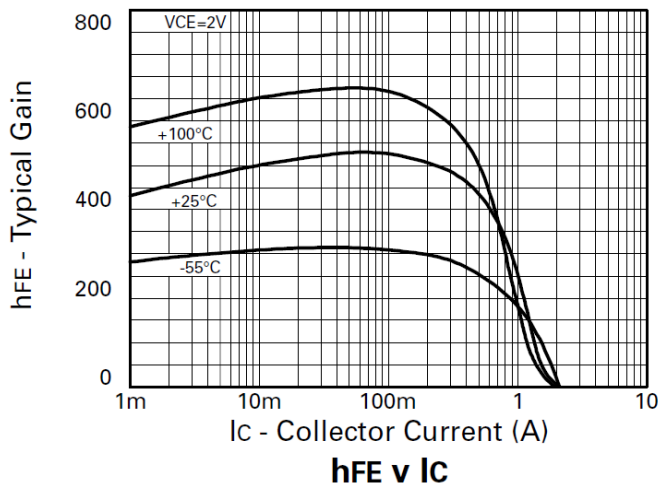
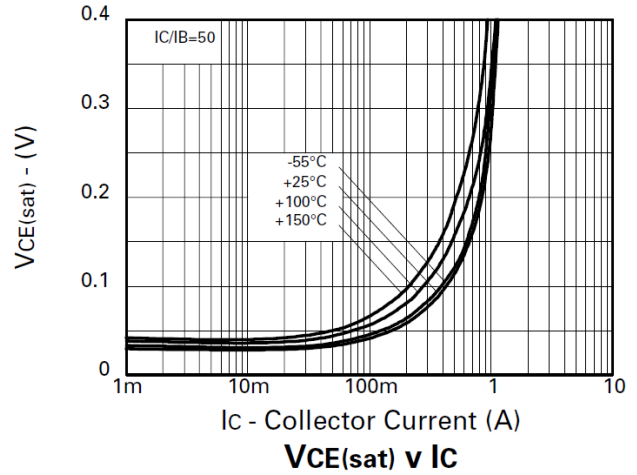
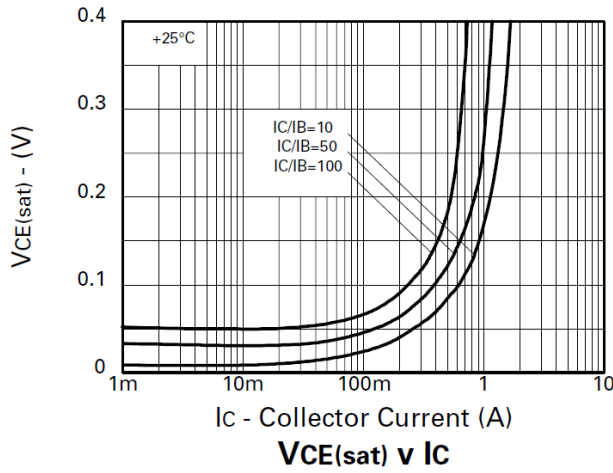
Safe Operating Area

Electrical Characteristics - Q1 & Q2 common (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	50			V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 12)	BV _{CEO}	50			V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7			V	I _E = 100μA
Collector-Base Cutoff Current	I _{CBO}			10	nA	V _{CB} = 40V
Collector-Emitter Cutoff Current	I _{CES}			10	nA	V _{CES} = 40V
Emitter Cutoff Current	I _{EBO}			10	nA	V _{EB} = 5.6V
DC Current Gain (Note 12)	h _{FE}	200 300 200 75 20	420 450 350 130 60			I _C = 10mA, V _{CE} = 2V I _C = 100mA, V _{CE} = 2V I _C = 500mA, V _{CE} = 2V I _C = 1A, V _{CE} = 2V I _C = 1.5A, V _{CE} = 2V
Collector-Emitter Saturation Voltage (Note 12)	V _{CE(sat)}		24 60 120 160	35 80 200 270	mV	I _C = 100mA, I _B = 10mA I _C = 250mA, I _B = 10mA I _C = 500mA, I _B = 10mA I _C = 1A, I _B = 50mA
Base-Emitter Saturation Voltage (Note 12)	V _{BE(sat)}		940	1100	mV	I _C = 1A, I _B = 50mA
Base-Emitter Turn-On Voltage (Note 12)	V _{BE(on)}		850	1100	mV	I _C = 1A, V _{CE} = 2V
Output Capacitance	C _{obo}		10		pF	V _{CB} = 10V, f = 1MHz
Current Gain-Bandwidth Product	f _T		215		MHz	V _{CE} = 10V, I _C = 50mA f = 100MHz
Turn-On Time	t _{on}		150		ns	V _{CC} = 10V, I _C = 1A
Turn-Off Time	t _{off}		425		ns	I _{B1} = I _{B2} = 100mA

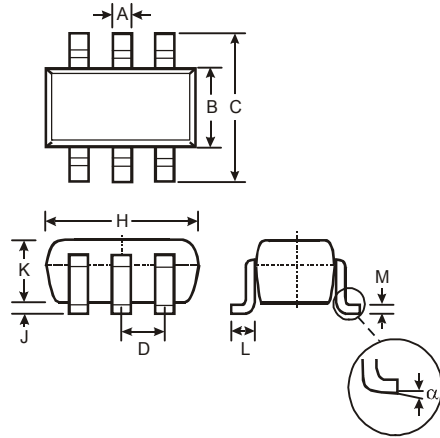
Note: 12. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%

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



Package Outline Dimensions

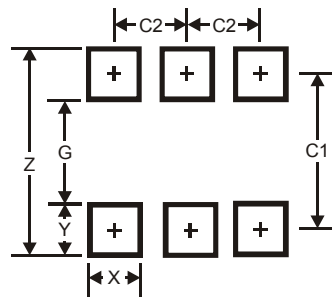
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT26			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

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