



A Product Line of Diodes Incorporated

ZXTD2090E6

50V DUAL NPN LOW SATURATION SWITCHING TRANSISTOR IN SOT26

Features

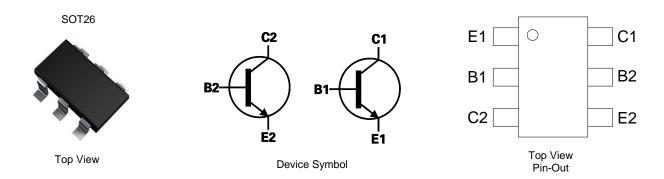
- BV_{CEO} > 50V
- I_C = 1A High Continuous Current
- High Gain Hold-Up hFE > 200 @ $I_C = 0.5A$
- $R_{SAT} = 160m\Omega$ for Low Equivalent On Resistance
- Low Saturation Voltage V_{CE(SAT)} < -270mV @ 1A
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (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	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTD2090E6TA	AEC-Q101	2090	7	8	3,000

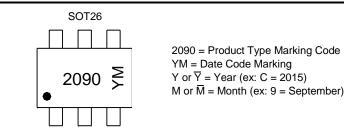
Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

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



Date Code	Key													
Year	201	5	201	6	2017	2018	2019	2020	202	1 20	22	2023	2024	2025
Code	С		D		E	F	G	Н			J	К	L	М
Month	1 I	Jai	n	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	•	1		2	3	4	5	6	7	8	9	0	N	D





Absolute Maximum Ratings – Q1 & Q2 Common (@TA = +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	А
Peak Pulse Current	I _{CM}	2	А
Base Current	IB	200	mA

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

Characteristic		Symbol	Value	Unit
	(Notes 5 & 9)		0.7 5.6	
	(Notes 6 & 9)		0.9 7.2	
Power Dissipation Linear Derating Factor	(Notes 6 & 10)	PD	1.1 8.8	W mW/°C
	(Notes 7 & 9)		1.1 8.8	
	(Notes 8 & 9)		1.7 13.6	
	(Notes 5 & 9)		179	
	(Notes 6 & 9)	R _{0JA}	139	
Thermal Resistance, Junction to Ambient	(Notes 6 & 10)		113	0044
	(Notes 7 & 9)		113	°C/W
	(Notes 8 & 9)		73	
Thermal Resistance, Junction to Lead	(Note 11)	$R_{ ext{ heta}JL}$	95.50	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 12)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	ЗA
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

Notes:

5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state.

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.

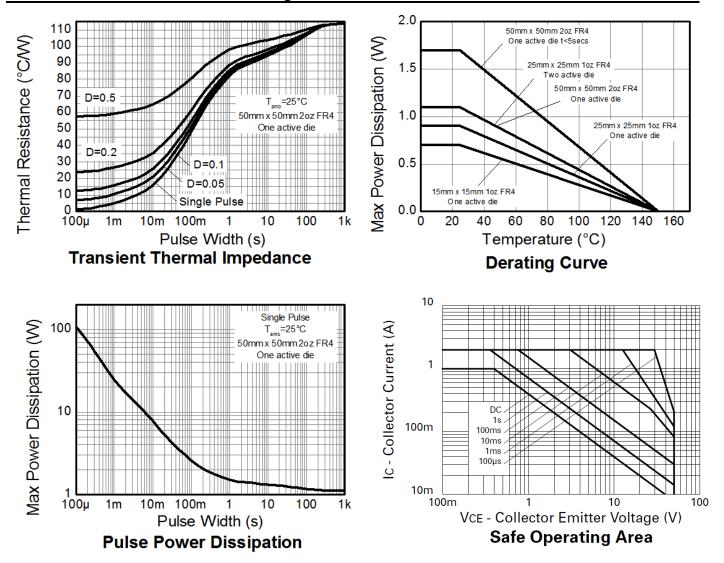
9. One active die operating with the collector attached to the heatsink.

Two active dice running at equal power with heatsink split 50% to each collector.
Thermal resistance from junction to solder-point (at the end of the collector lead).
Refer to JEDEC specification JESD22-A114 and JESD22-A115.





Thermal Characteristics and Derating Information



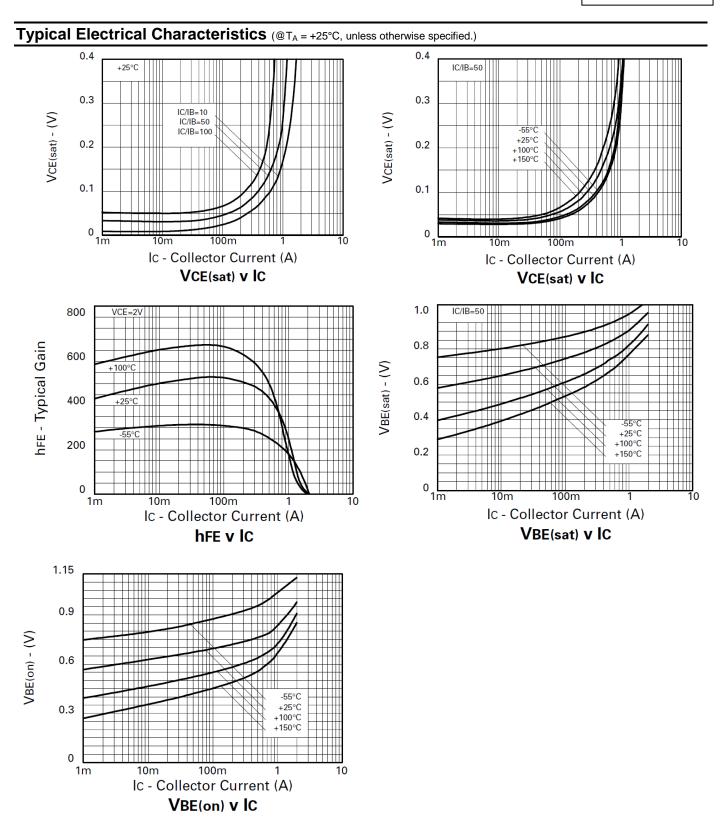




Electrical Characteristics - Q1 & Q2 common (@T _A = +25°C, unless otherwise specified.)							
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
Collector-Base Breakdown Voltage	BV _{CBO}	50	_	_	V	I _C = 100µA	
Collector-Emitter Breakdown Voltage (Note 13)	BVCEO	50	_	_	V	$I_{\rm C} = 10 {\rm mA}$	
Emitter-Base Breakdown Voltage	BVEBO	7	_	_	V	I _E = 100μA	
Collector-Base Cut-Off Current	I _{CBO}	—		10	nA	$V_{CB} = 40V$	
Collector-Emitter Cut-Off Current	I _{CES}	—		10	nA	$V_{CES} = 40V$	
Emitter Cut-Off Current	I _{EBO}	_	_	10	nA	V _{EB} = 5.6V	
DC Current Gain (Note 13)	hfe	200 300 200 75 20	420 450 350 130 60	_	_	$\begin{split} I_{C} &= 10 \text{mA}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 100 \text{mA}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 500 \text{mA}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 1A, \ V_{CE} = 2 \text{V} \\ I_{C} &= 1.5 \text{A}, \ V_{CE} = 2 \text{V} \end{split}$	
Collector-Emitter Saturation Voltage (Note 13)	V _{CE(sat)}	_	24 60 120 160	35 80 200 270	mV	$\begin{split} I_{C} &= 100 \text{mA}, \ I_{B} = 10 \text{mA} \\ I_{C} &= 250 \text{mA}, \ I_{B} = 10 \text{mA} \\ I_{C} &= 500 \text{mA}, \ I_{B} = 10 \text{mA} \\ I_{C} &= 1A, \ I_{B} = 50 \text{mA} \end{split}$	
Base-Emitter Saturation Voltage (Note 13)	V _{BE(sat)}	_	940	1100	mV	$I_{\rm C} = 1$ A, $I_{\rm B} = 50$ mA	
Base-Emitter Turn-On Voltage (Note 13)	V _{BE(on)}	_	850	1100	mV	$I_{C} = 1A, V_{CE} = 2V$	
Output Capacitance	Cobo	_	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	$I_{B1} = I_{B2} = 100 \text{mA}$	

Note: 13. Measured under pulsed conditions. Pulse width ≤ 300 $\mu s.$ Duty cycle ≤ 2%.

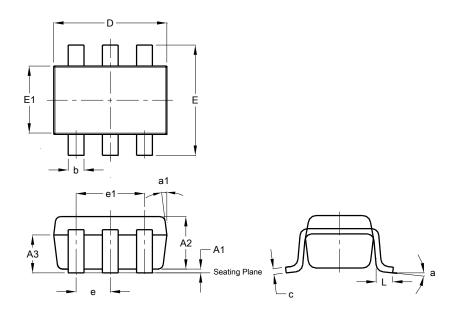






Package Outline Dimensions

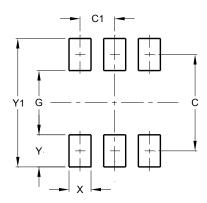
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT26							
Dim	Min	Max	Тур				
A1	0.013	0.10	0.05				
A2	1.00	1.30	1.10				
A3	0.70	0.80	0.75				
b	0.35	0.50	0.38				
c	0.10	0.20	0.15				
D	2.90	3.10	3.00				
е	-	-	0.95				
e1	-	-	1.90				
Е	2.70	3.00	2.80				
E1	1.50	1.70	1.60				
L	0.35	0.55	0.40				
а	-	-	8°				
a1	-	-	7°				
All	Dimen	sions i	in mm				

Suggested Pad Layout

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



Dimensions	Value (in mm)
С	2.40
C1	0.95
G	1.60
Х	0.55
Y	0.80
Y1	3.20



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