

Features

- $BV_{CEO} > -40V$
- $I_C = -3A$ High Continuous Collector Current
- $I_{CM} = -6A$ Peak Pulse Current
- High Gain Device $>200 @ -1A$
- $R_{CE(SAT)} = 83m\Omega$ Typical
- Low Saturation Voltage
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

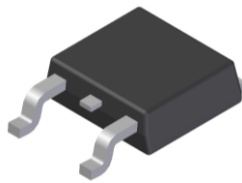
Mechanical Data

- Case: TO252 (DPAK)
- 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; Solderable per MIL-STD-202, Method 208
- Weight: 0.34 grams (Approximate)

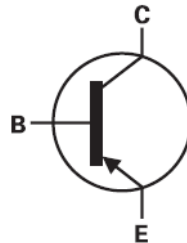
Application

- DC-DC Converters
- MOSFET Gate Drivers
- Charging Circuits
- Power Switches
- Siren Drivers

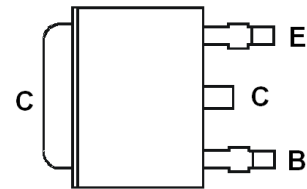
TO252 (DPAK)



Top View



Device Schematic



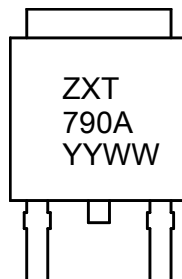
Pin Out Configuration
Top view

Ordering Information (Note 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXT790AKTC	ZXT790A	13	16	2,500

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 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



ZXT790A = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 16 = 2016)
 WW = Week Code (01 to 53)

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	BV _{CBO}	-50	V
Collector-Emitter Voltage	BV _{CEO}	-40	V
Emitter-Base Voltage	BV _{EBO}	-7	V
Continuous Collector Current	I _C	-3	A
Base Current	I _B	-0.5	A
Peak Pulse Collector Current	I _{CM}	-6	A

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

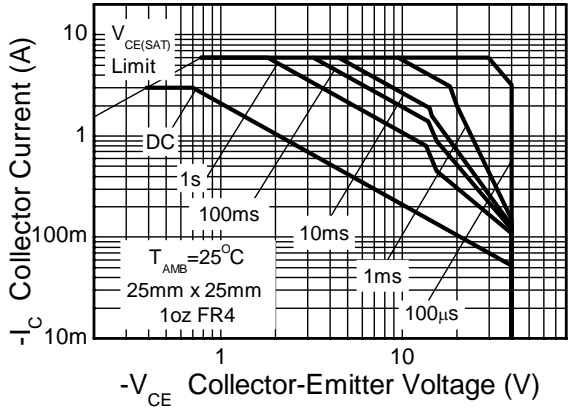
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5)	2.1
		(Note 6)	3.0
		(Note 7)	3.9
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 5)	59
		(Note 6)	41
		(Note 7)	32
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

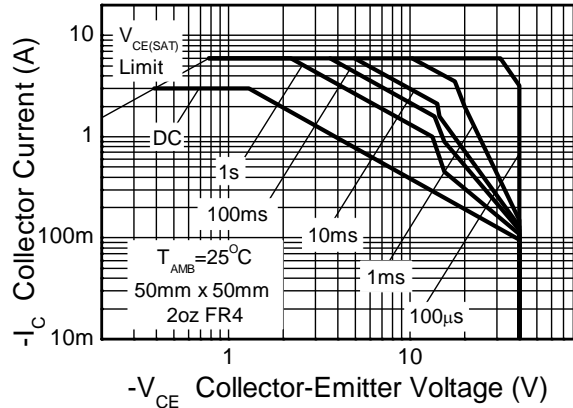
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3B
Electrostatic Discharge – Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the exposed collector pad on 25mm x 25mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except mounted on 50mm x 50mm 1oz copper.
 7. Same as note (5), except mounted on 50mm x 50mm 2oz copper.
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

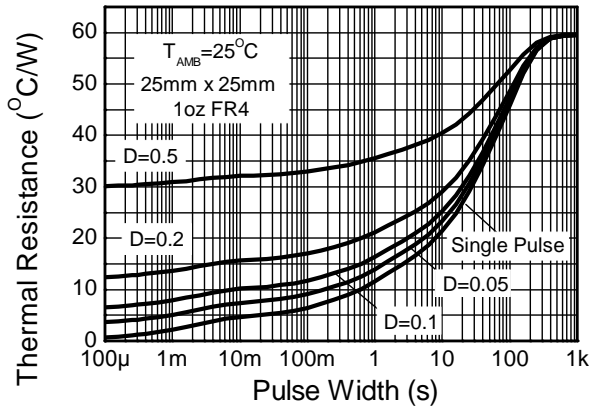
Thermal Characteristics and Derating Information



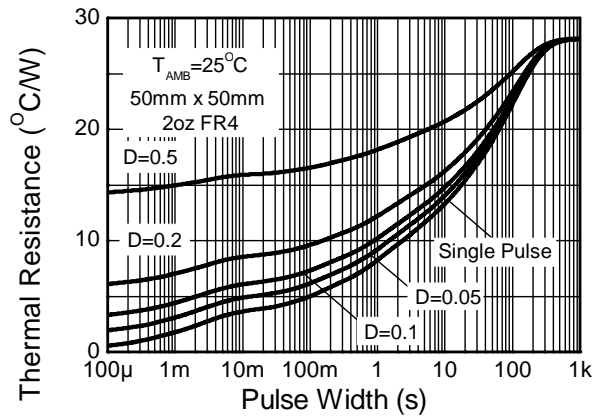
Safe Operating Area



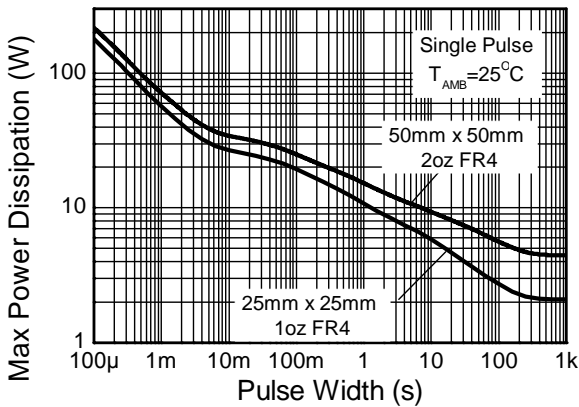
Safe Operating Area



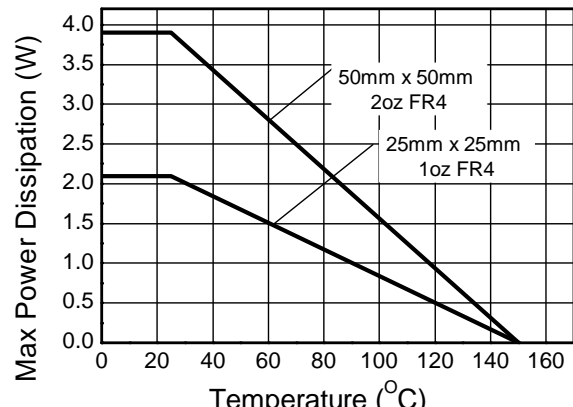
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



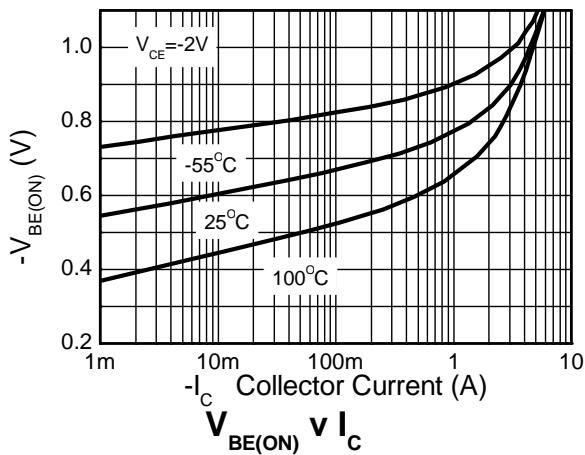
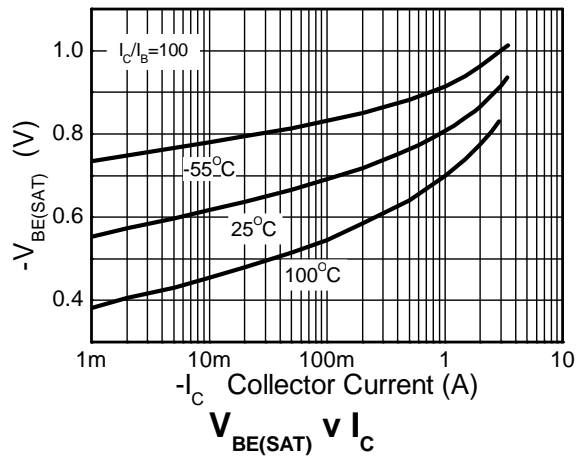
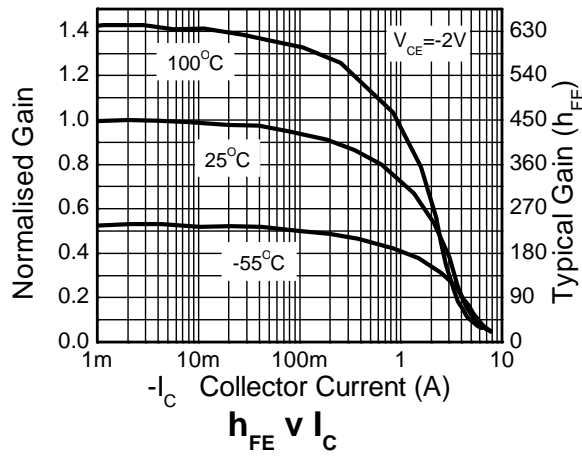
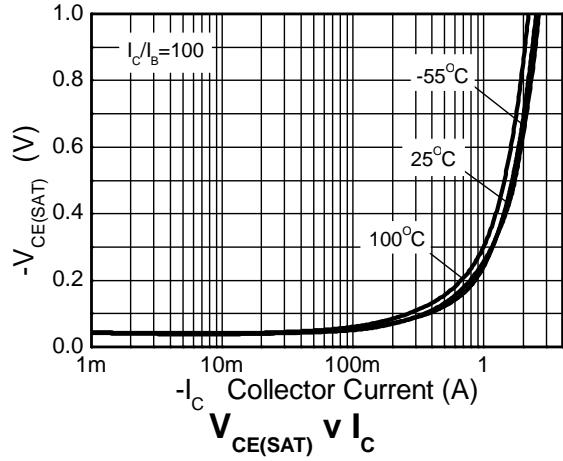
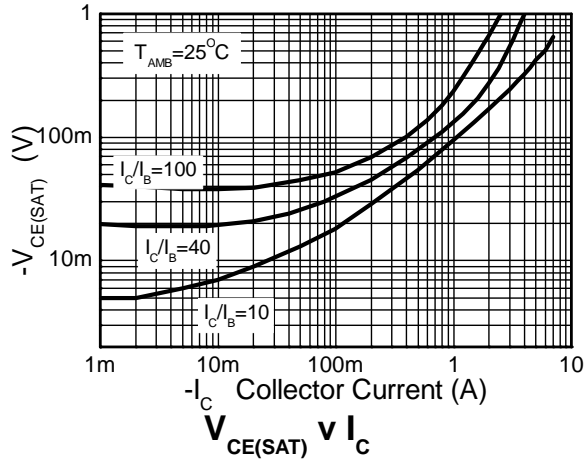
Derating Curve

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

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-50	-70	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-40	-60	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	-8.3	—	V	I _E = -100μA
Collector Cutoff Current	I _{CBO}	—	<1	-20	nA	V _{CB} = -30V
Emitter Cutoff Current	I _{EBO}	—	<1	-20	nA	V _{EB} = -6V
Emitter Cutoff Current	I _{CES}	—	<1	-20	nA	V _{CB} = -30V
DC Current Transfer Static Ratio (Note 9)	h _{FE}	300 250 200 150 80	450 390 350 280 170	800 — — — —	—	I _C = -10mA, V _{CE} = -2V I _C = -500mA, V _{CE} = -2V I _C = -1A, V _{CE} = -2V I _C = -2A, V _{CE} = -2V I _C = -3A, V _{CE} = -2V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(SAT)}	—	-110 -220 -260 -250	-170 -350 -450 -450	mV	I _C = -0.5A, I _B = -5mA I _C = -1A, I _B = -10mA I _C = -2A, I _B = -50mA I _C = -3A, I _B = -300mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(SAT)}	—	-1.05	-1.15	V	I _C = -3A, I _B = -300mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(ON)}	—	-0.90	-1.0	V	I _C = -3A, V _{CE} = -2V
Transitional Frequency	f _T	100	—	—	MHz	I _C = -50mA, V _{CE} = -5V f = 50MHz
Output Capacitance	C _{OBO}	—	24	—	pF	V _{CB} = -10V, f = 1MHz,
Switching Times	t _{ON} t _{OFF}	—	35 600	—	ns	I _C = -500mA, V _{CC} = -10V, I _{B1} = -50mA I _{B2} = 50mA

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

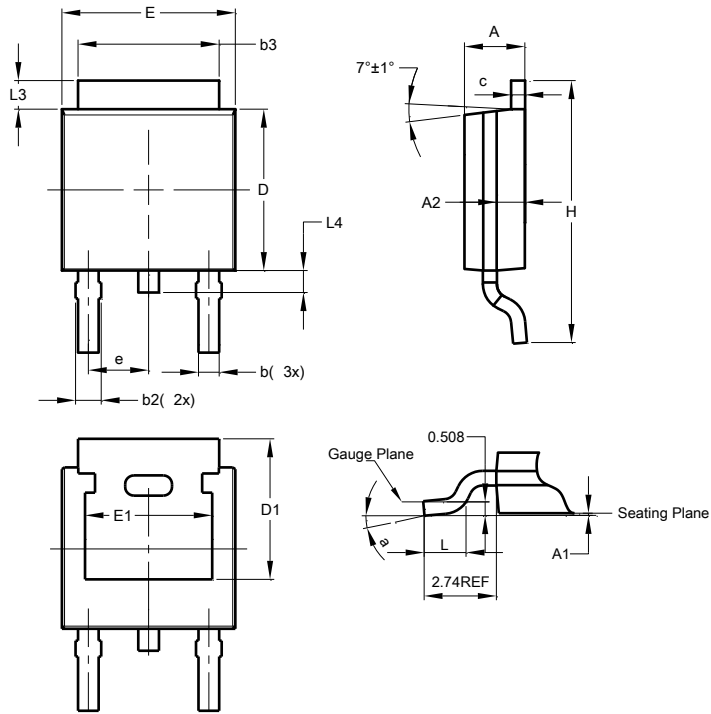
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO252 (DPAK)

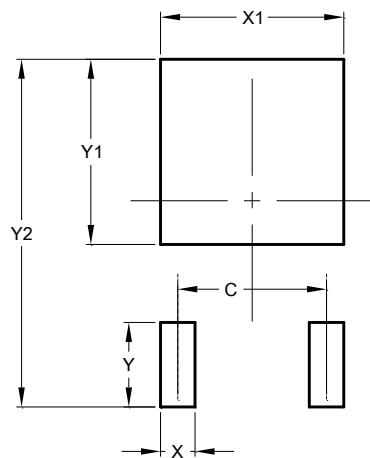


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	—	—
e	—	—	2.286
E	6.45	6.70	6.58
E1	4.32	—	—
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	—
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO252 (DPAK)



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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