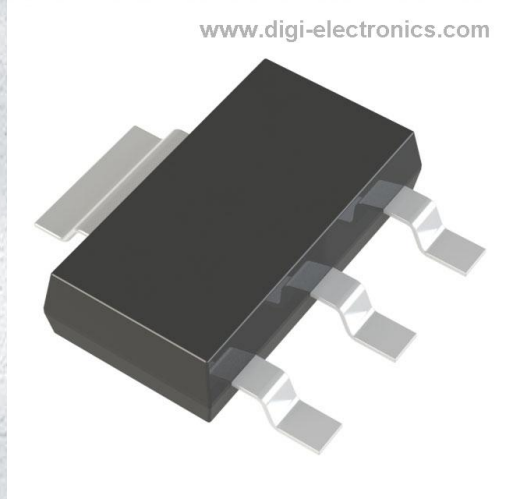
FZT790ATC Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	FZT790ATC-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	FZT790ATC
Description	TRANS PNP 40V 3A SOT223-3
Detailed Description	Bipolar (BJT) Transistor PNP 40 V 3 A 100MHz 2 W Surface Mount SOT-223-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
FZT790ATC	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
PNP	3 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
40 V	750mV @ 50mA, 2A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	300 @ 10mA, 2V
Power - Max:	Frequency - Transition:
2 W	100MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-261-4, TO-261AA	SOT-223-3
Base Product Number:	
FZT790	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0075	

Green

FZT790A

40V PNP MEDIUM POWER TRANSISTOR IN SOT223

Features

- BV_{CEO} > -40V
- I_C Max. -3A High Continuous Current
- I_{CM} Max. -6A Peak Pulse Current
- Very Low Equivalent On-Resistance; R_{CE}(sat) 125mΩ at 2A
- h_{FE} of 200 at I_C=1A and Very Low Saturation Voltage
- Complementary NPN Type: FZT690B
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

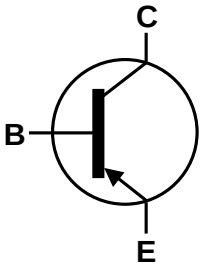
- Package: SOT223 (Type DN)
- Package Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

Applications

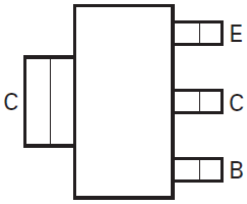
- DC-DC converters
- Siren drivers

SOT223

Top View



Device Symbol



Top View
Pin-Out

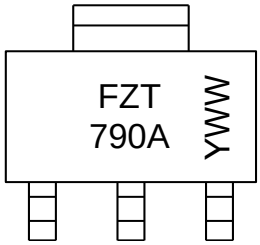
Ordering Information (Note 4)

Orderable Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
				Quantity	Carrier
FZT790ATA	FZT790A	7	12	1,000	Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

SOT223



FZT 790A = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 2 = 2022)
WW or $\overline{WW}$ = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-3	A
Peak Pulse Current	I_{CM}	-6	A

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

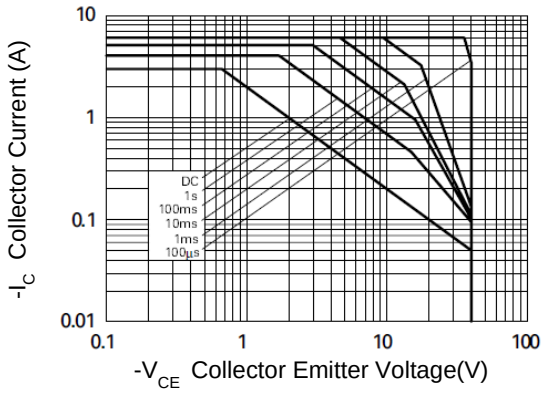
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	3.0	W
	(Note 6)		2.0	
	(Note 7)		1.6	
	(Note 8)		1.2	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	41.7	°C/W
	(Note 6)		62.5	
	(Note 7)		78.1	
	(Note 8)		104	
Thermal Resistance Junction to Lead	(Note 9)	$R_{\theta JL}$	12.9	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 10)

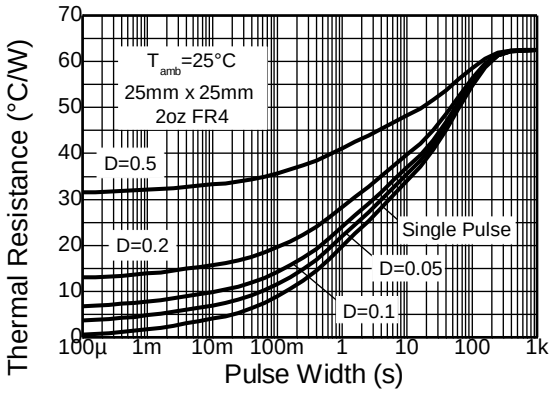
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted with the collector lead on 50mm x 50mm 2oz 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 the device is mounted on 25mm x 25mm 2oz copper.
7. Same as Note 5, except the device is mounted on 25mm x 25mm 1oz copper.
8. Same as Note 5, except the device is mounted on minimum recommended pad layout.
9. Thermal resistance from junction to solder-point (at the end of the collector lead).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

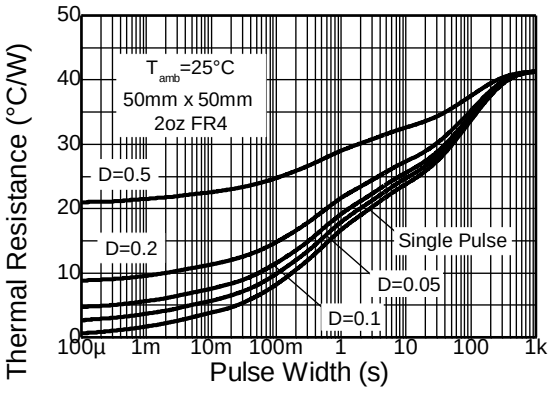
Thermal Characteristics and Derating Information



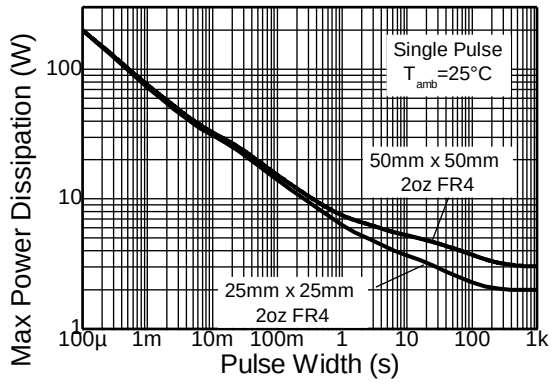
Safe Operating Area



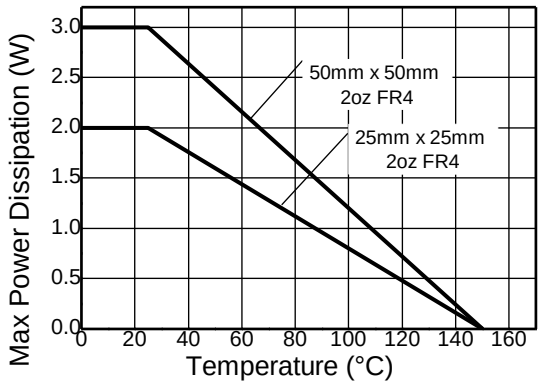
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



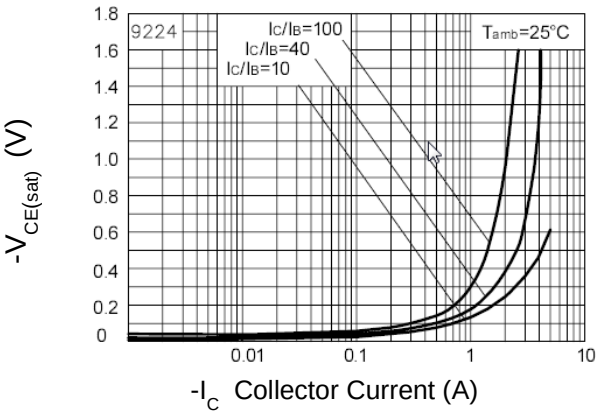
Derating Curve

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

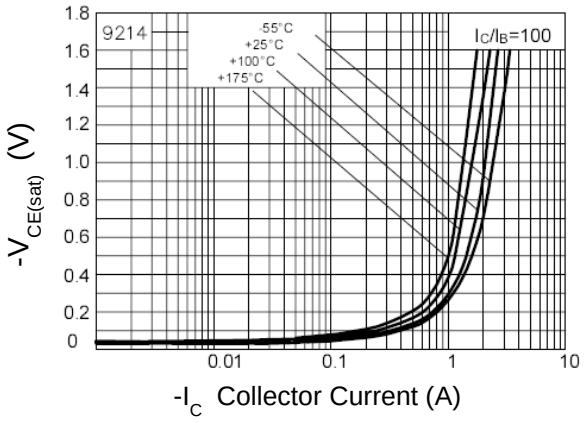
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	-70	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	-40	-60	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.5	-	V	I_E = -100µA
Collector Cut-Off Current	I_{CBO}	- -	- -	-0.1 -10	µA	V_{CB} = -30V V_{CB} = -30V, T_A = +100°C
Emitter Cut-Off Current	I_{EBO}	-	-	-0.1	µA	V_{EB} = -4V
DC Current Transfer Static Ratio (Note 11)	h_{FE}	300	-	800	-	I_C = -10mA, V_{CE} = -2V
		250	-	-		I_C = -500mA, V_{CE} = -2V
		200	-	-		I_C = -1A, V_{CE} = -2V
		150	-	-		I_C = -2A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(sat)}$	-	-0.15	-0.25	V	I_C = -500mA, I_B = -5mA
		-	-0.30	-0.45		I_C = -1A, I_B = -10mA
		-	-0.40	-0.75		I_C = -2A, I_B = -50mA
Base-Emitter Saturation Voltage (Note 11)	$V_{BE(sat)}$	-	-0.8	-1.0	V	I_C = -1A, I_B = -10mA
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(on)}$	-	-0.75	-	V	I_C = -1A, 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 Time	t_{on}	-	35	-	ns	V_{CC} = -10V, I_C = -500mA, I_{B1} = -I_{B2} = -50mA
	t_{off}	-	600	-		

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

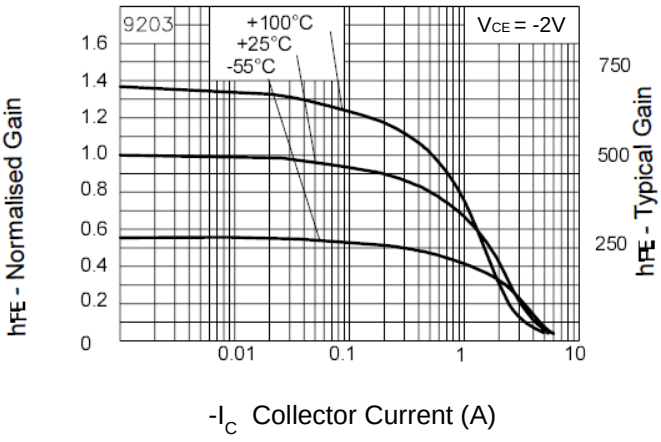
Typical Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)



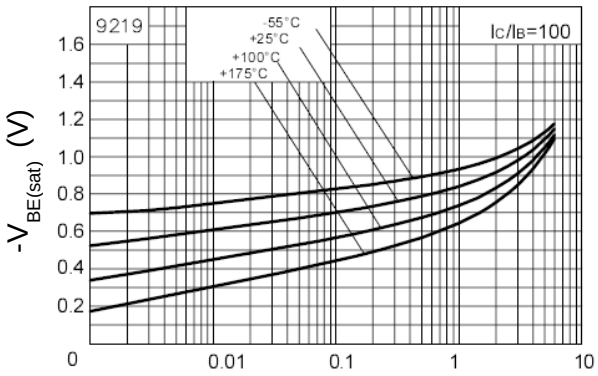
VCE(sat) v IC



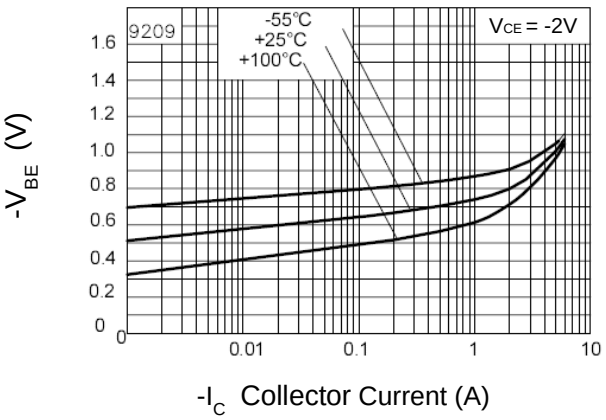
VCE(sat) v IC



hFE v IC



VBE(sat) v IC

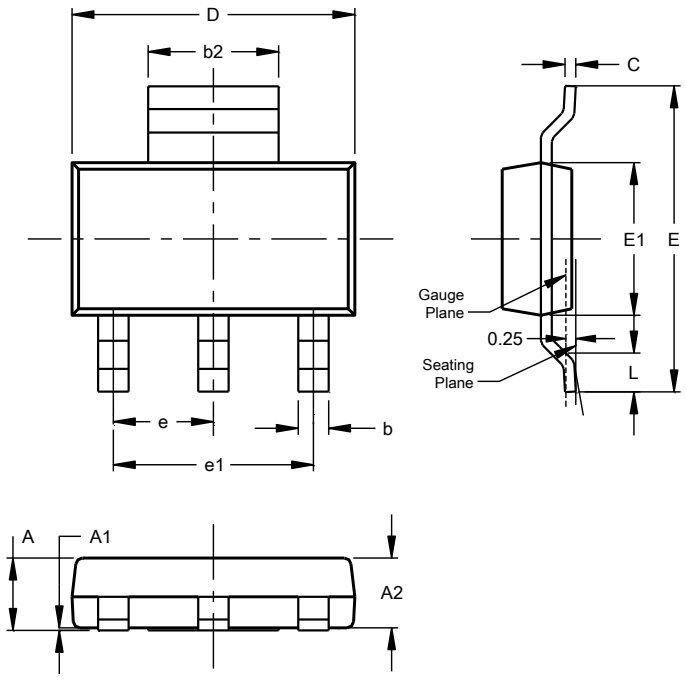


VBE(on) v IC

Package Outline Dimensions

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

SOT223 (Type DN)

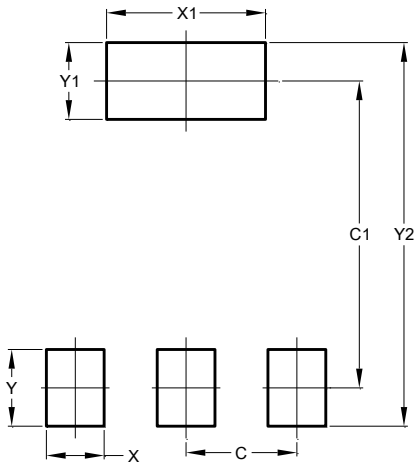


SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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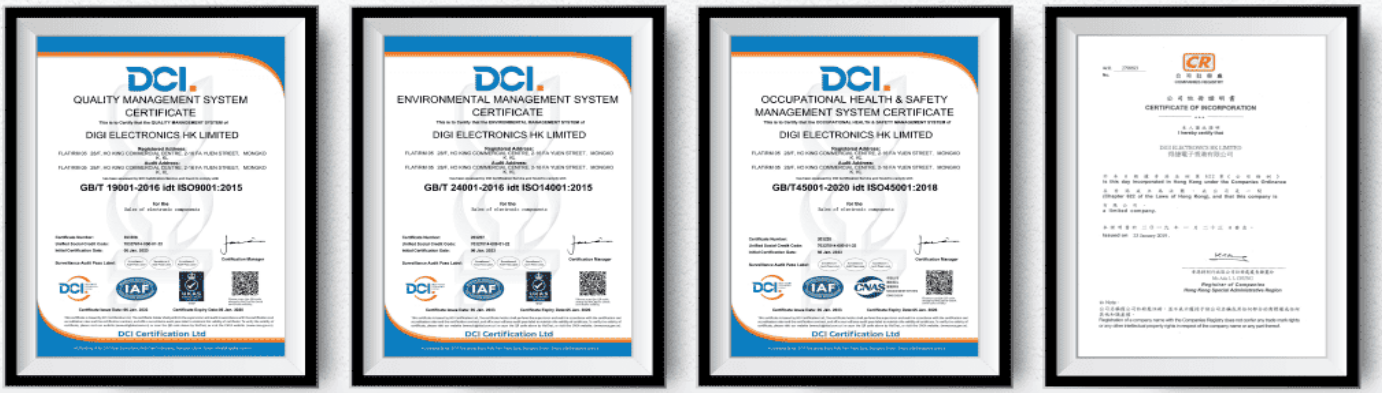

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