



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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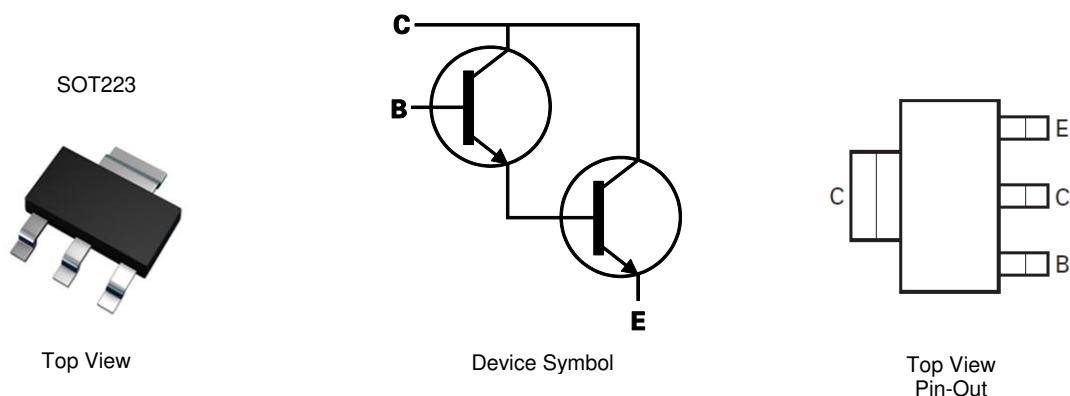


Features

- $BV_{CEO} > 140V$
- $BV_{CBO} > 160V$
- $I_C = 2A$ High Continuous Current
- NPN Darlington with Gain $>10k$
- Guaranteed h_{FE} Specified up to 1A
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOT223
- Case 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 ③
- Weight: 0.112 grams (Approximate)

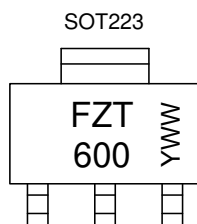


Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT600TA	AEC-Q101	FZT600	7	12	1,000
FZT600BTA	AEC-Q101	FZT600B	7	12	1,000
FZT600BQTA	Automotive	FZT600B	7	12	1,000

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



FZT 600 = Product Type Marking Code (Group A)
 FZT 600B = Product Type Marking Code (Group B)
 YWW = Date Code Marking
 Y or Y = Last Digit of Year (ex: 5= 2015)
 WW or WW = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	160	V
Collector-Emitter Voltage	V _{CEO}	140	V
Emitter-Base Voltage	V _{EBO}	10	V
Continuous Collector Current	I _C	2	A
Peak Pulse Current	I _{CM}	4	A

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

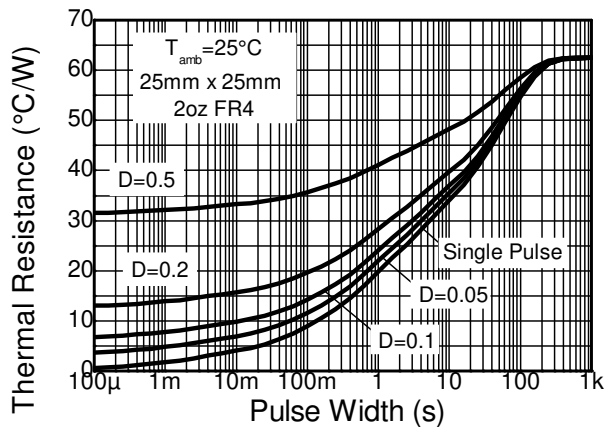
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	3.0	W
		2.0	
		1.6	
		1.2	
Thermal Resistance, Junction to Ambient	R _{θJA}	41.7	°C/W
		62.5	
		78.1	
		104	
Thermal Resistance Junction to Lead	R _{θJL}	12.9	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 11)

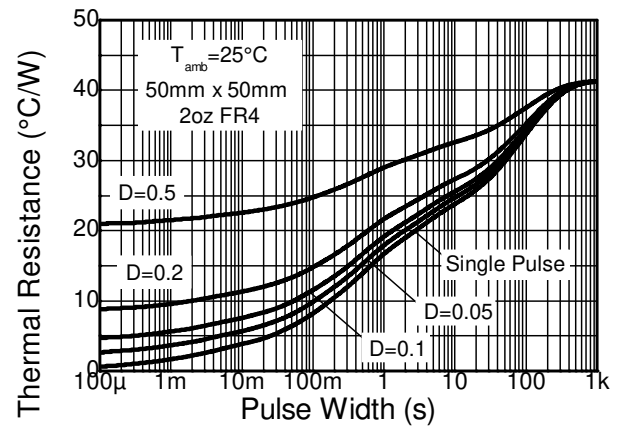
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

- Notes:
- 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.
 - Same as Note 6, except the device is mounted on 25mm x 25mm 2oz copper.
 - Same as Note 6, except the device is mounted on 25mm x 25mm 1oz copper.
 - Same as Note 6, except the device is mounted on minimum recommended pad layout.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

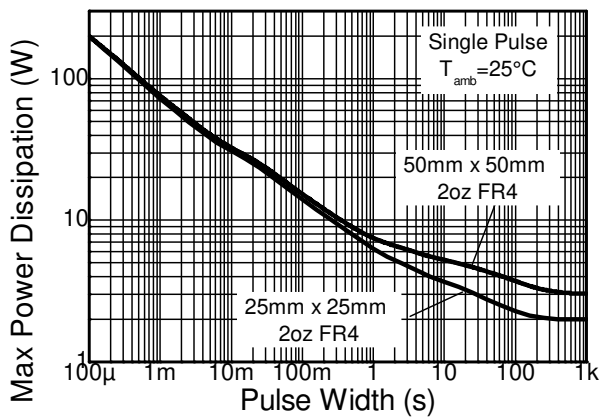
Thermal Characteristics and Derating Information



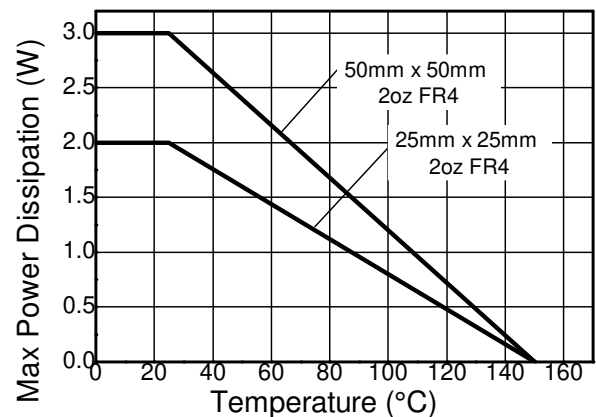
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



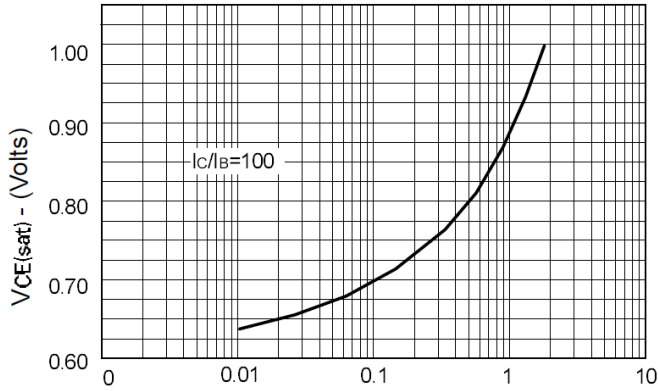
Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	160	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 12)	BV _{CEO}	140	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	10	—	—	V	I _E = 100μA
Collector-Base Cut-Off Current	I _{CBO}	—	—	0.01 10	μA μA	V _{CB} = 140V V _{CB} = 140V, T _A = +100°C
Collector-Emitter Cut-Off Current	I _{CES}	-	—	10	μA	V _{CES} = 140V
Emitter Cut-Off Current	I _{EBO}	-	—	0.1	μA	V _{EB} = 8V
DC Current Gain (Note 12)	h _{FE}	1,000	—	—	—	I _C = 50mA, V _{CE} = 10V
		2,000	—	100,000		I _C = 500mA, V _{CE} = 10V
		1,000	—	—		I _C = 1A, V _{CE} = 10V
		5,000	10,000	—		I _C = 50mA, V _{CE} = 10V
Group B (FZT600B)	h _{FE}	10,000	20,000	100,000	—	I _C = 500mA, V _{CE} = 10V
		5,000	10,000	—		I _C = 1A, V _{CE} = 10V
		5,000	10,000	—		I _C = 1A, V _{CE} = 10V
Collector-Emitter Saturation Voltage (Note 12)	V _{CE(sat)}	—	0.75 0.85	1.1 1.2	V	I _C = 500mA, I _B = 5mA I _C = 1A, I _B = 10mA
Base-Emitter Saturation Voltage (Note 12)	V _{BE(sat)}	—	1.7	1.9	V	I _C = 1A, I _B = 10mA
Base-Emitter Turn-On Voltage (Note 12)	V _{BE(on)}	—	1.5	1.7	V	I _C = 1A, V _{CE} = 5V
Output Capacitance (Note 12)	C _{obo}	—	10	15	pF	V _{CB} = 10V, f = 1MHz
Current Gain-Bandwidth Product (Note 12)	f _T	150	250	—	MHz	V _{CE} = 10V, I _C = 100mA, f=20MHz
Turn-On Time	t _{on}	—	0.75	—	μs	V _{CC} = 10V, I _C = 500mA
Turn-Off Time	t _{off}	—	2.20	—	μs	I _{B1} = -I _{B2} = 0.5mA

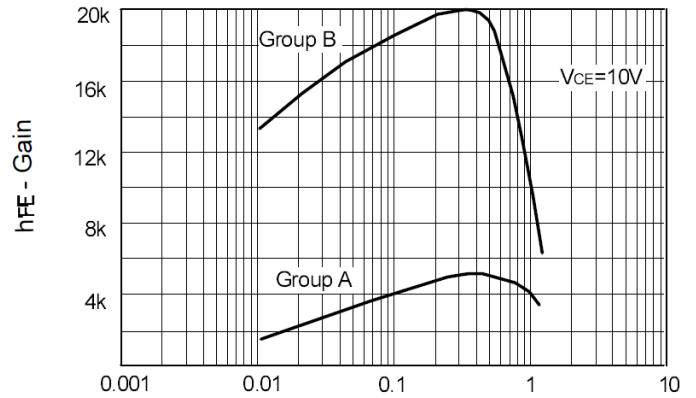
Note: 12. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

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



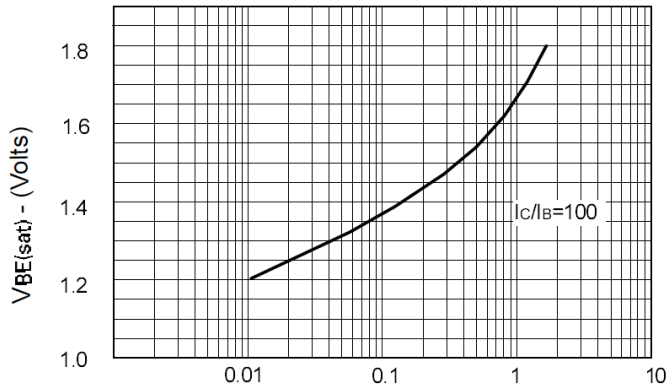
I_C - Collector Current (Amps)

$V_{CE(sat)}$ v I_C



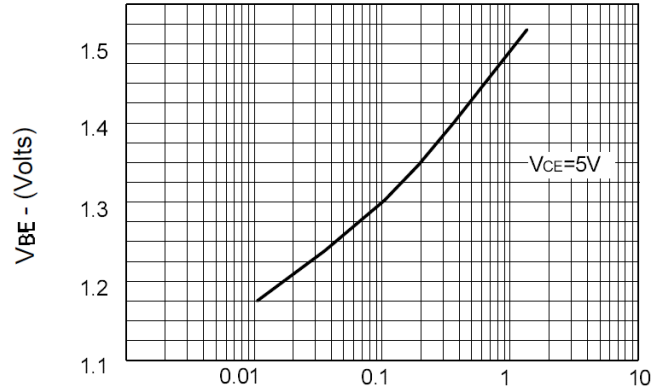
I_C - Collector Current (Amps)

h_{FE} v I_C



I_C - Collector Current (Amps)

$V_{BE(sat)}$ v I_C

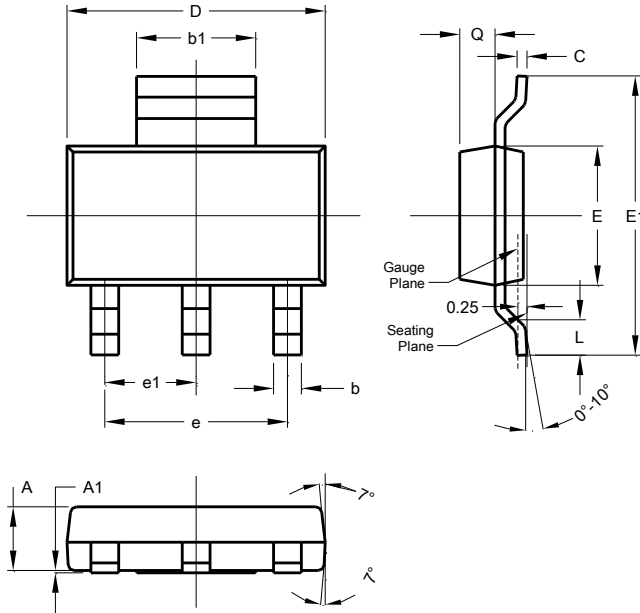


I_C - Collector Current (Amps)

$V_{BE(on)}$ v I_C

Package Outline Dimensions

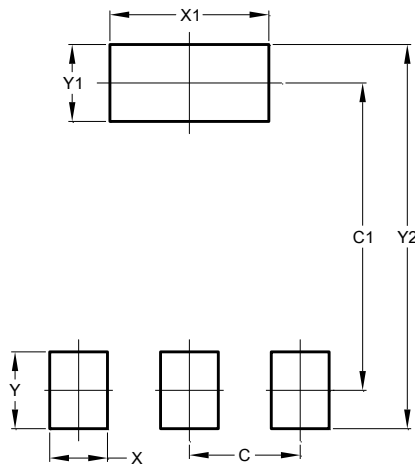
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
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)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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