

150V NPN SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT23

Feature

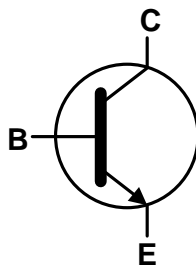
- $BV_{CEO} > 150V$
- $I_C = 1A$ Continuous Collector Current
- $I_{CM} = 2A$ Peak Pulse Current
- 500mW Power Dissipation
- h_{FE} Characterised up to 1A for High Current Gain Hold Up
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

Mechanical Data

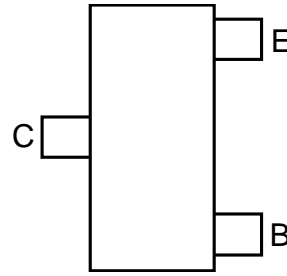
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (G3)
- Weight 0.008 grams (Approximate)



Top View



Device Symbol



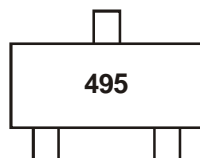
Top View Pin-Out

Ordering Information (Notes 4 & 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FMMT495TA	AEC-Q101	495	7	8	3,000
FMMT495TC	AEC-Q101	495	13	8	10,000
FMMT495QTA	Automotive	495	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. 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



495 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	170	V
Collector-Emitter Voltage	V _{CEO}	150	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.)

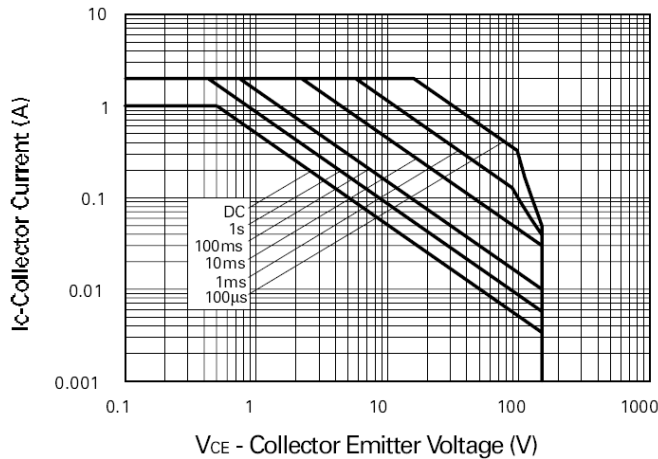
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	250	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R _{θJL}	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

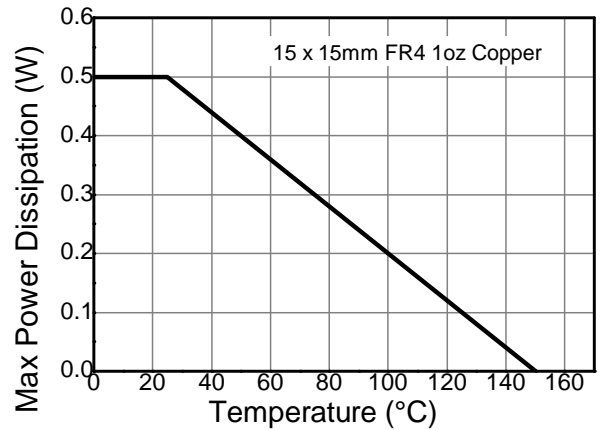
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	≥ 400	V	C

- Notes:
6. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

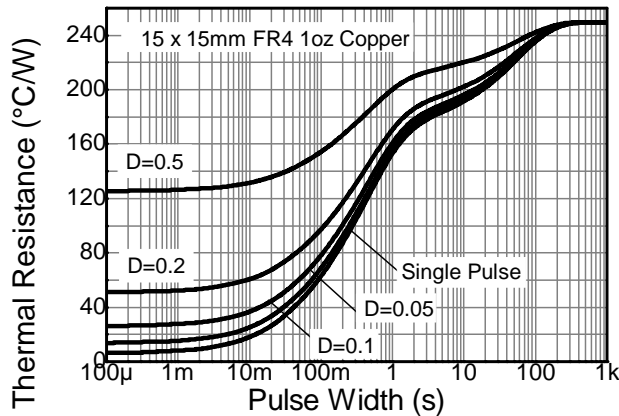
Thermal Characteristics and Derating Information



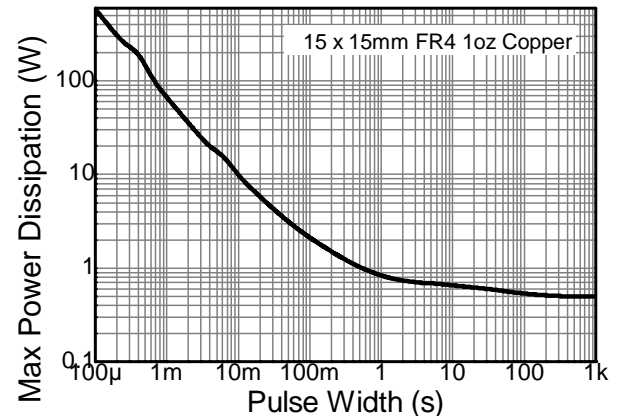
Safe Operating Area



Derating Curve



Transient Thermal Impedance



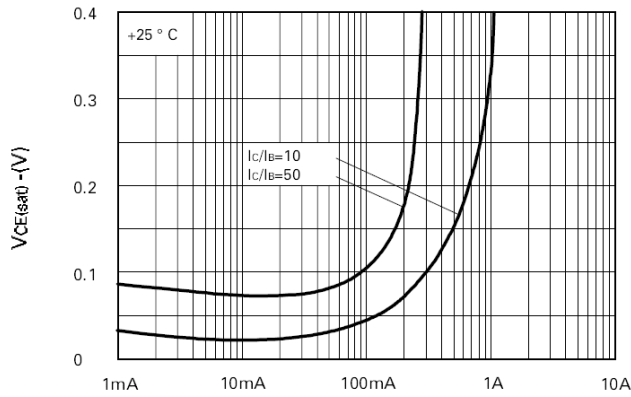
Pulse Power Dissipation

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

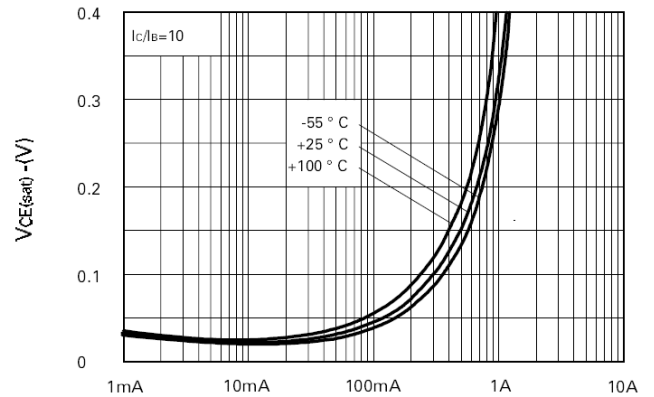
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	170	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	150	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	—	—	100	nA	V _{CB} = 150V
Emitter Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V
Collector Emitter Cutoff Current	I _{CES}	—	—	100	nA	V _{CE} = 150V
Static Forward Current Transfer Ratio (Note 9)	h _{FE}	100	—	—	—	I _C = 1mA, V _{CE} = 10V
		100	—	300		I _C = 250mA, V _{CE} = 10V
		50	—	—		I _C = 500mA, V _{CE} = 10V
		10	—	—		I _C = 1A, V _{CE} = 10V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(SAT)}	—	—	0.2	V	I _C = 250mA, I _B = 25mA
		—	—	0.3		I _C = 500mA, I _B = 50mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(ON)}	—	—	1.0	V	I _C = 500mA, V _{CE} = 10V
Base-Emitter Saturation Voltage (Note 9)	V _{BE(SAT)}	—	—	1.0	V	I _C = 500mA, I _B = 50mA
Output Capacitance	C _{OBO}	—	—	10	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	100	—	—	MHz	V _{CE} = 10V, I _C = 50mA, f = 100MHz

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

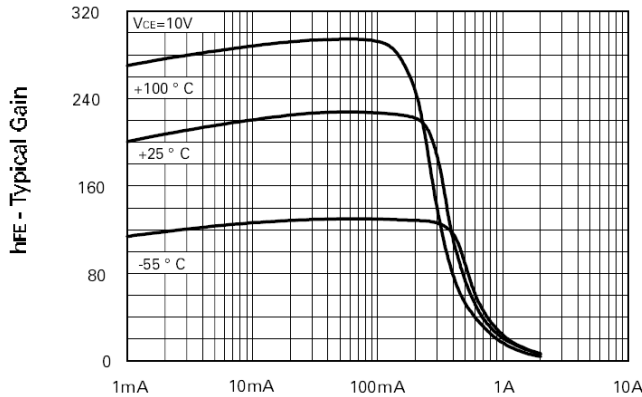
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



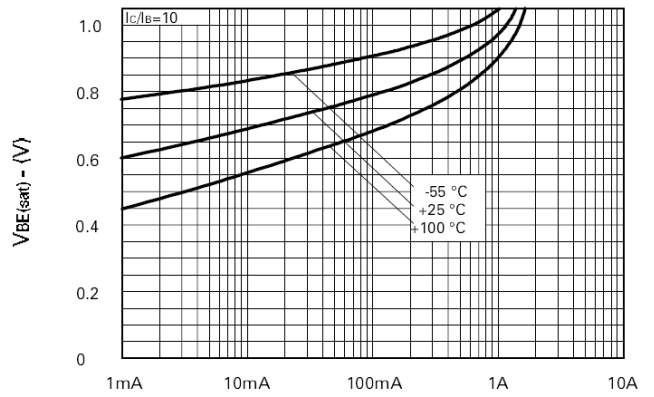
$V_{CE(sat)} \text{ v } I_C$



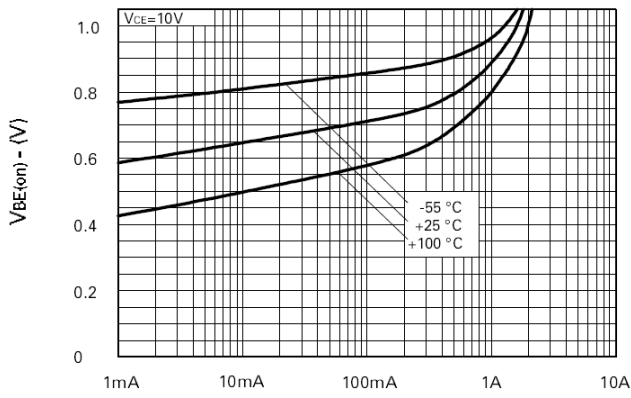
$V_{CE(sat)} \text{ v } I_C$



$h_{FE} \text{ v } I_C$



$V_{BE(sat)} \text{ v } I_C$

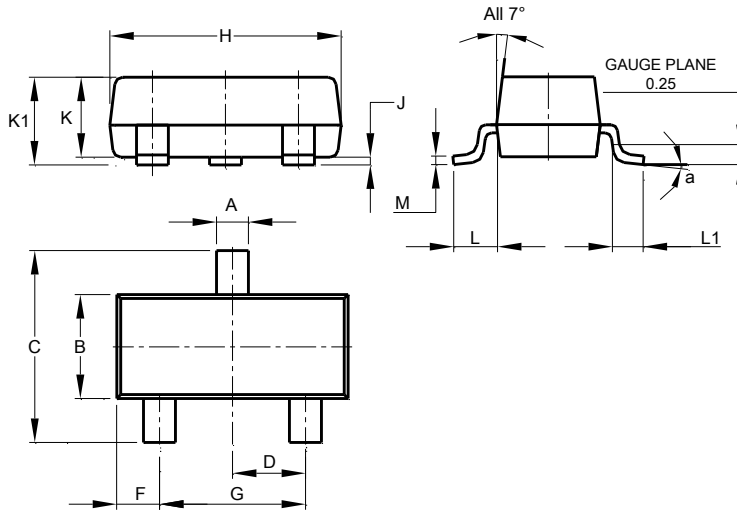


$V_{BE(on)} \text{ v } I_C$

Package Outline Dimensions

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

SOT23

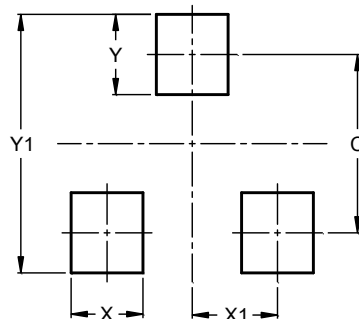


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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