

FMMT493TA Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	FMMT493TA-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	FMMT493TA
Description	TRANS NPN 100V 1A SOT23-3
Detailed Description	Bipolar (BJT) Transistor NPN 100 V 1 A 150MHz 500 mW Surface Mount SOT-23-3



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Purchase and inquiry

Manufacturer Product Number:

FMMT493TA

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

100 V

Current - Collector Cutoff (Max):

100nA

Power - Max:

500 mW

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

TO-236-3, SC-59, SOT-23-3

Base Product Number:

FMMT493

Manufacturer:

Diodes Incorporated

Product Status:

Active

Current - Collector (Ic) (Max):

1 A

Vce Saturation (Max) @ Ib, Ic:

600mV @ 100mA, 1A

DC Current Gain (hFE) (Min) @ Ic, Vce:

100 @ 250mA, 10V

Frequency - Transition:

150MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-23-3

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



FMMT493

100V NPN MEDIUM POWER TRANSISTOR IN SOT23

Features

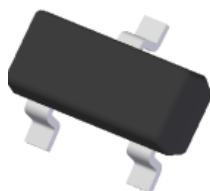
- $BV_{CEO} > 100V$
- $I_C = 1A$ High Continuous Collector Current
- $I_{CM} = 2A$ Peak Pulse Current
- 500mW Power Dissipation
- h_{FE} Characterised Up to 2A for High Current Gain Hold Up
- Complementary PNP Type: FMMT593
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The FMMT493Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

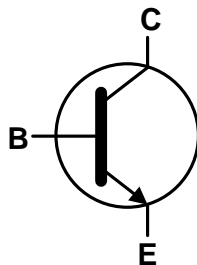
Mechanical Data

- Case: SOT23
- 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 **e3**
- Weight: 0.008 grams (Approximate)

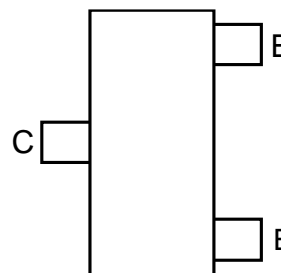
SOT23 (Type DN)



Top View



Device Symbol



Top View Pin-Out

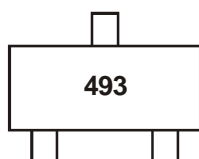
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FMMT493TA	AEC-Q101	493	7	8	3,000
FMMT493QTA	Automotive	493	7	8	3,000
FMMT493TC	AEC-Q101	493	13	8	10,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 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

SOT23 (Type DN)



493 = Product Type Marking Code



FMMT493

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	120	V
Collector-Emitter Voltage	V _{CEO}	100	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.)

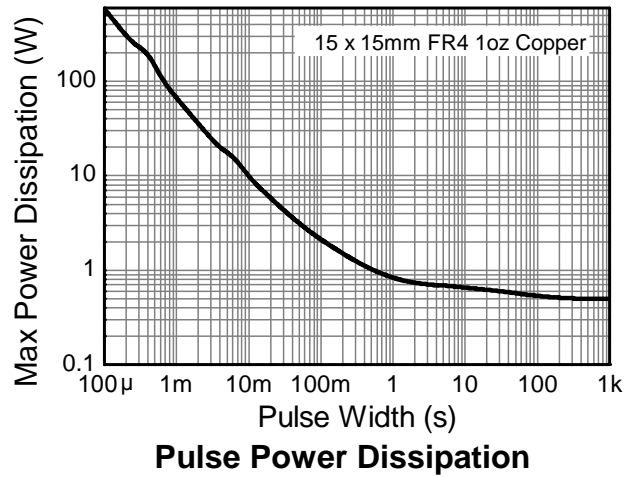
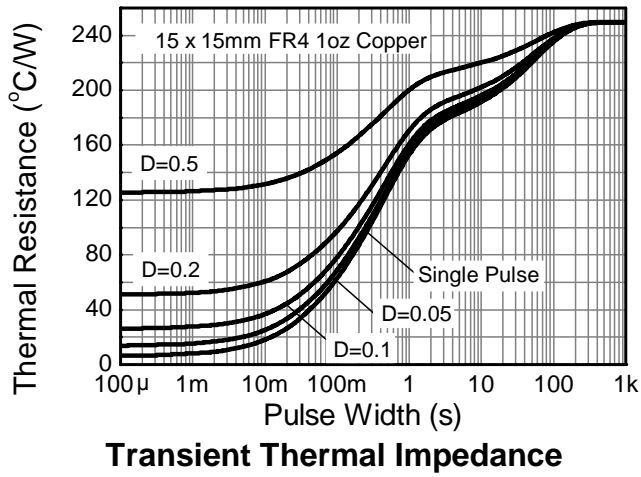
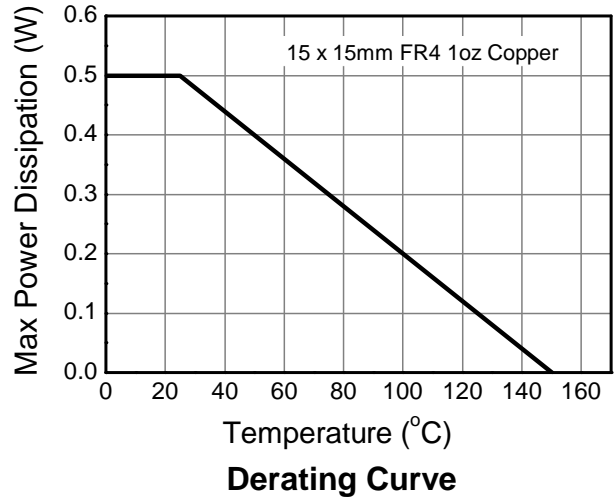
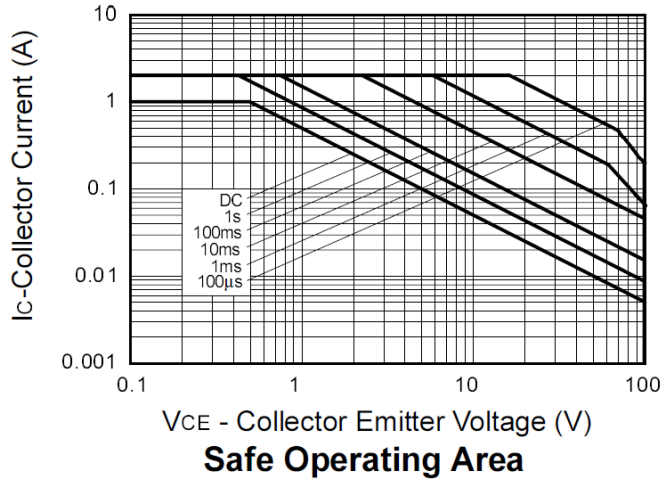
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	250	°C/W
Thermal Resistance, Junction to Lead (Note 6)	R _{θJL}	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

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:
- For a device mounted on 15mm × 15mm 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - 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



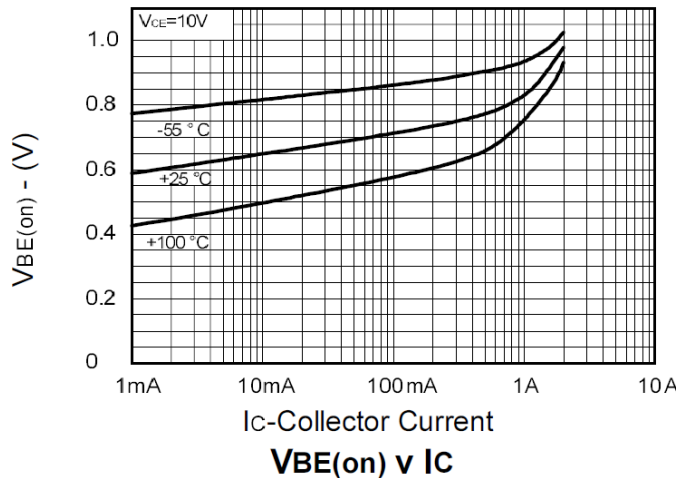
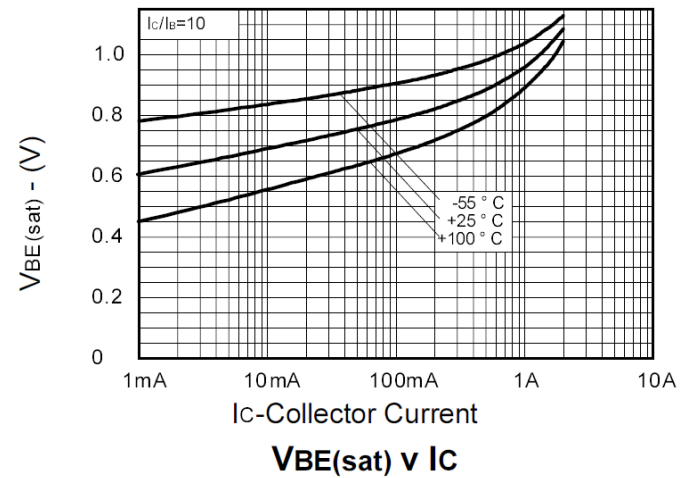
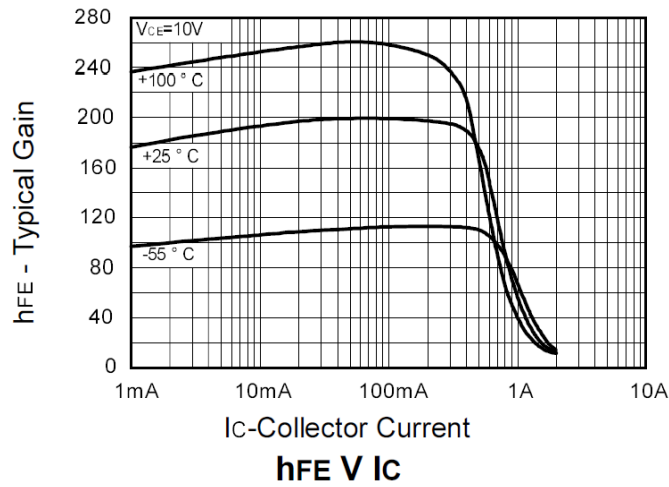
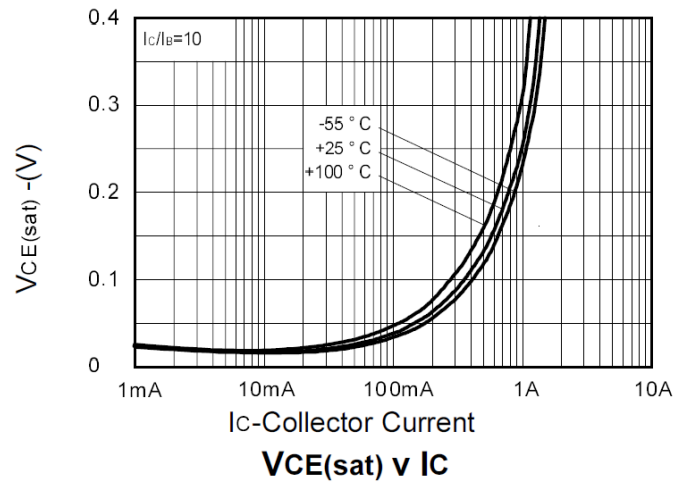
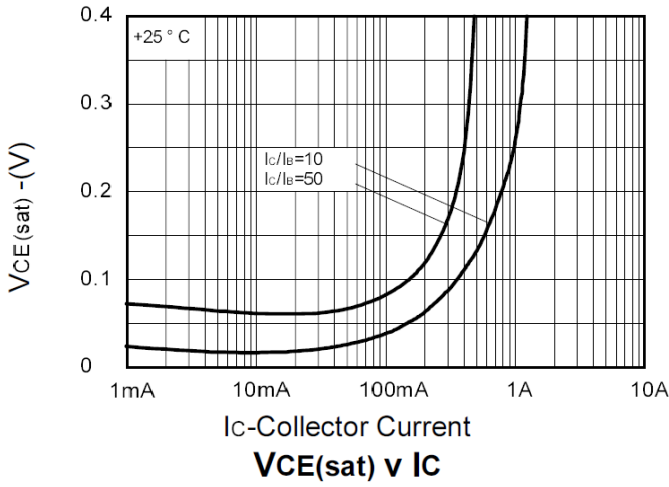

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	120	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	100	—	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	—	—	100	nA	V _{CB} = 100V
Emitter Cutoff Current	I _{EBO}	—	—	50	nA	V _{EB} = 5.6V
Collector Emitter Cutoff Current	I _{CES}	—	—	100	nA	V _{CE} = 100V
Static Forward Current Transfer Ratio (Note 8)	h _{FE}	100 100 60 20	— — — —	— 300 — —	—	I _C = 1mA, V _{CE} = 10V I _C = 250mA, V _{CE} = 10V I _C = 500mA, V _{CE} = 10V I _C = 1A, V _{CE} = 10V
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	—	—	300 600	mV mV	I _C = 500mA, I _B = 50mA I _C = 1A, I _B = 100mA
Base-Emitter Turn-On Voltage (Note 8)	V _{BE(on)}	—	—	1.0	V	I _C = 1A, V _{CE} = 10V
Base-Emitter Saturation Voltage (Note 8)	V _{BE(sat)}	—	—	1.15	V	I _C = 1A, I _B = 100mA
Output Capacitance	C _{obo}	—	—	10	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	150	—	—	MHz	V _{CE} = 10V, I _C = 50mA, f = 100MHz

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.



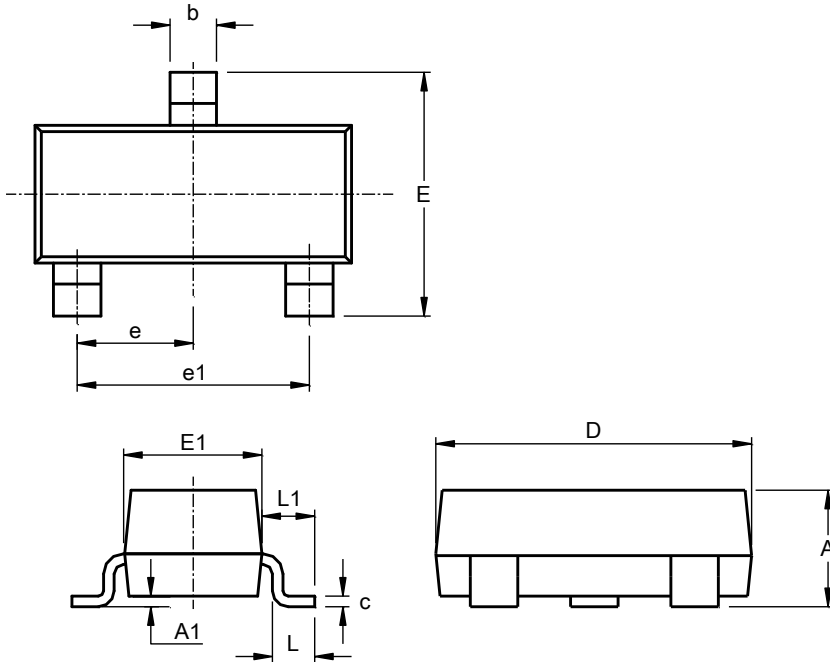
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



Package Outline Dimensions

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

SOT23 (Type DN)

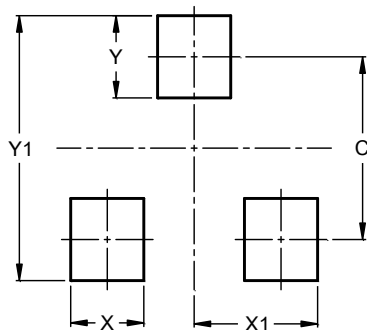


SOT23 Type DN			
Dim	Min	Max	Typ
A	0.89	1.12	1.00
A1	0.01	0.10	0.05
b	0.30	0.51	0.45
c	0.08	0.20	0.10
D	2.80	3.04	3.00
E	2.10	2.64	2.42
E1	1.20	1.40	1.37
e	0.95 REF		
e1	1.90 REF		
L	0.25	0.60	0.30
L1	0.45	0.62	0.54
All Dimensions in mm			

Suggested Pad Layout

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

SOT23 (Type DN)



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

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