



300V NPN HIGH VOLTAGE TRANSISTOR IN SOT23

Features

- BV_{CEO} > 300V
- I_C = 200mA High Collector Current
- 350mW Power Dissipation
- Excellent h_{FE} Characteristics Up To 30mA
- Complementary Part Number FMMTA92
- 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

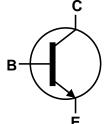
- Case: SOT23
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

С

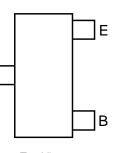
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208⁽³⁾
- Weight: 0.008 grams (Approximate)



Top View



Device Symbol



Top View Pin-Out

Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FMMTA42TA	AEC-Q101	3E	7	8	3000
FMMTA42TC	AEC-Q101	3E	13	8	10,000
FMMTA42QTA	Automotive	3E	7	8	3000

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

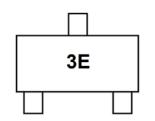
See https://www.diodes.co Lead-free.

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 https://www.diodes.com/quality/.

5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



3E = Product Type Marking Code



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	300	V
Collector-Emitter Voltage	V _{CEO}	300	V
Emitter-Base Voltage	V _{EBO}	7	V
Collector Current	Ι _C	200	mA

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

Characteristic	Symbol	Value	Unit		
Dower Dissinction	(Note 6)		310	mW	
Power Dissipation	(Note 7) P _D		350	TIVV	
Thermal Desistance Junction to Ambient	(Note 6)	D	403	°C/W	
Thermal Resistance, Junction to Ambient	(Note 7)	R _{ƏJA}	357	°C/W	
Thermal Resistance, Junction to Leads (Note 8)		R _{ƏJL}	350	°C/W	
Operating and Storage Temperature Range	T _J ,T _{STG}	-55 to +150	°C		

ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400	V	С

Notes:

6. For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition.

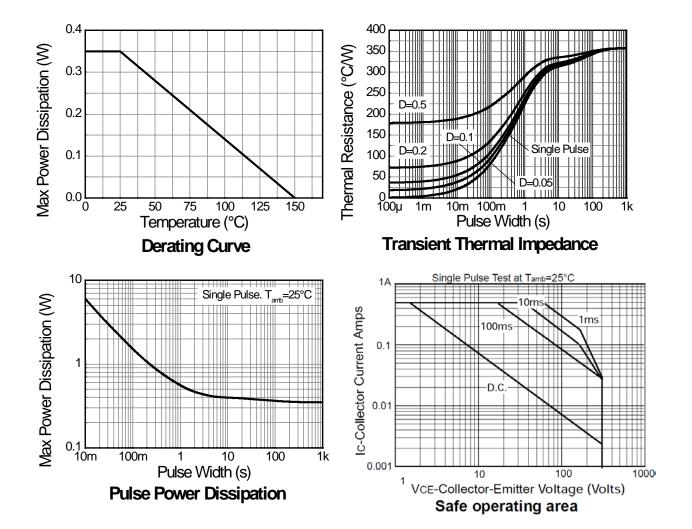
7. Same as Note 6, except the device is mounted on 15mm × 15mm 1oz copper.

8. Thermal resistance from junction to solder-point (at the end of the leads).

9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



Thermal Characteristics and Derating information



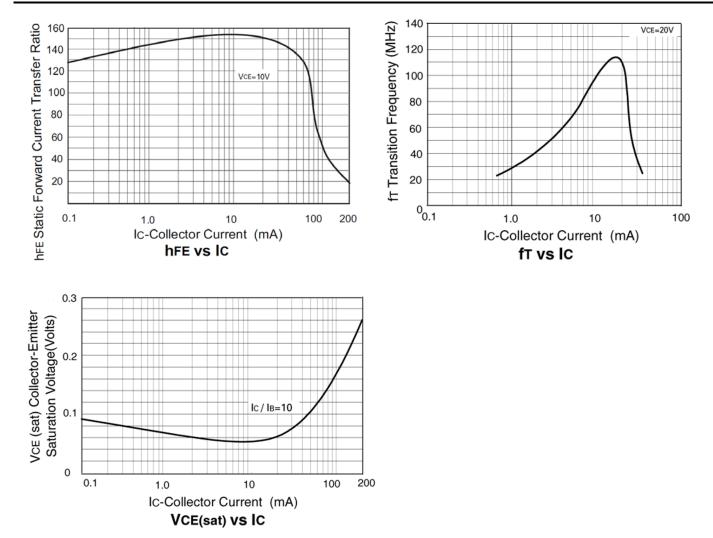


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	300	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	300	—	—	V	$I_{\rm C} = 1 {\rm mA}$
Emitter-Base Breakdown Voltage	BV _{EBO}	7	_	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	_	_	100	nA	V _{CB} = 200V
Emitter Cutoff Current	I _{EBO}	_	_	100	nA	V _{EB} = 6V
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	25 40 40	_	_	_	$I_{C} = 1mA, V_{CE} = 10V$ $I_{C} = 10mA, V_{CE} = 10V$ $I_{C} = 30mA, V_{CE} = 10V$
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	—	—	500	mV	$I_{\rm C} = 20 {\rm mA}, I_{\rm B} = 2 {\rm mA}$
Base-Emitter Saturation Voltage(Note 10)	V _{BE(sat)}	—	—	900	mV	$I_{\rm C} = 20$ mA, $I_{\rm B} = 2$ mA
Output Capacitance	C _{obo}	—	—	6	pF	V _{CB} = 20V. f = 1MHz
Transition Frequency	f⊤	50	_	_	MHz	$V_{CE} = 20V, I_C = 10mA,$ f = 20MHz

Note: 10. Measured under pulsed conditions. Pulse width \leq 300µs. Duty cycle \leq 2%.

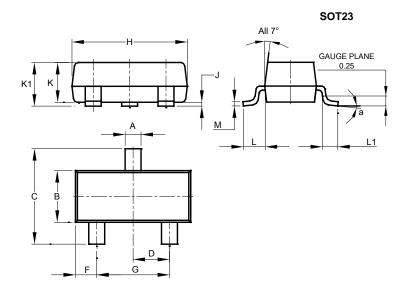
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)





Package Outline Dimensions

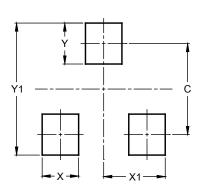
Please see http://www.diodes.com/package-outlines.html for the latest version.



	SOT23					
Dim	Min	Max	Тур			
Α	0.37	0.51	0.40			
В	1.20	1.40	1.30			
С	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			
н	2.80	3.00	2.90			
J	0.013	0.10	0.05			
κ	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			
М	0.085	0.150	0.110			
а	0°	8°	_			
All	All Dimensions in mm					

Suggested Pad Layout

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



SOT23

Dimensions	Value (in mm)
С	2.0
Х	0.8
X1	1.35
Y	0.9
Y1	2.9



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