FMMTA42TC Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	FMMTA42TC-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	FMMTA42TC
Description	TRANS NPN 300V 0.2A SOT23-3
Detailed Description	Bipolar (BJT) Transistor NPN 300 V 200 mA 50MHz 3 30 mW Surface Mount SOT-23-3

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RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
FMMTA42TC	Diodes Incorporated
Series:	Product Status:
-	Obsolete
Transistor Type:	Current - Collector (Ic) (Max):
NPN	200 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
300 V	500mV @ 2mA, 20mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	40 @ 30mA, 10V
Power - Max:	Frequency - Transition:
330 mW	50MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-236-3, SC-59, SOT-23-3	SOT-23-3
Base Product Number:	
FMMTA42	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0095	

Lead-free Green

FMMTA42

300V NPN HIGH VOLTAGE TRANSISTOR IN SOT23

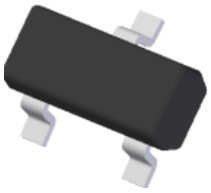
Features

- 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)**
- **An automotive-compliant part is available under separate datasheet (FMMTA42Q)**

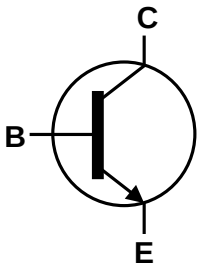
Mechanical Data

- Package: SOT23
- Package 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 e3
- Weight: 0.008 grams (Approximate)

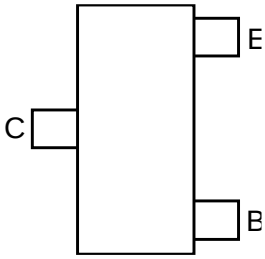
SOT23



Top View



Device Symbol



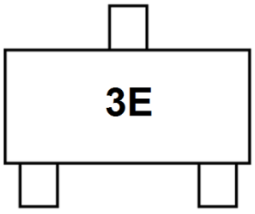
Top View
Pin-Out

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
FMMTA42TA	SOT23	3E	7	8	3,000	Reel
FMMTA42TC	SOT23	3E	13	8	10,000	Reel

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



3E = Product Type Marking Code

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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	I_C	200	mA

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	310	mW
	(Note 6)		350	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°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:
5. 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.
6. Same as Note 5, except the device is mounted on 15mm x 15mm 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the leads).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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Thermal Characteristics and Derating Information

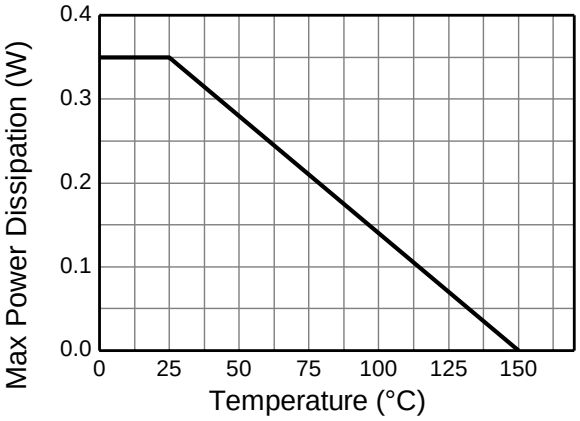

Figure 1. Derating Curve

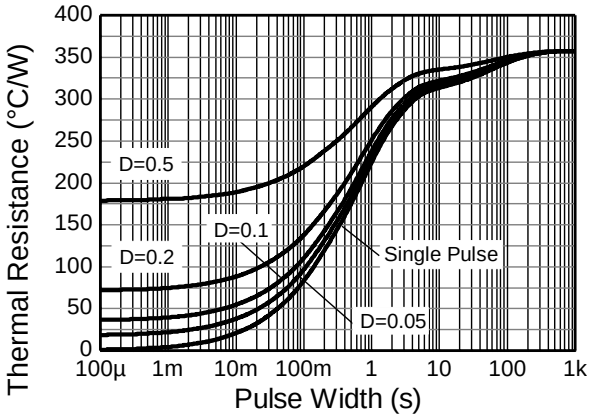

Figure 2. Transient Thermal Impedance

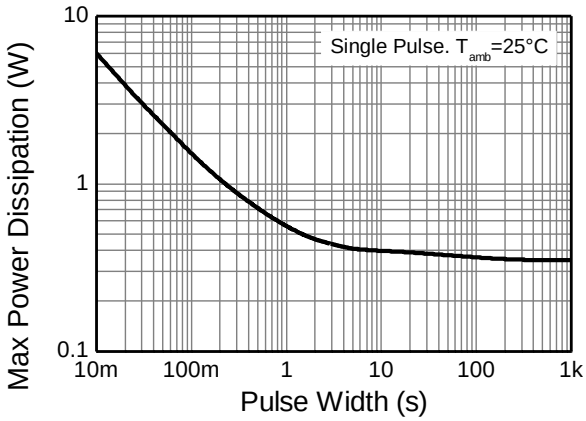

Figure 3. Pulse Power Dissipation

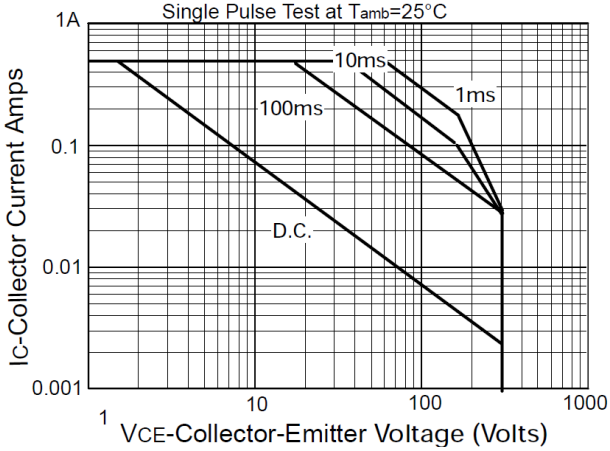

Figure 4. Safe Operating Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	300	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	300	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100µA
Collector Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 200V
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 9)	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 9)	$V_{CE(sat)}$	—	—	500	mV	I_C = 20mA, I_B = 2mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	—	900	mV	I_C = 20mA, I_B = 2mA
Output Capacitance	C_{obo}	—	—	6	pF	V_{CB} = 20V, f = 1MHz
Transition Frequency	f_T	50	—	—	MHz	V_{CE} = 20V, I_C = 10mA f = 20MHz

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

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

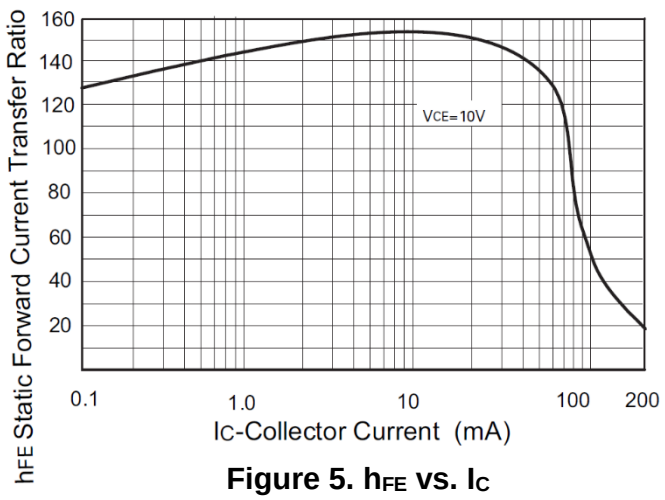

Figure 5. h_{FE} vs. I_C

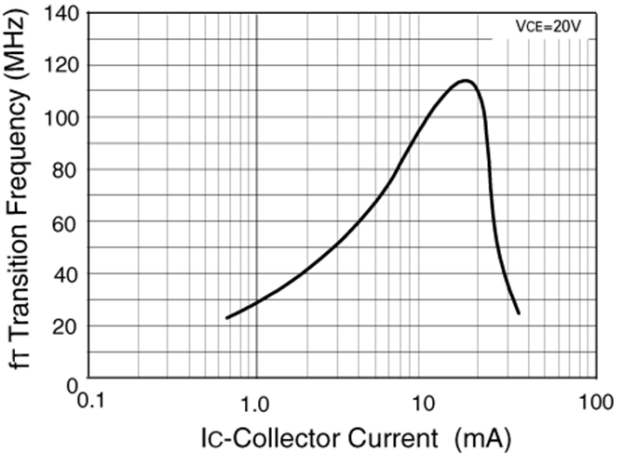

Figure 6. f_T vs. I_C

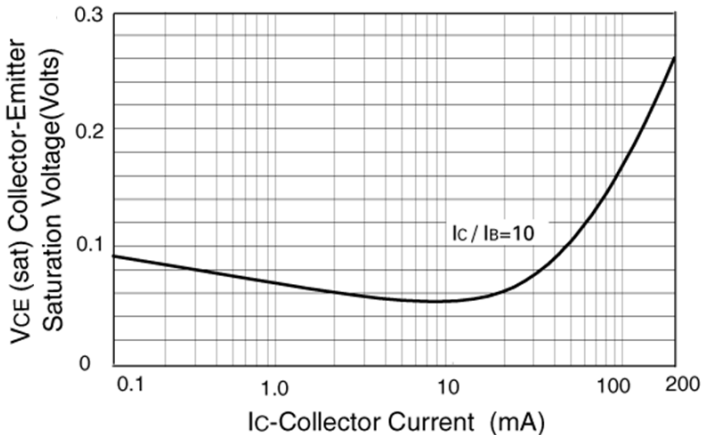

Figure 7. $V_{CE(sat)}$ vs. I_C

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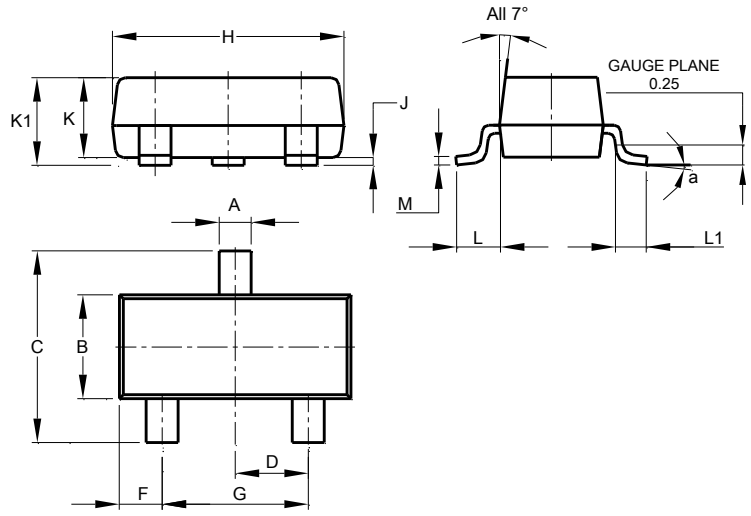
Package Outline Dimensions

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

SOT23

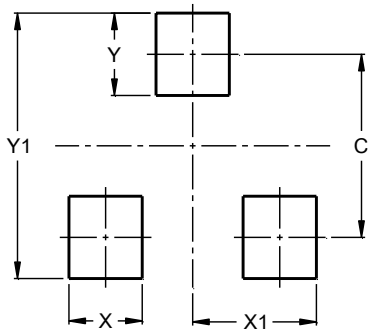


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html 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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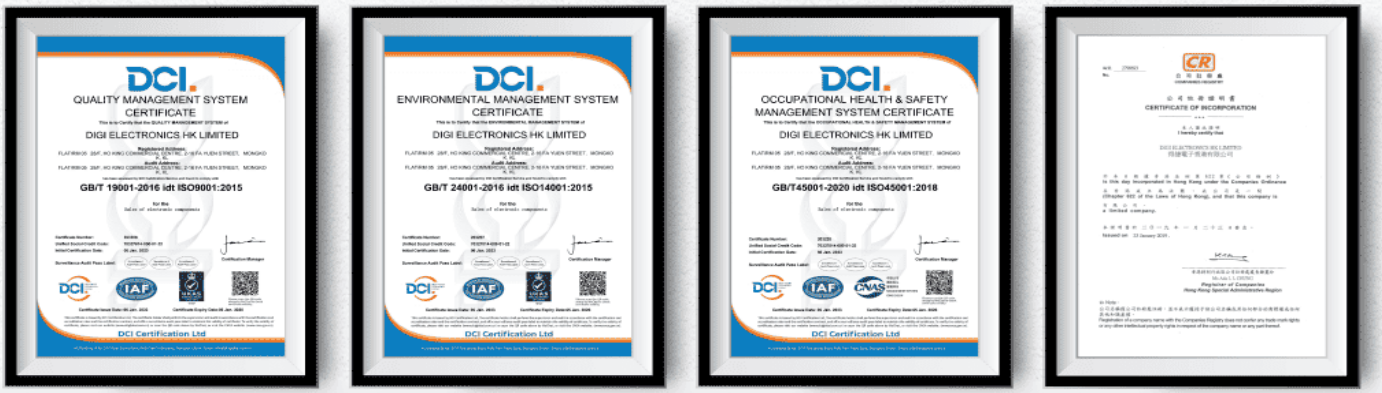

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