

FMMT6517TC Datasheet



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DiGi Electronics Part Number	FMMT6517TC-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	FMMT6517TC
Description	TRANS NPN 350V 0.5A SOT23-3
Detailed Description	Bipolar (BJT) Transistor NPN 350 V 500 mA 50MHz 3 30 mW Surface Mount SOT-23-3



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Purchase and inquiry

Manufacturer Product Number:

FMMT6517TC

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

350 V

Current - Collector Cutoff (Max):

50nA (ICBO)

Power - Max:

330 mW

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

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

Base Product Number:

FMMT6517

Manufacturer:

Diodes Incorporated

Product Status:

Obsolete

Current - Collector (Ic) (Max):

500 mA

Vce Saturation (Max) @ Ib, Ic:

1V @ 5mA, 50mA

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

20 @ 50mA, 10V

Frequency - Transition:

50MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-23-3

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



FMMT6517

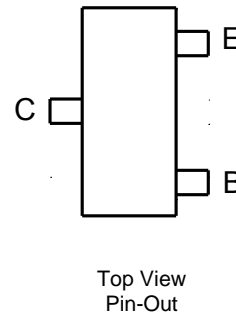
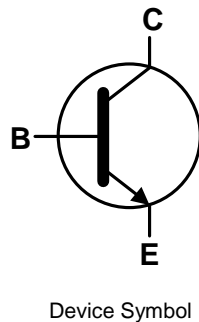
350V NPN HIGH VOLTAGE TRANSISTOR IN SOT23

Features

- $BV_{CEO} > 350V$
- $I_C = 500mA$ High Collector Current
- 350mW Power Dissipation
- h_{FE} of 15 @ $I_C=100mA$
- Complementary Part Number: FMMT6520
- **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**

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 (E3)
- Weight: 0.008 grams (Approximate)

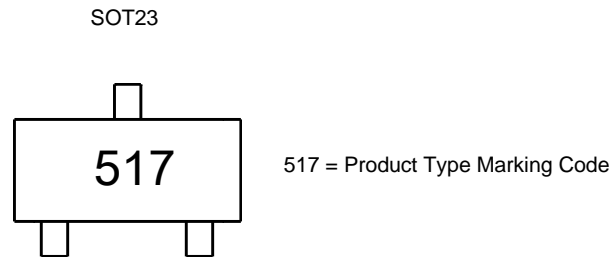


Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FMMT6517TA	AEC-Q101	517	7	8	3,000

- 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





FMMT6517

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	350	V
Collector-Emitter Voltage	V _{CEO}	350	V
Emitter-Base Voltage	V _{EBO}	7	V
Base Current	I _B	25	mA
Collector Current	I _C	500	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 _{θJA}	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	R _{θJL}	350	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

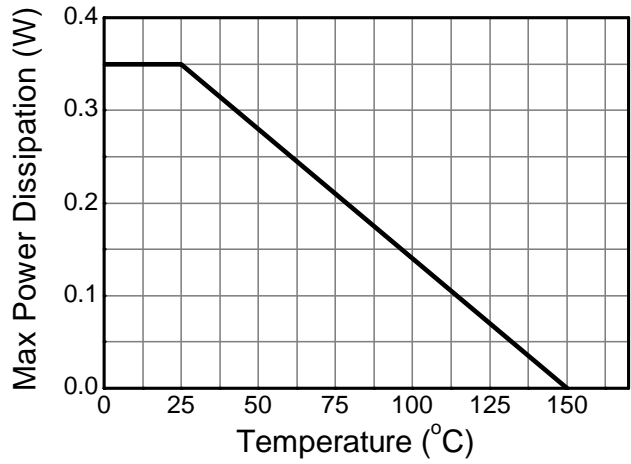
ESD Ratings (Note 8)

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

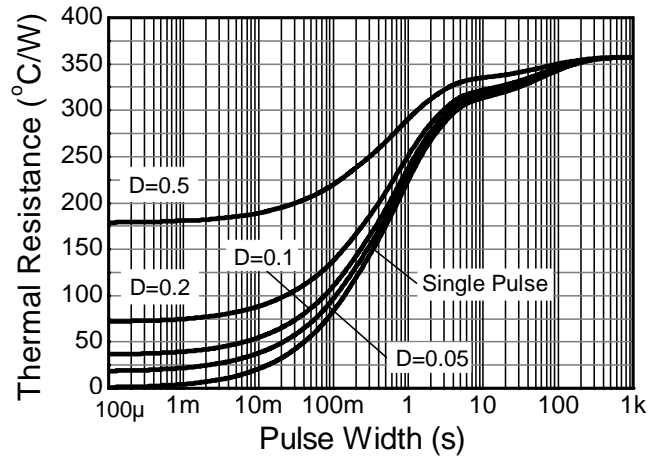
- Notes:
- For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in steady state condition.
 - Same as note (5), except the device is mounted on 15mm x 15mm 1oz copper.
 - Thermal resistance from junction to solder-point (at the end of the leads).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.



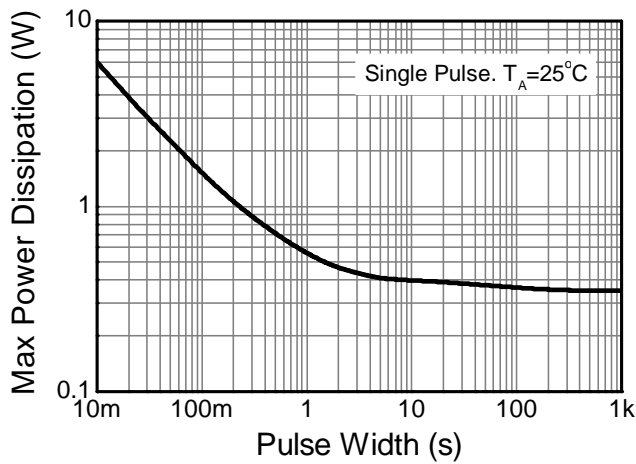
Thermal Characteristics and Derating information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation


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

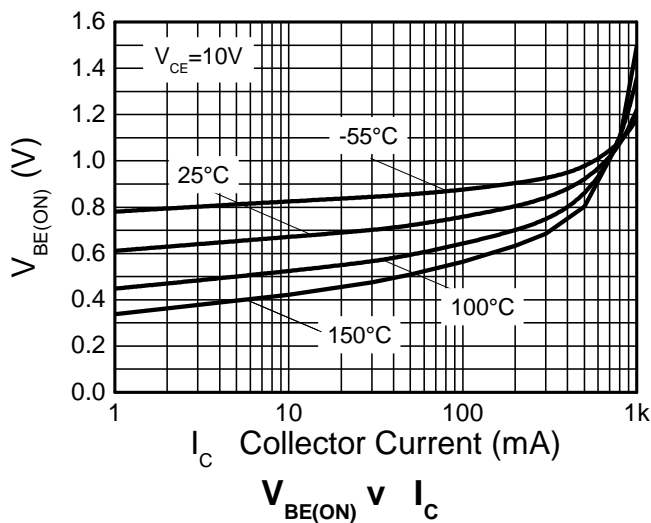
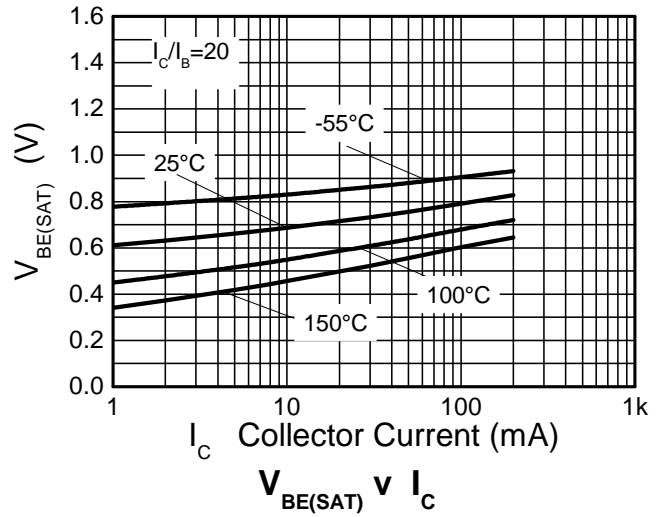
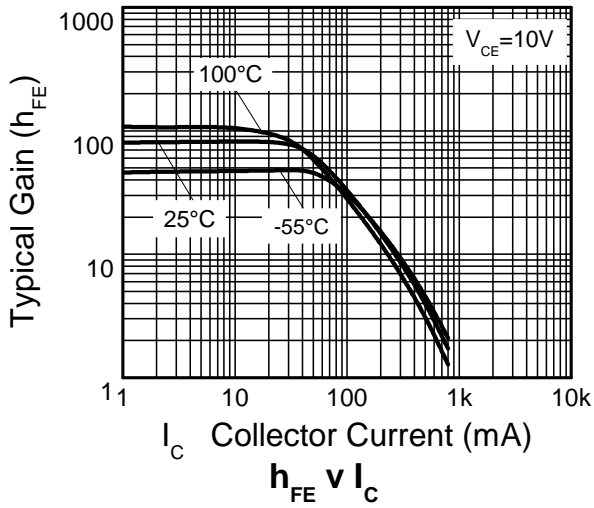
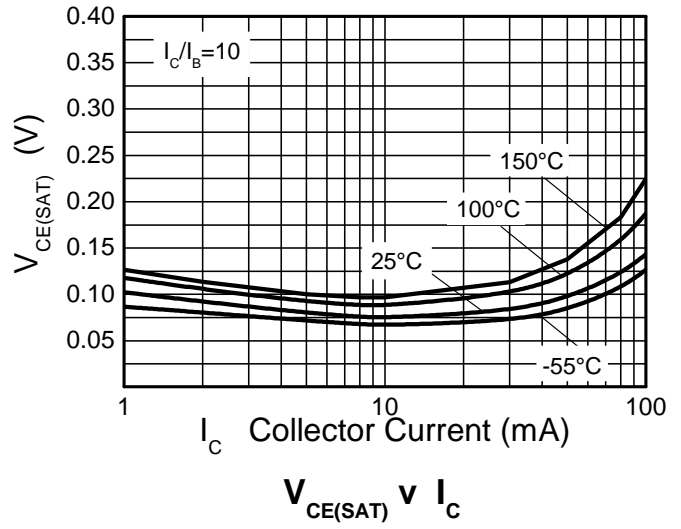
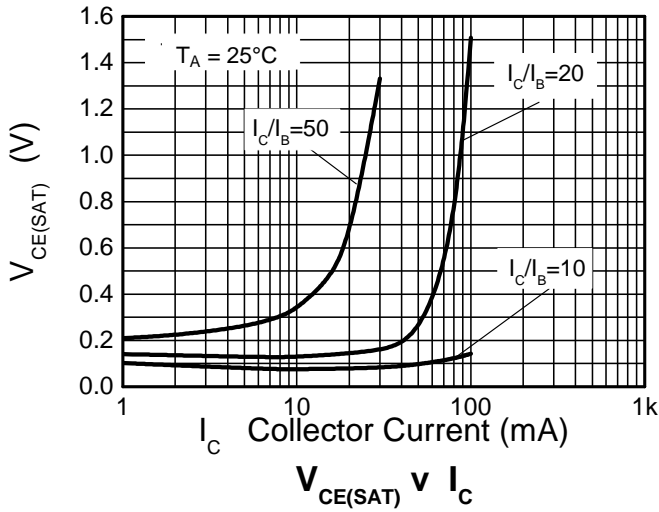
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	350	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	350	—	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	—	—	50	nA	V _{CB} = 250V
Emitter Cutoff Current	I _{EBO}	—	—	50	nA	V _{EB} = 6V
Static Forward Current Transfer Ratio (Note 9)	h _{FE}	20 30 30 20 15	—	— — 200 200 —	—	I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V I _C = 30mA, V _{CE} = 10V I _C = 50mA, V _{CE} = 10V I _C = 100mA, V _{CE} = 10V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(SAT)}	—	—	0.3 0.35 0.5 1.0	V	I _C = 10mA, I _B = 1mA I _C = 20mA, I _B = 2mA I _C = 30mA, I _B = 3mA I _C = 50mA, I _B = 5mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(SAT)}	—	—	0.80 0.85 0.90	V	I _C = 10mA, I _B = 1mA I _C = 20mA, I _B = 2mA I _C = 30mA, I _B = 3mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(ON)}	—	—	2.0	V	I _C = 100mA, V _{CE} = 10V
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%.



FMMT6517

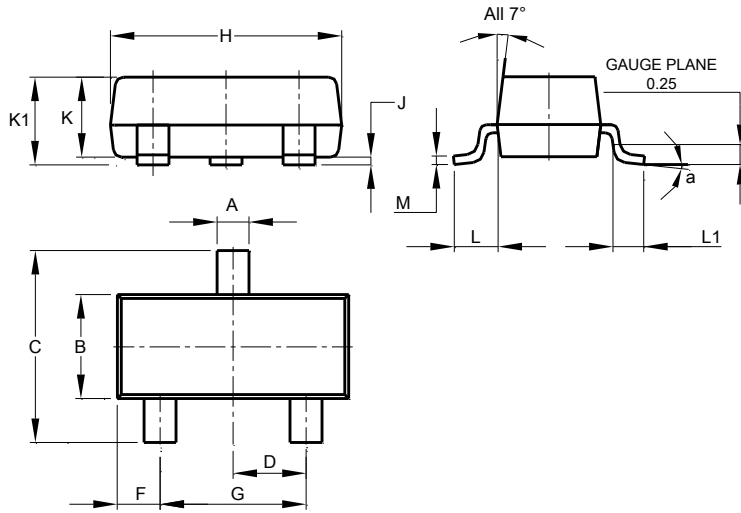
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

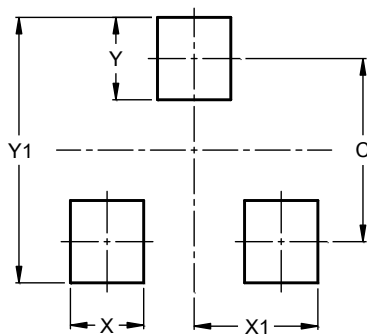


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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

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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