

**FMMT717**

**12V PNP SILICON POWER (SWITCHING) TRANSISTOR  
IN SOT23 PACKAGE**

**Features**

- 625mW Power dissipation
- -2.5A Continuous collector current
- I<sub>C</sub> Up to 10A Peak Pulse Current
- Excellent h<sub>FE</sub> Characteristics Up To -10A (pulsed)
- Low equivalent on-resistance R<sub>CE(sat)</sub> = 72mΩ at 2.5A
- Low Saturation Voltage E.g. -17mV Max @ I<sub>C</sub> = -100mA.
- Complementary part number FMMT617
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

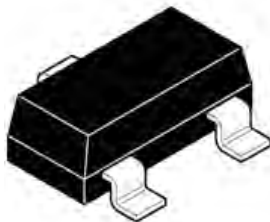
**Mechanical Data**

- Case: SOT23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (Approximate)

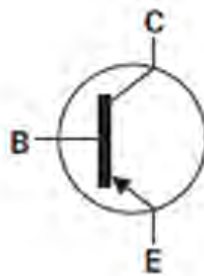
**Application**

- Load switch
- Battery charging
- DC-DC conversion

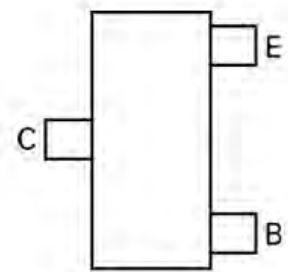
SOT23



Top View



Device Symbol



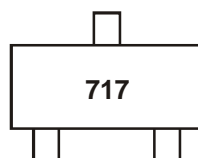
Top View  
Pin-Out

**Ordering Information (Notes 3 & 4)**

Product	Grade	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT717TA	Commercial	717	7	8	3000
FMMT717QTA	Automotive	717	7	8	3000

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" Policy can be found on our website at <http://www.diodes.com>
  3. For Packaging Details, go to our website at <http://www.diodes.com>.
  4. Products with Q-suffix are automotive grade. Automotive products are electrical and thermal the same as the commercial, except where specified.

**Marking Information**



717 = Product type Marking Code

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

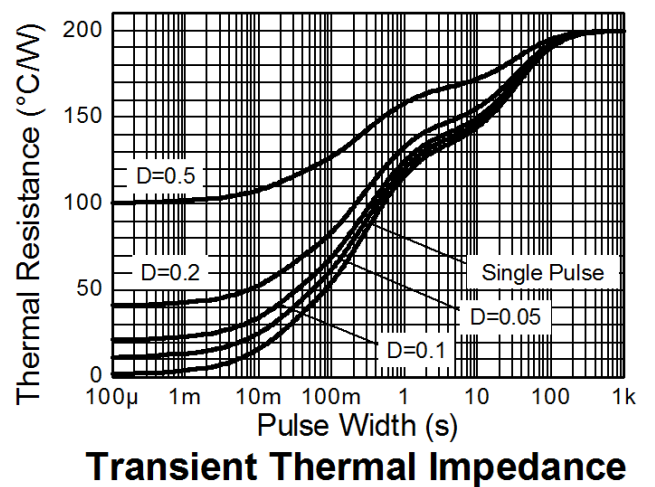
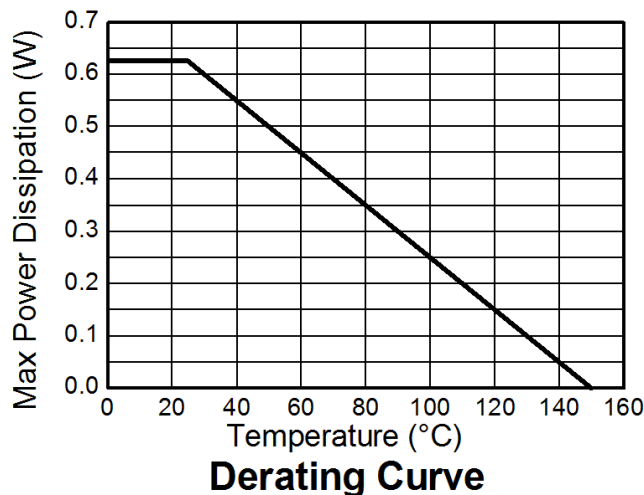
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-12	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-12	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Continuous Collector Current	I <sub>C</sub>	-2.5	A
Peak Pulse Current (Note 5)	I <sub>CM</sub>	-10	A
Base Current	I <sub>B</sub>	-500	mA

**Thermal Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P <sub>D</sub>	625	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	200	°C/W
Thermal Resistance, Junction to Leads (Note 7)	R <sub>θJL</sub>	194	°C/W
Operating and Storage Temperature Range	T <sub>J, TSTG</sub>	-55 to +150	°C

- Notes:
- 5. Measured under pulse conditions. Pulse width = 300μs. Duty cycle ≤2%
  - 6. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
  - 7. Thermal resistance from junction to solder-point (at the end of the collector lead).

**Thermal Characteristics and Derating information**



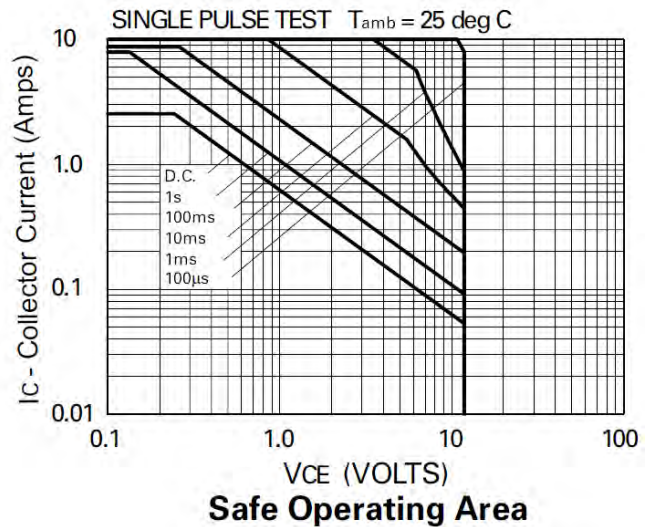
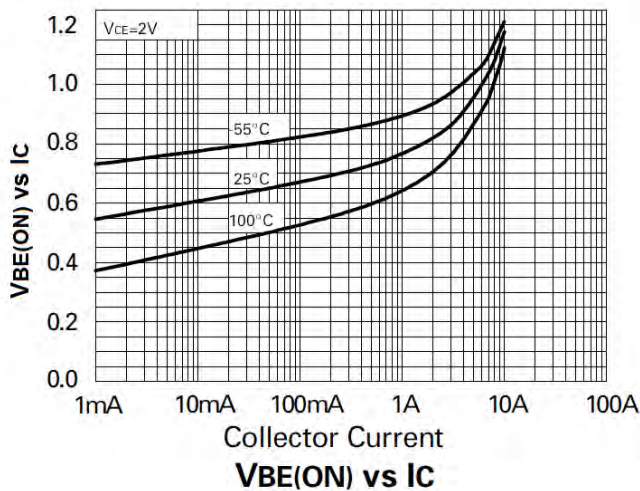
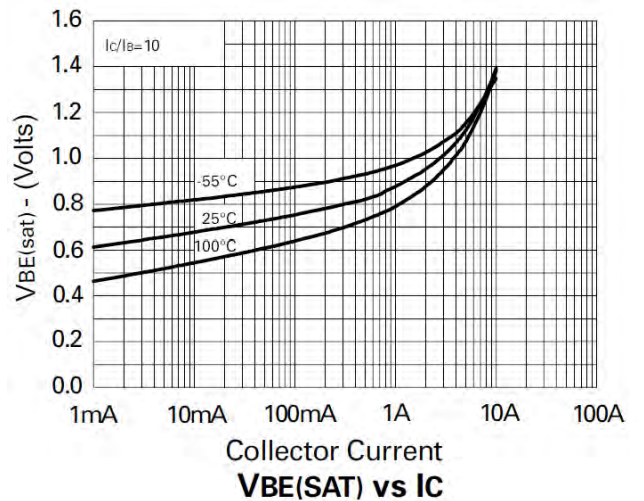
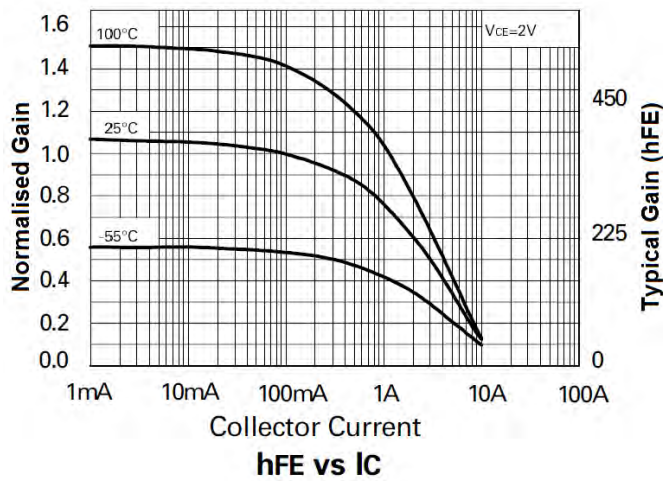
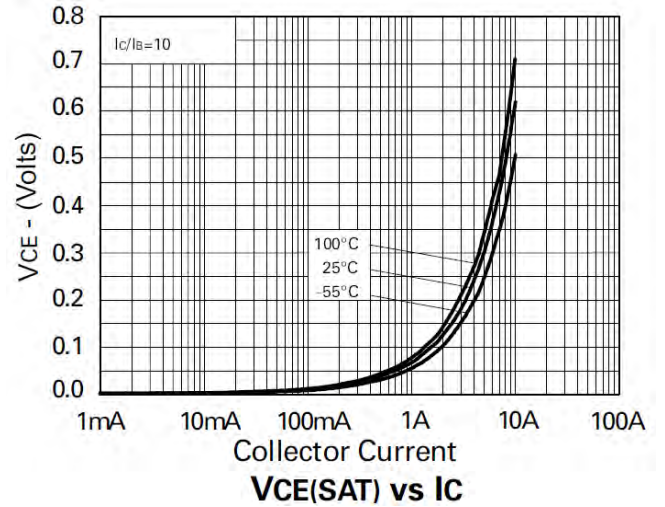
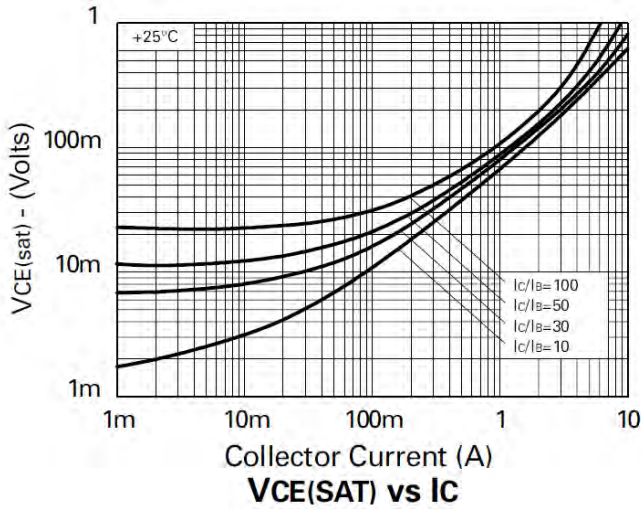
**FMMT717**

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-12	-35	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	-12	-25	-	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	-8.5	-	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	-	-	-100	nA	V <sub>CB</sub> = -10V
Emitter Cutoff Current	I <sub>EBO</sub>	-	-	-100	nA	V <sub>EB</sub> = -4V
Collector Emitter Cutoff Current	I <sub>CES</sub>	-	-	-100	nA	V <sub>CE</sub> = -10V
Static Forward Current Transfer Ratio (Note 8)	h <sub>FE</sub>	300	475	-	-	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -2V
		300	450	-		I <sub>C</sub> = -100mA, V <sub>CE</sub> = -2V
		180	275	-		I <sub>C</sub> = -2.5A, V <sub>CE</sub> = -2V
		60	100	-		I <sub>C</sub> = -8A, V <sub>CE</sub> = -2V
		45	70	-		I <sub>C</sub> = -10A, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 8)	V <sub>CE(sat)</sub>	-	-10	-17	mV	I <sub>C</sub> = -0.1A, I <sub>B</sub> = -10mA
		-	-100	-140		I <sub>C</sub> = -1A, I <sub>B</sub> = -10mA
		-	-110	-170		I <sub>C</sub> = -1.5A, I <sub>B</sub> = -50mA
		-	-180	-220		I <sub>C</sub> = -2.5A, I <sub>B</sub> = -50mA
Base-Emitter Turn-On Voltage(Note 8)	V <sub>BE(on)</sub>	-	-0.8	-1.0	V	I <sub>C</sub> = -2.5A, V <sub>CE</sub> = -2V
Base-Emitter Saturation Voltage(Note 8)	V <sub>BE(sat)</sub>	-	-0.9	-1.0	V	I <sub>C</sub> = -2.5A, I <sub>B</sub> = -50mA
Output Capacitance	C <sub>obo</sub>	-	21	30	pF	V <sub>CB</sub> = -10V, f = 1MHz
Transition Frequency	f <sub>T</sub>	80	110	-	MHz	V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA, f = 100MHz
Turn-On Time	t <sub>on</sub>	-	70	-	ns	V <sub>CC</sub> = -6V, I <sub>C</sub> = -2A
Turn-Off Time	t <sub>off</sub>	-	130	-	ns	I <sub>B1</sub> = I <sub>B2</sub> = 50mA

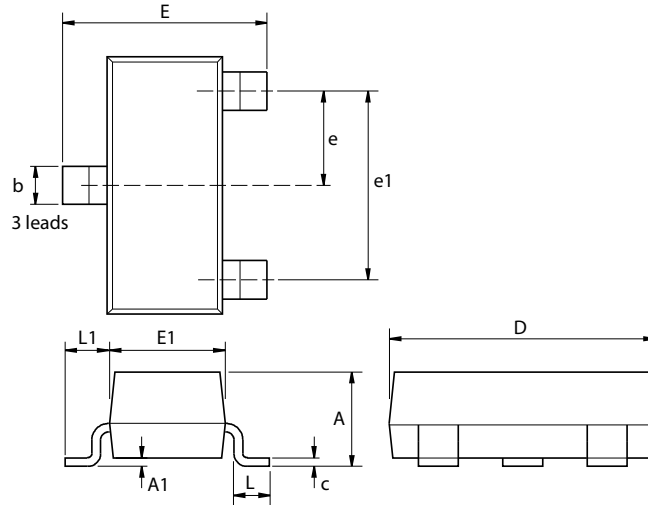
Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%

**Typical Characteristics**



**FMMT717**

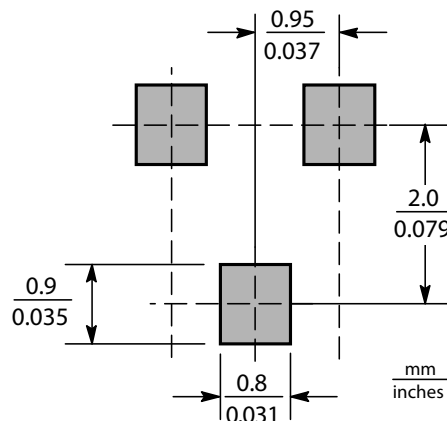
**Package Outline Dimensions**



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

**Note:** Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

**Suggested Pad Layout**



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