





12V PNP SILICON LOW SATURATION TRANSISTOR IN SOT23

Features

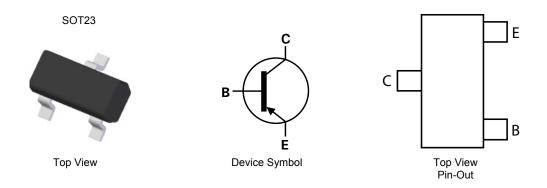
- BV_{CEO} > -12V
- I_C = -2.5A Continuous Collector Current
- I_{CM} = -10A Peak Pulse Current
- Low Saturation Voltage E.g. -17mV Max @ I_C = -100mA.
- $R_{CE(sat)} = 72m\Omega$ at 2.5A for a low equivalent on-resistance
- 625mW power dissipation
- h_{FE} characterised up to -10A for high current gain hold-up
- Complementary NPN Type: FMMT617
- 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
- Weight 0.008 grams (approximate)

Application

- Gate Driving MOSFETs and IGBTs
- Load switch
- Battery charging
- DC-DC conversion



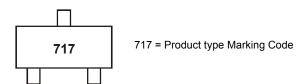
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT717TA	AEC-Q101	717	7	8	3,000
FMMT717QTA	Automotive	717	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com 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.
- 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.
- 5. For packaging details, go to our website at http://www.diodes.com

Marking Information







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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-12	V
Collector-Emitter Voltage	V_{CEO}	-12	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	Ic	-2.5	Α
Peak Pulse Current	I _{CM}	-10	Α
Base Current	Ι _Β	-500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	625	mW
Power Dissipation (Note 7)	P _D	806	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{0JA}	200	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	155	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R ₀ JL	194	°C/W
Operating and Storage Temperature Range	$T_{J,}T_{STG}$	-55 to +150	°C

ESD Ratings (Note 9)

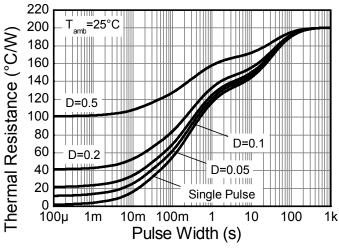
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	С

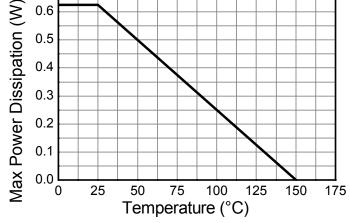
Notes:

- 6. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
- 7. Same as note 6, except the device is measured at $t \le 5$ sec.
- 8. Thermal resistance from junction to solder-point (at the end of the collector lead).
- 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



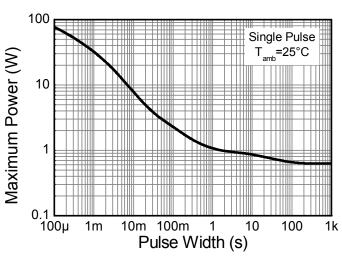
Thermal Characteristics and Derating information



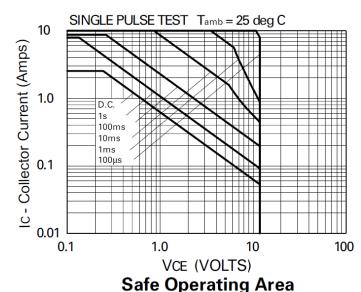


0.7

Transient Thermal Impedance

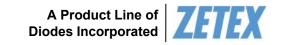


Derating Curve



Pulse Power Dissipation





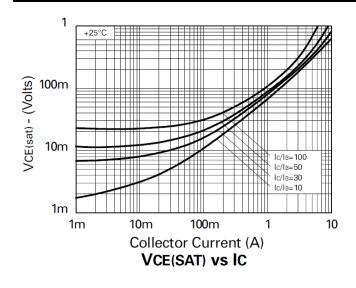
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

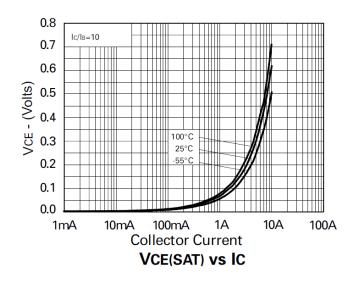
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-12	-35	-	V	$I_{C} = -100 \mu A$
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	-12	-25	-	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	-8.5	-	V	$I_E = -100 \mu A$
Collector Cutoff Current	I _{CBO}	-	-	-100	nA	V _{CB} = -10V
Emitter Cutoff Current	I _{EBO}	-	-	-100	nA	V _{EB} = -5V
Collector Emitter Cutoff Current	I _{CES}	-	-	-100	nA	V _{CE} = -10V
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	300 300 180 60 45	475 450 275 100 70	-	-	$\begin{split} &I_{C} = -10\text{mA}, \ V_{CE} = -2\text{V} \\ &I_{C} = -100\text{mA}, \ V_{CE} = -2\text{V} \\ &I_{C} = -2.5\text{A}, \ V_{CE} = -2\text{V} \\ &I_{C} = -8\text{A}, \ V_{CE} = -2\text{V} \\ &I_{C} = -10\text{A}, \ V_{CE} = -2\text{V} \end{split}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{\text{CE(sat)}}$		-10 -100 -110 -180	-17 -140 -170 -220	mV	$I_C = -0.1A$, $I_B = -10mA$ $I_C = -1A$, $I_B = -10mA$ $I_C = -1.5A$, $I_B = -50mA$ $I_C = -2.5A$, $I_B = -50mA$
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(on)}$	-	-0.8	-1.0	V	$I_C = -2.5A$, $V_{CE} = -2V$
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(sat)}$	-	-0.9	-1.0	V	$I_C = -2.5A$, $I_B = -50mA$
Output Capacitance	C_{obo}	-	21	30	pF	V_{CB} = -10V, f = 1MHz
Transition Frequency	f _T	80	110	-	MHz	$V_{CE} = -10V$, $I_{C} = -50mA$, $f = 100MHz$
Turn-On Time	t _{on}	-	70	-	ns	$V_{CC} = -6V, I_{C} = -2A$
Turn-Off Time	t _{off}	-	130	-	ns	$I_{B1} = I_{B2} = 50 \text{mA}$

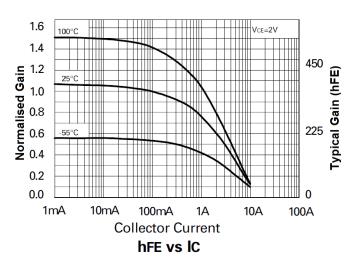
Notes: 10. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%

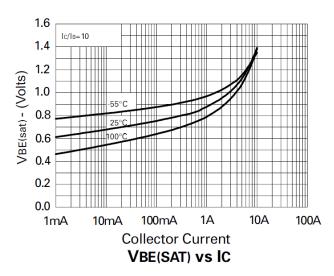


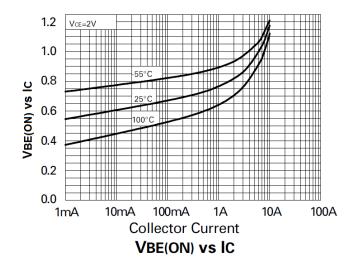
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)









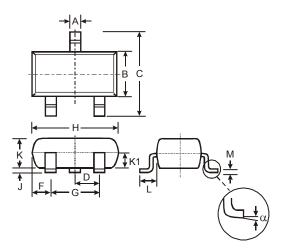






Package Outline Dimensions

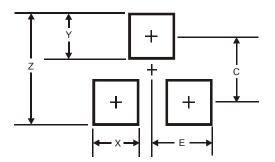
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23					
Dim	Min	Max	Тур		
Α	0.37	0.51	0.40		
В	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		
7	0.013	0.10	0.05		
K	0.903	1.10	1.00		
K1	-	-	0.400		
L	0.45	0.61	0.55		
М	0.085	0.18	0.11		
α	0°	8°	-		
All Dimensions in mm					

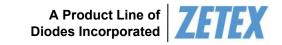
Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)			
Z	2.9			
Х	0.8			
Υ	0.9			
С	2.0			
E	1.35			





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