Lead-free Green

ZUMT717

12V PNP POWER SWITCHING TRANSISTOR IN SOT323

Features

- BV_{CEO} > -12V
- I_C = -1.25A Continuous Collector Current
- I_{CM} = -3A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -215mV @ I_C = -1A
- $R_{CE(SAT)}$ = 150mΩ for a Low Equivalent On-Resistance
- 500mW Power Dissipation
- Excellent h_{FE} Characteristics up to -3A
- Complementary NPN Type: ZUMT617
- **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

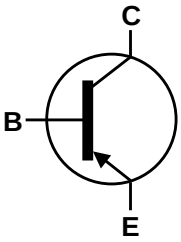
- Case: SOT323
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (approximate)

Applications

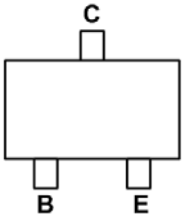
- Negative boost functions in DC-DC converters
- Supply line switching in mobile phones and pagers
- Motor drivers in camcorders and mini disk players

SOT323

Top view



Device symbol



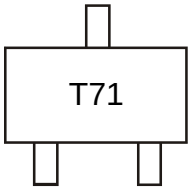
Top View
Pin-Out

Ordering Information (Notes 4)

Device	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per reel
ZUMT717TA	AEC-Q101	T71	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/quality/lead_free.html 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 http://www.diodes.com/products/packages.html.

Marking Information



T71 = Product Type Marking Code

Absolute 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
Peak Pulse Current	I_{CM}	-3	A
Continuous Collector Current	I_C	-1.25	A
Base Current	I_B	-200	mA

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

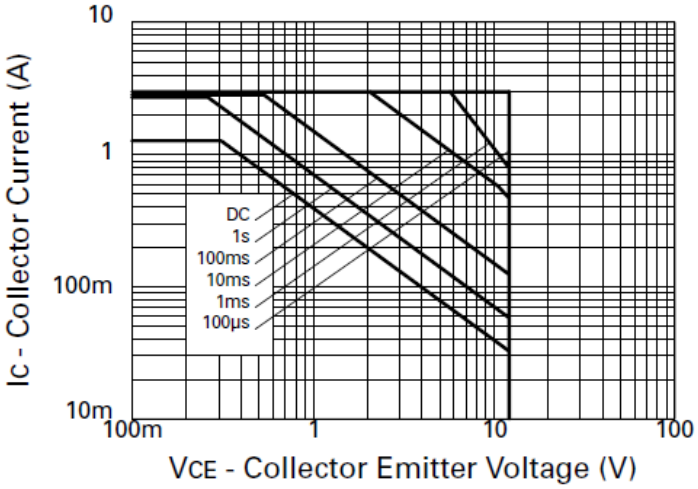
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	385	mW
	(Note 6)		500	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	325	°C/W
	(Note 6)		250	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

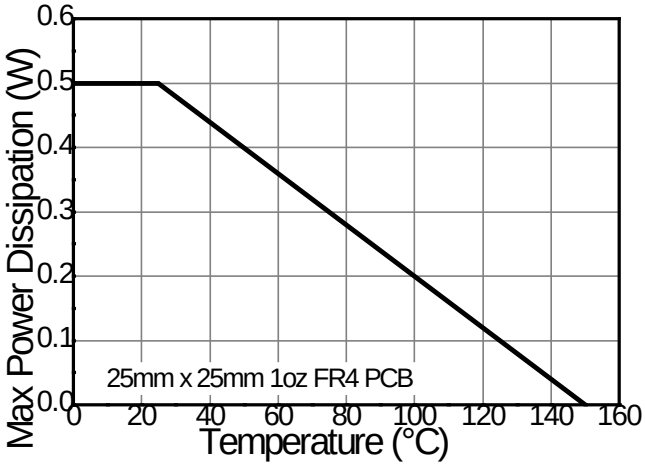
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted with collector lead on 10mm x 8mm 1oz copper that is on a single-sided 0.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as note (5), except the collector lead is on a 25mm x 25mm 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.

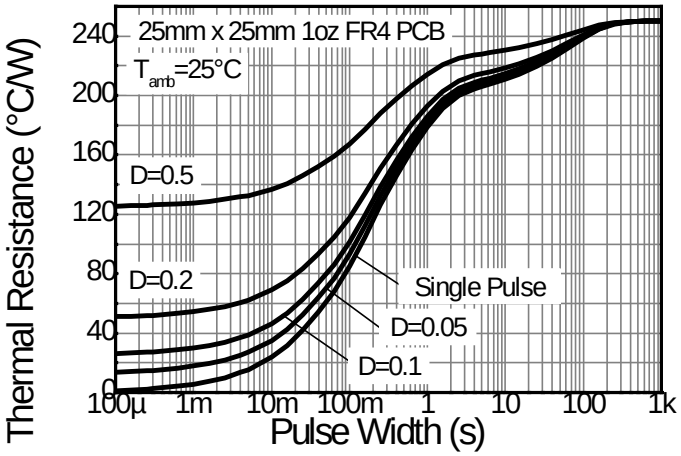
Thermal Characteristics and Derating Information



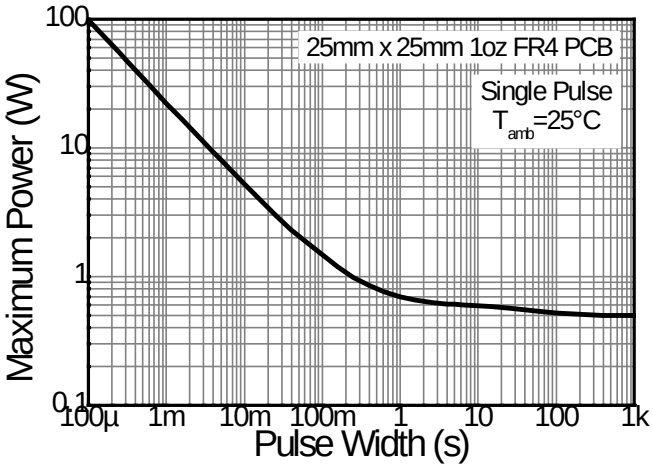
Safe Operating Area



Derating Curve



Transient Thermal Impedance



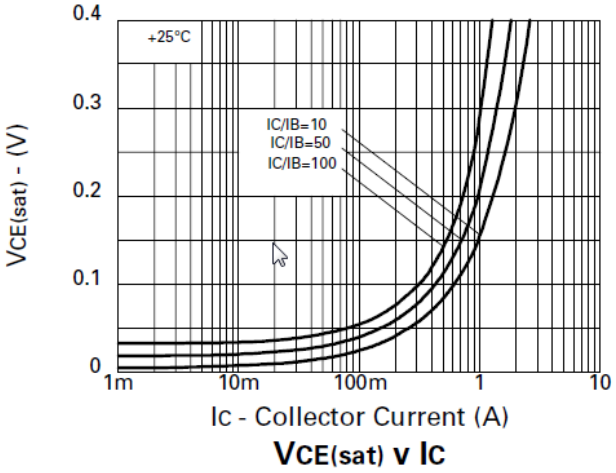
Pulse Power Dissipation

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

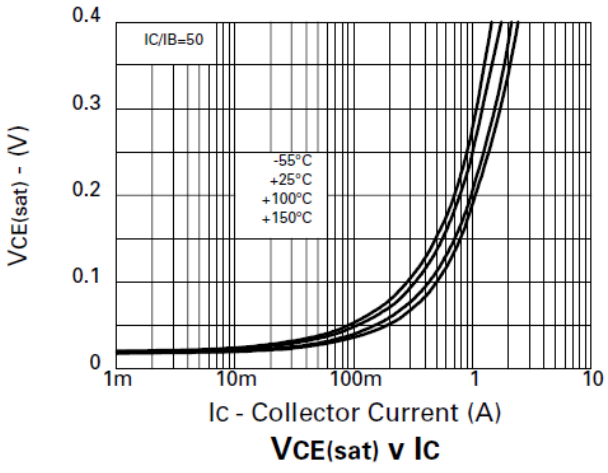
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Collector-Base Breakdown Voltage	V_{CBO}	-12	—	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage	V_{CEO}	-12	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	V_{EBO}	-7	—	—	V	I_E = -100µA
Collector-Base Cutoff Current	I_{CBO}	—	—	-10	nA	V_{CB} = -10V
Emitter-Base Cutoff Current	I_{EBO}	—	—	-10	nA	V_{EB} = -5.6V
Collector-Emitter Cutoff Current	I_{CES}	—	—	-10	nA	V_{CES} = -10V
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h_{FE}	300	490	—	—	I_C = -10mA, V_{CE} = -2.0V
		300	450			I_C = -0.1A , V_{CE} = -2.0V
		200	340			I_C = -0.5A , V_{CE} = -2.0V
		125	250			I_C = -1.25A , V_{CE} = -2.0V
		75	140			I_C = -2A , V_{CE} = -2.0V
		30	80			I_C = -3A , V_{CE} = -2.0V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-25	-40	mV	I_C = -0.1A, I_B = -10mA
		—	-55	-100	mV	I_C = -0.25A, I_B = -10mA
		—	-110	-175	mV	I_C = -0.5A, I_B = -10mA
		—	-160	-215	mV	I_C = -1A, I_B = -50mA
		—	-185	-240	mV	I_C = -1.25A, I_B = -100mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-990	-1100	mV	I_C = -1.25A, I_B = 100mA
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	-850	-1000	mV	I_C = -1.25A, V_{CE} = -2.0V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	15	—	pF	V_{CB} = -10V, f = 1MHz
Turn-On Time	$t_{(on)}$	—	50	—	ns	V_{CC} = -10V, I_C = -1A, I_{B1} = $-I_{B2}$ = -100mA
Turn-Off Time	$t_{(off)}$	—	135	—	ns	
Current Gain-Bandwidth Product	f_T	—	220	—	MHz	V_{CE} = -10V, I_C = -50mA, f = 100MHz

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

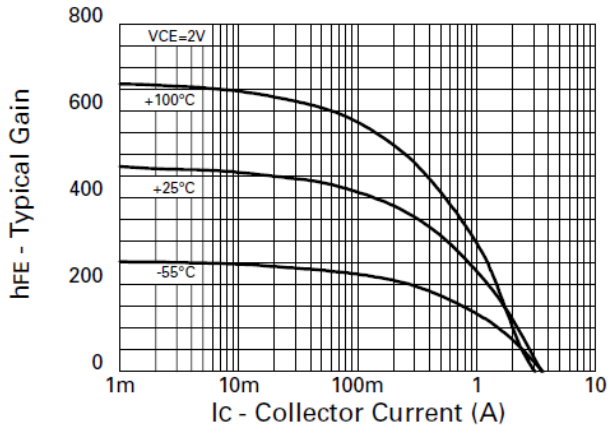
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



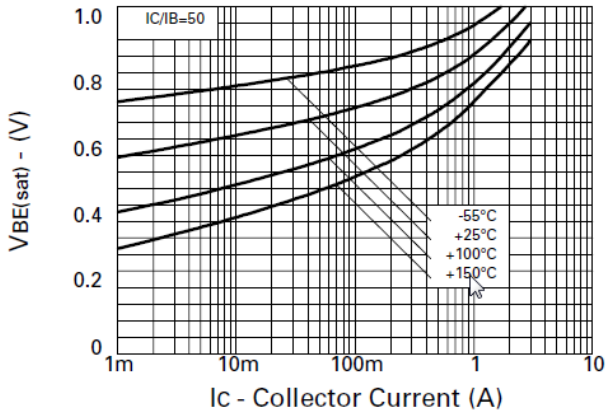
VCE(sat) v IC



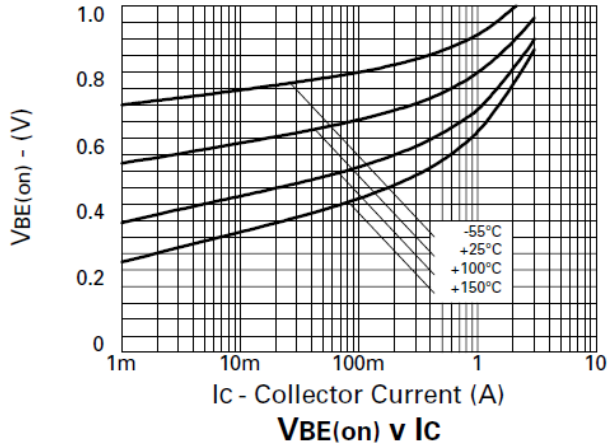
VCE(sat) v IC



hFE v IC



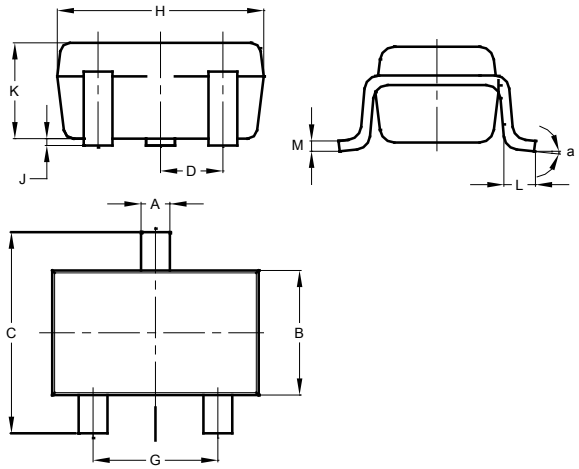
VBE(sat) v IC



VBE(on) v IC

Package Outline Dimensions

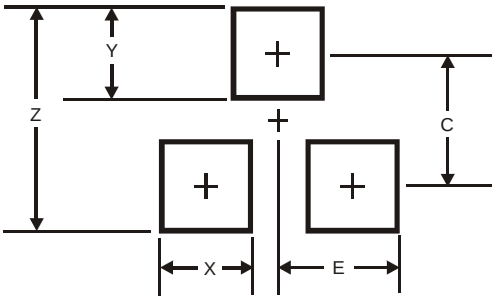
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.650 BSC		
F	0.375	0.475	0.425
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.00	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
a	8°C		
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	SOT323
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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