Lead-free Green

FMMT624

150V NPN SILICON LOW SATURATION TRANSISTOR IN SOT-23

Features

- V_{CEO} = 125V
- I_C = 1A
- 625mW Power dissipation
- Low Equivalent On Resistance
- Low Saturation Voltage
- h_{FE} characterised up to 3.0A
- **"Lead Free", RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Devices (Note 2)**

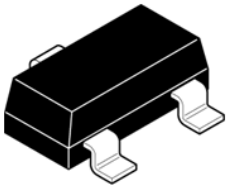
Mechanical Data

- Case: SOT-23
- Case material: "Green" molding Compound. (Note 2)
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (Approximate)

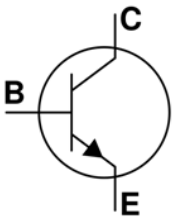
Applications

- DC-DC / DC-AC Modules
- Regulator
- LED driver

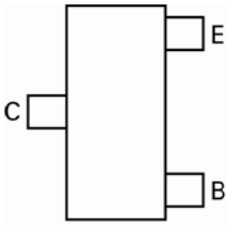
SOT-23



Top View



Device Symbol



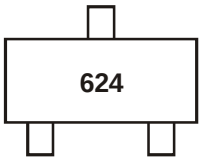
Top View
Pin Configuration

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT624TA	624	7	8mm embossed	3000 units

Notes:
1. No purposefully added lead.
2. Devices with the PID number starting from PID0155145 are 'Green' products. Halogen and Antimony Free. 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.

Marking Information



624 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

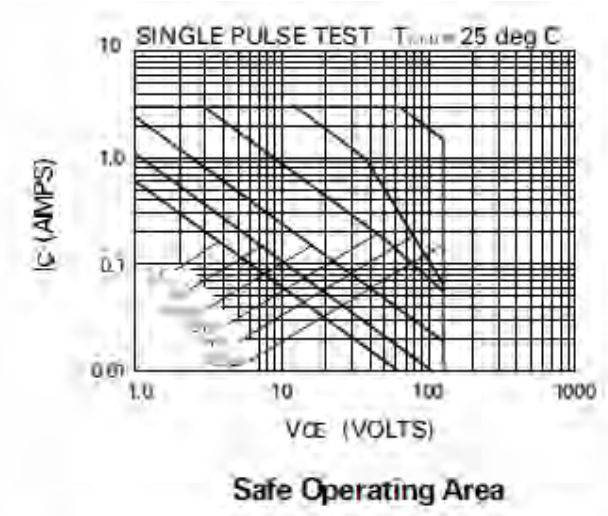
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	125	V
Collector-Emitter Voltage	V_{CEO}	125	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

Thermal Characteristics

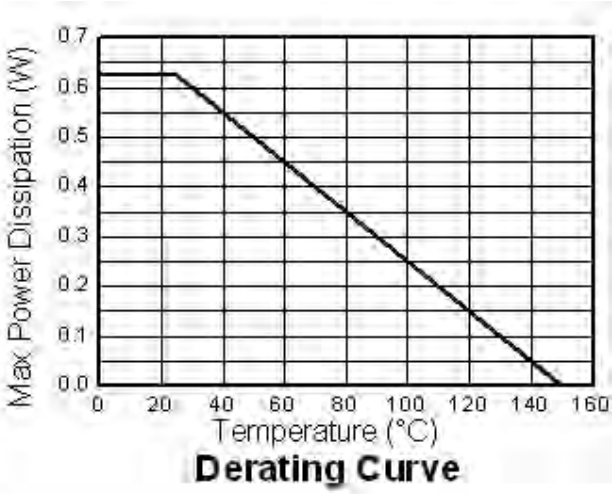
Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = 25°C (Note 5)	P_D	625	mW
Thermal Resistance, Junction to Ambient Air (Note 4) @ T_A = 25°C	$R_{\theta JA}$	200	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 4. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%.
5. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions.

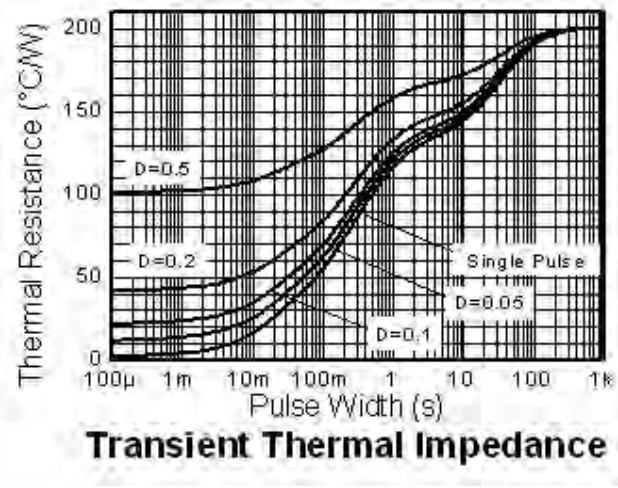
Thermal Characteristics and Derating information



Safe Operating Area



Derating Curve



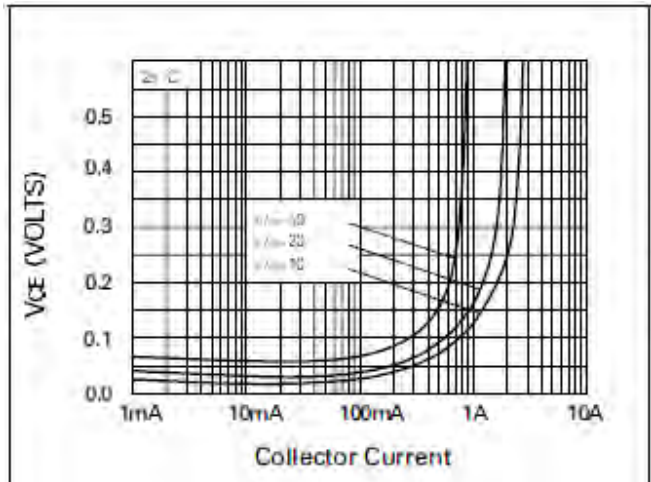
Transient Thermal Impedance

Electrical Characteristics @T_A = 25°C unless otherwise specified

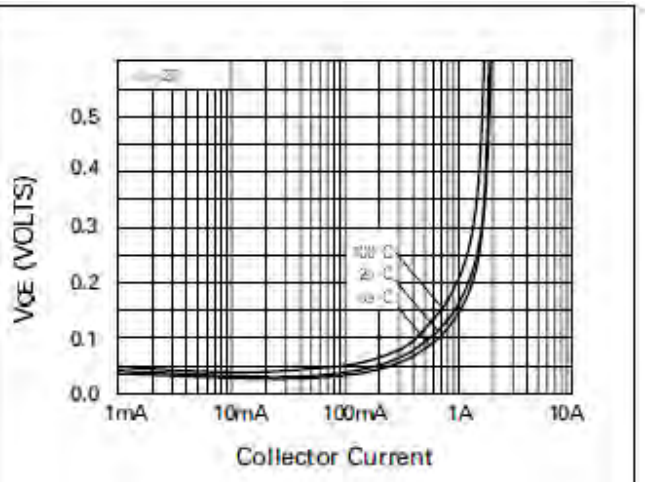
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	125	250	-	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	125	160	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	8.3	-	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	-	-	100	nA	V_{CB} = 100V
Emitter Cut-off Current	I_{EBO}	-	-	100	nA	V_{EB} = 4V
Collector Emitter Cut-off Current	I_{CES}	-	-	100	nA	V_{CES} = 100V
Static Forward Current Transfer Ratio (Note 6)	h_{FE}	200 300 100 -	400 450 140 18	- - - -	-	I_C = 10mA, V_{CE} = 10V I_C = 200mA, V_{CE} = 10V I_C = 1A, V_{CE} = 10V I_C = 3A, V_{CE} = 10V
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	- - - -	26 70 160 165	50 150 220 250	mV	I_C = 0.1A, I_B = 10mA I_C = 0.5A, I_B = 1mA I_C = 0.5A, I_B = 50mA I_C = 1A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 6)	$V_{BE(sat)}$	-	0.85	1.0	V	I_C = 1A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 6)	$V_{BE(on)}$	-	0.70	1.0	V	I_C = 1A, V_{CE} = 10V
Transition Frequency	f_T	100	155	-	MHz	I_C = 50mA, V_{CE} = 10V, f = 100MHz
Collector Output Capacitance	C_{obo}	-	7	15	pF	V_{CB} = 10V, f = 1MHz
Turn-On Time	$t_{(on)}$	-	60	-	ns	V_{CC} = 50V, I_C = 0.5A, I_{B1} = -I_{B2} = 50mA
Turn-Off Time	$t_{(off)}$	-	1300	-	ns	

Notes: 6. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%

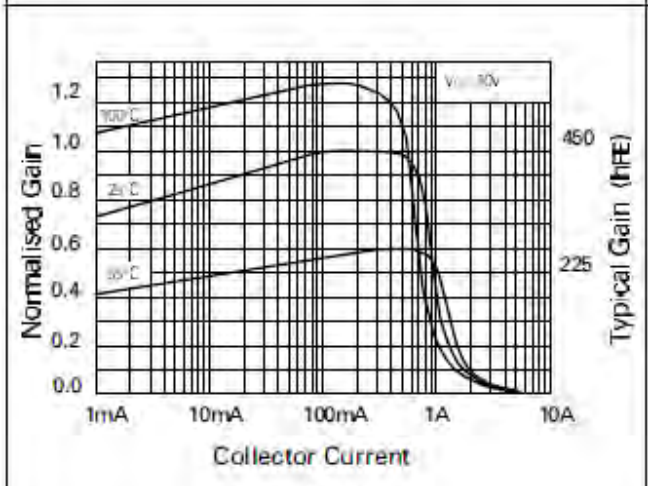
Typical Characteristics



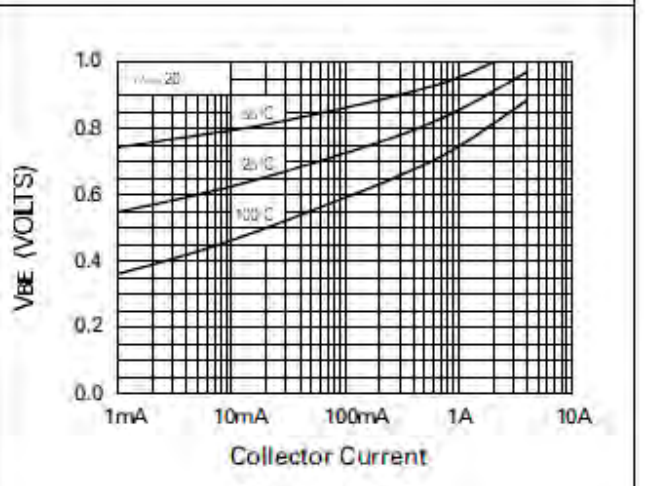
VCE(SAT) vs IC



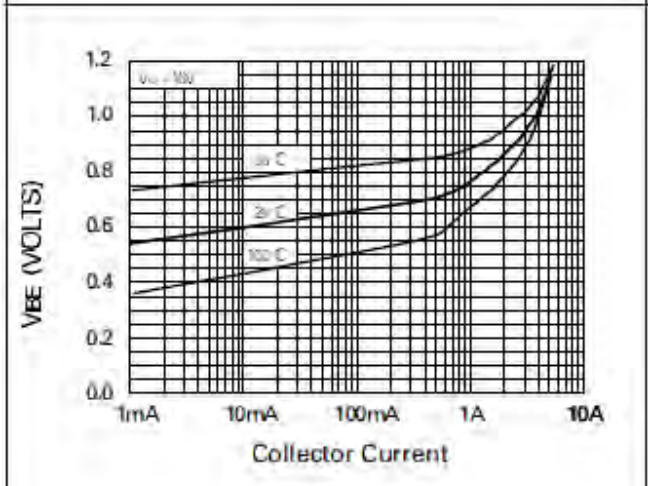
VCE(SAT) vs IC



hFE vs IC

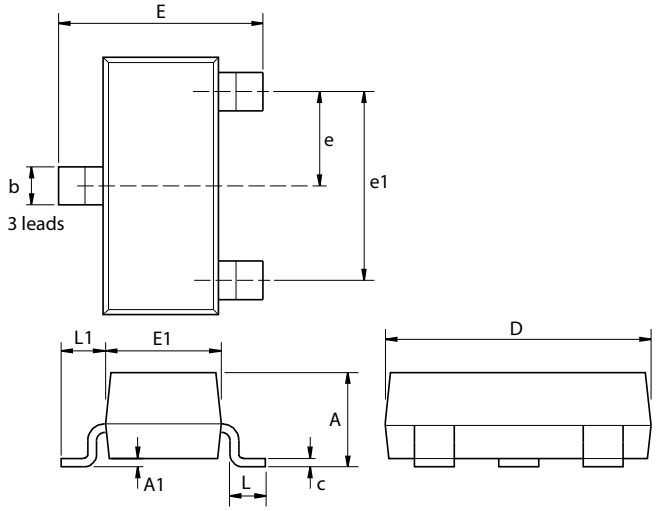


VBE(SAT) vs IC



VBE(ON) vs IC

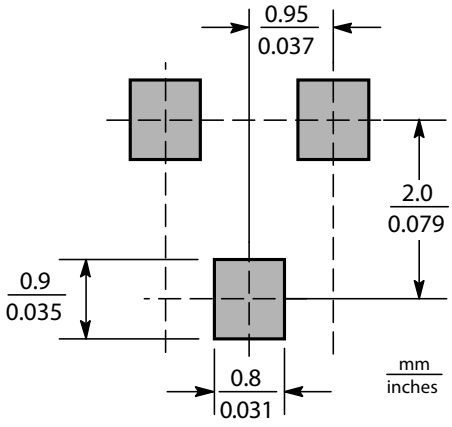
Package Outline Dimensions



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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