


FMMT624
150V NPN SILICON LOW SATURATION TRANSISTOR IN SOT-23
Features

- $V_{CE0} = 125V$
- $I_C = 1A$
- 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)**

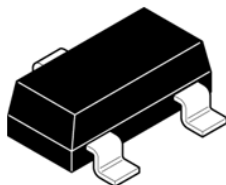
Mechanical Data

- 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)

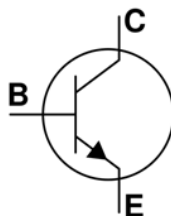
Applications

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

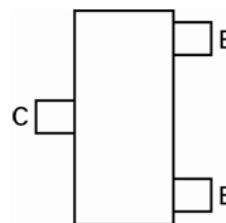
SOT-23



Top View



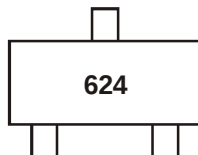
Device Symbol


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

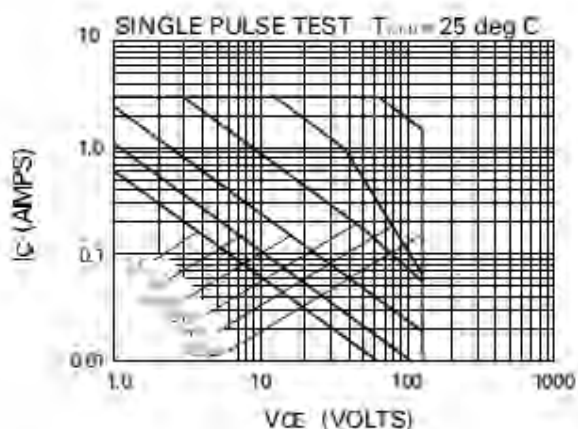
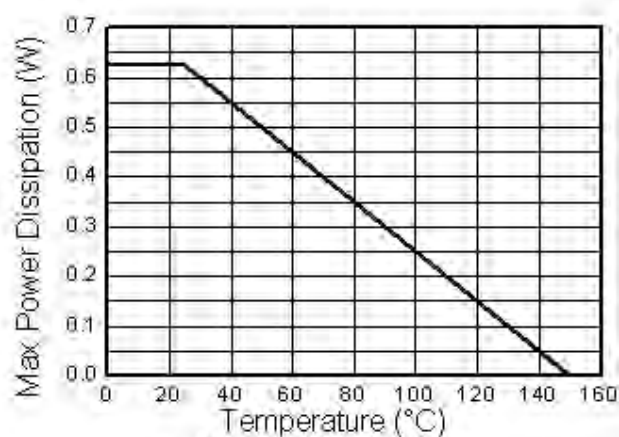
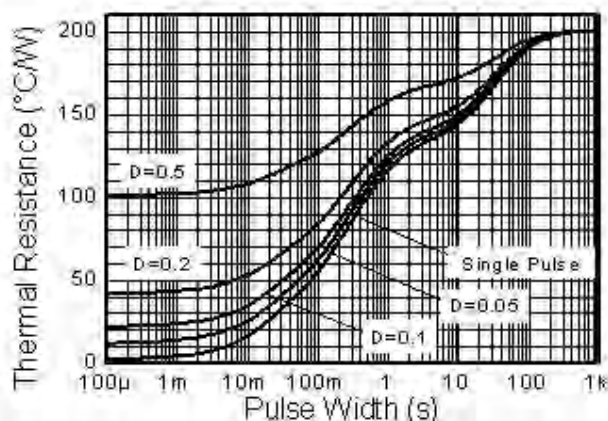
Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	125	V
Collector-Emitter Voltage	V_{CE0}	125	V
Emitter-Base Voltage	V_{EB0}	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 $T_A = 25^\circ\text{C}$ (Note 5)	P_D	625	mW
Thermal Resistance, Junction to Ambient Air (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 4. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.
 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.

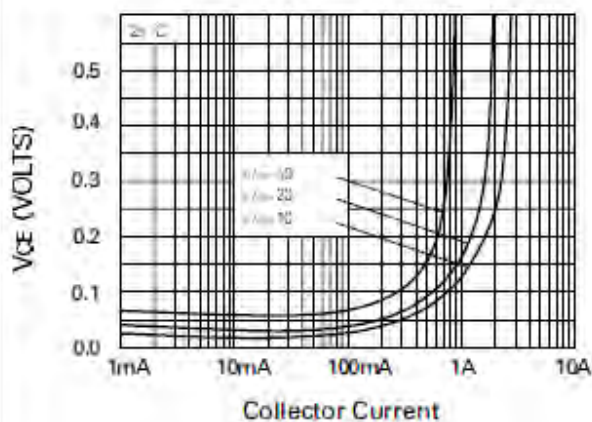
Thermal Characteristics and Derating information

Safe Operating Area

Derating Curve

Transient Thermal Impedance

Electrical Characteristics @T_A = 25°C unless otherwise specified

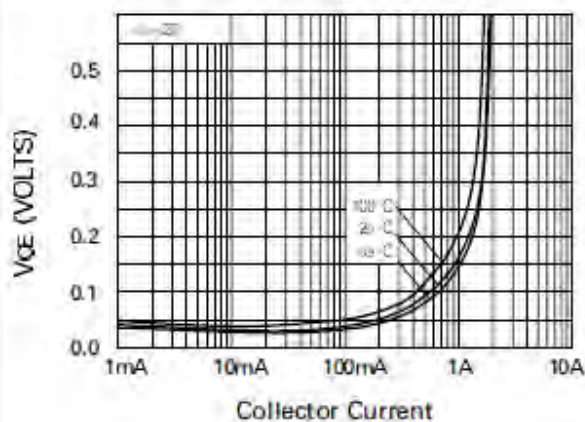
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	125	250	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 6)	BV _{CEO}	125	160	-	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	5	8.3	-	V	I _E = 100μA
Collector Cut-off Current	I _{CBO}	-	-	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,
Turn-Off Time	t _(off)	-	1300	-	ns	I _{B1} = -I _{B2} = 50mA

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

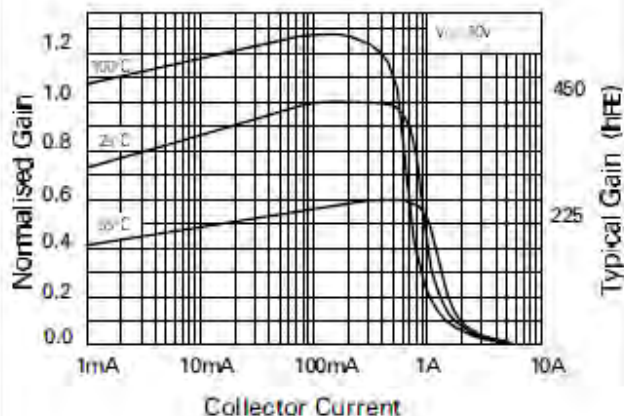
Typical Characteristics



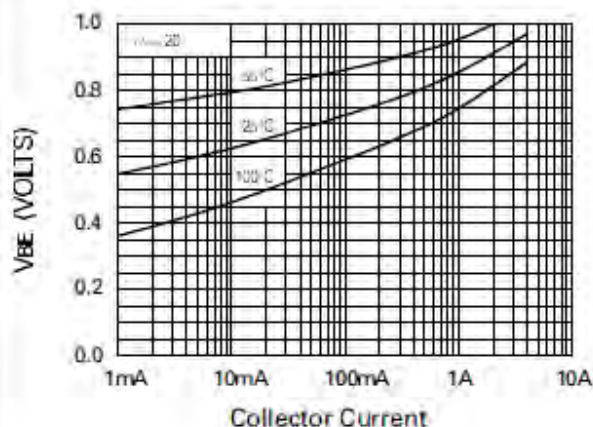
VCE(SAT) vs IC



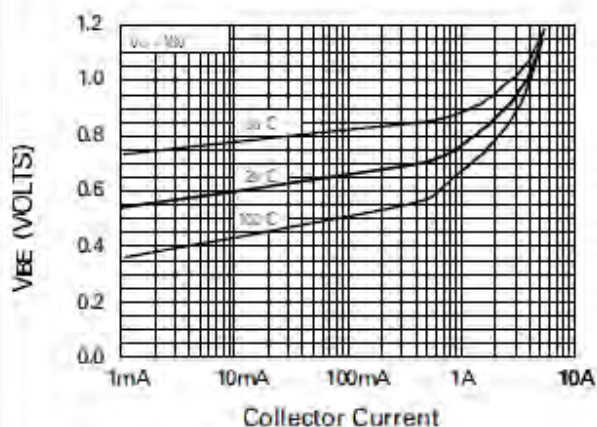
VCE(SAT) vs IC



hFE vs IC

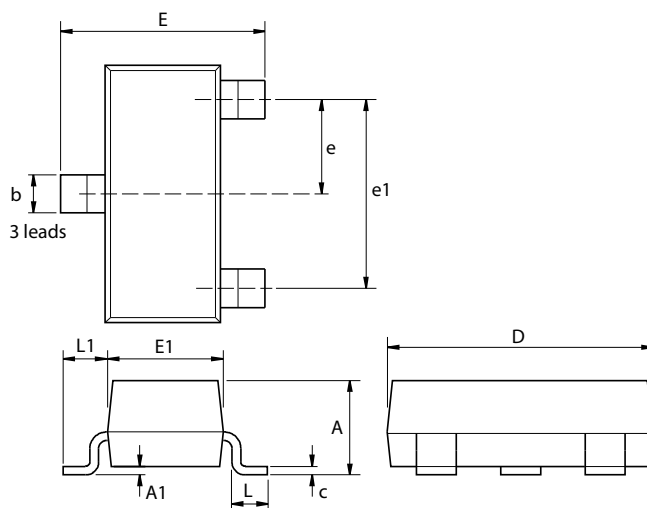


VBE(SAT) vs IC



VBE(ON) vs IC

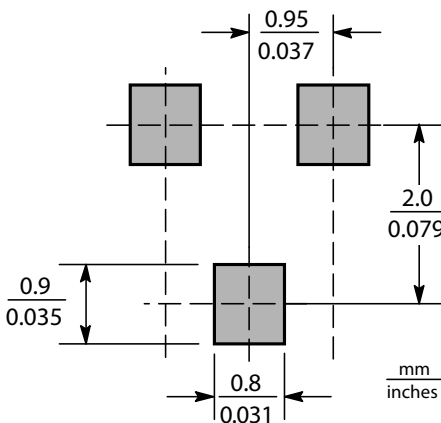
Package Outline Dimensions



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



IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2010, Diodes Incorporated

www.diodes.com