Lead-free Green

FMMT620

80V NPN SILICON LOW SATURATION TRANSISTOR IN SOT23

Features

- V_{CEO} = 80V
- V_{SAT} = 90mΩ
- I_C = 1.5A
- Low Equivalent On Resistance
- Low Saturation Voltage
- h_{FE} Characterized up to 3.0A
- **Lead, Halogen, and Antimony Free/RoHS Compliant (Note 1)**
- **"Green" Devices (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

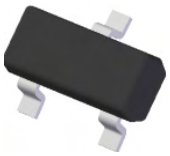
Mechanical Data

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

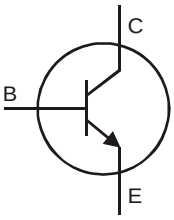
Applications

- DC-DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

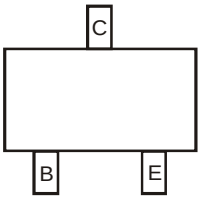
SOT-23



Top View



Device symbol



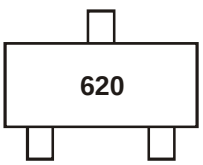
Top View
Pin Configuration

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT620TA	620	7	8mm embossed	1000 units
FMMT620TC	620	13	8mm embossed	3000 units

Notes: 1. No purposefully added lead. Halogen and Antimony free: <900ppm bromine, <900ppm chlorine (<1500ppm total) and <1000ppm antimony compounds.
2. Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com/

Marking Information



620 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

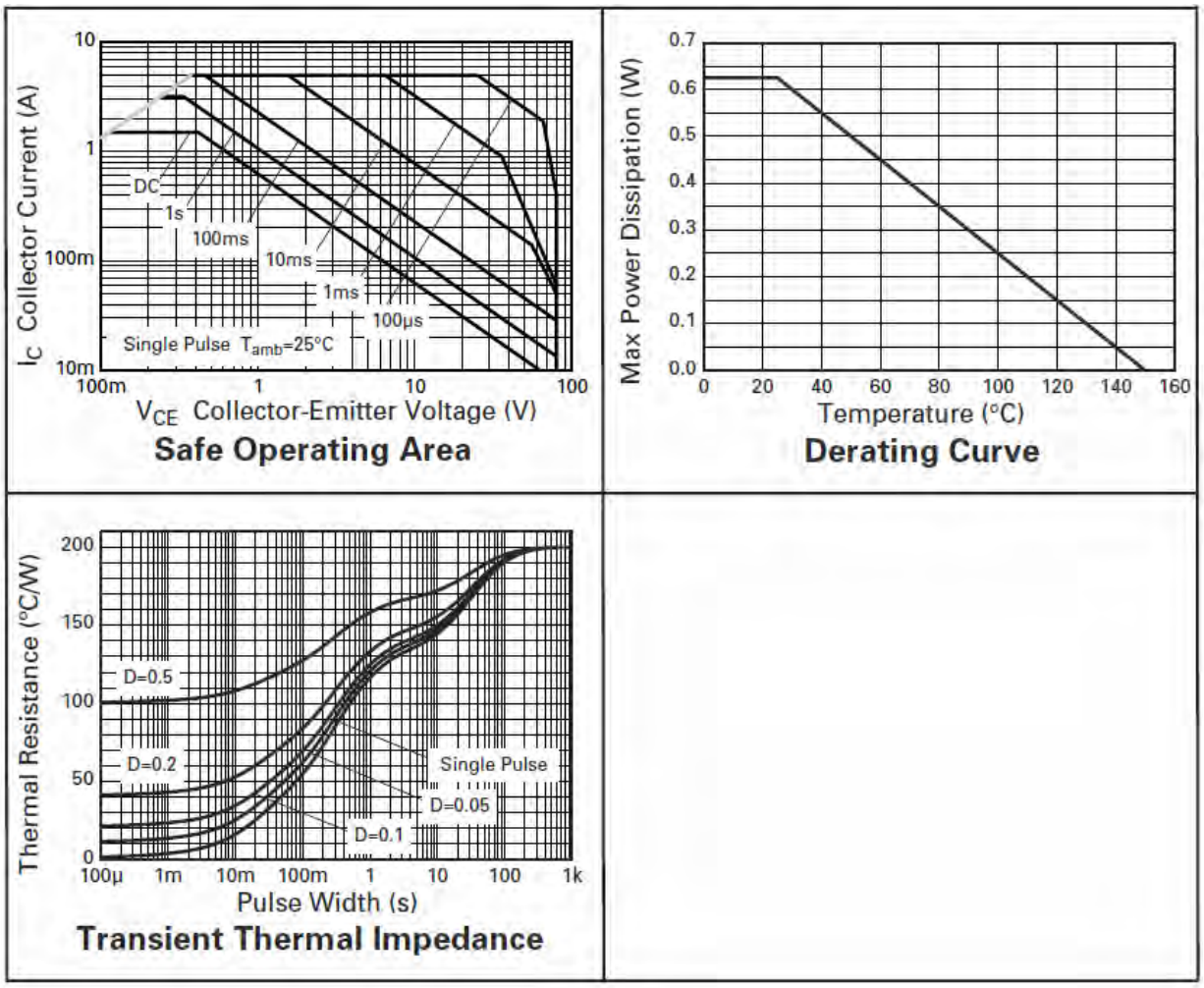
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1.5	A
Peak Pulse Current	I_{CM}	5	A
Base Current	I_B	500	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = 25°C (Note 3) Linear Derating Factor	P_D	625 5	mW mW/°C
Power Dissipation at T_A = 25°C (Note 4) Linear Derating Factor	P_D	625 6.4	mW mW/°C
Junction to Ambient (Note 3)	$R_{\theta JA}$	200	°C/W
Junction to Lead (Note 4)	$R_{\theta JA}$	155	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 3. For device surface mounted on 25mm x 25mm FR-4 PCB with high coverage of single sided 1 oz copper, in still air conditions
4. For device mounted on FR-4 PCB measured at t ≤ 5 Secs.

Thermal Characteristics and Derating information

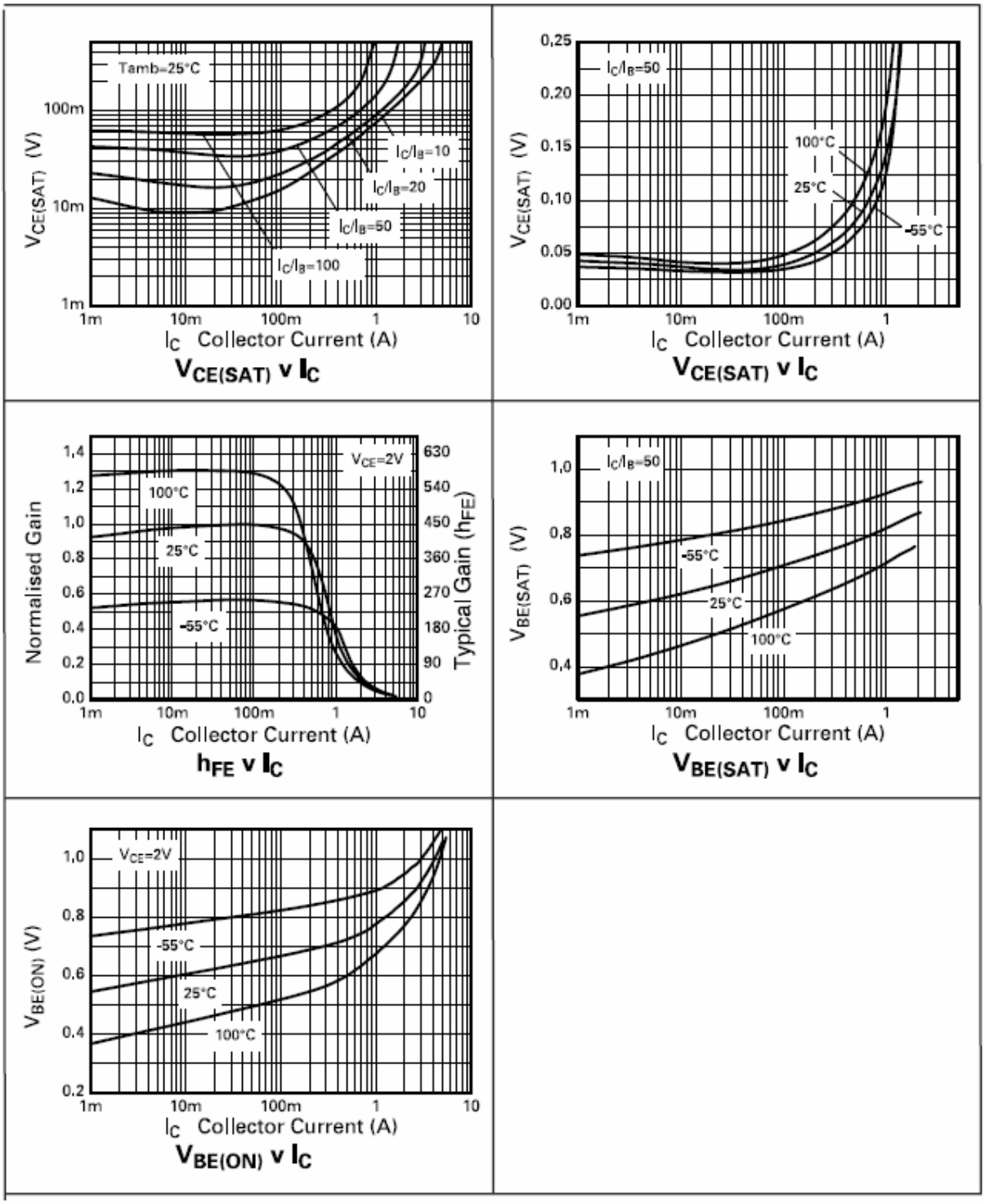


Electrical Characteristics @T_A = 25°C unless otherwise specified

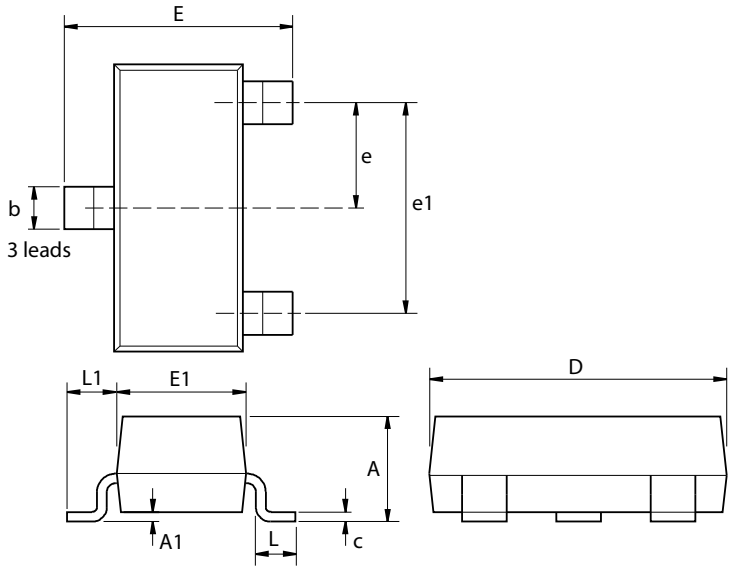
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	100	180	–	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	80	110	–	V	I_C = 10mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7	8	–	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	–	–	100	nA	V_{CB} = 80V
Emitter Cut-off Current	I_{EBO}	–	–	100	nA	V_{EB} = 5.5V
Collector Emitter Cut-off Current	I_{CES}	–	–	100	nA	V_{CES} = 80V
Static Forward Current Transfer Ratio (Note 5)	h_{FE}	200 300 110 60 20 –	450 450 170 90 30 10	– 900 – – – –	–	I_C = 10mA, V_{CE} = 2V I_C = 200mA, V_{CE} = 2V I_C = 1A, V_{CE} = 2V I_C = 1.5A, V_{CE} = 2V I_C = 3A, V_{CE} = 2V I_C = 5A, V_{CE} = 2V
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$	– – – –	15 45 145 160	20 60 185 200	mV	I_C = 0.1A, I_B = 10mA I_C = 0.5A, I_B = 50mA I_C = 1A, I_B = 20mA I_C = 1.5A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 5)	$V_{BE(sat)}$	–	0.86	1.0	V	I_C = 1.5A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 5)	$V_{BE(on)}$	–	0.82	0.95	V	I_C = 1.5A, V_{CE} = 2V
Transition Frequency	f_T	100	160	–	MHz	I_C = 50mA, V_{CE} = 10V f = 100MHz
Collector Output Capacitance	C_{obo}	–	11.5	18	pF	V_{CB} = 10V, f = 1MHz
Turn-On Time	$t_{(on)}$	–	86	–	ns	V_{CC} = 10V, I_C = 500mA I_{B1} = I_{B2} = 25mA
Turn-Off Time	$t_{(off)}$	–	1128	–	ns	

Notes: 5. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%

Typical Characteristics



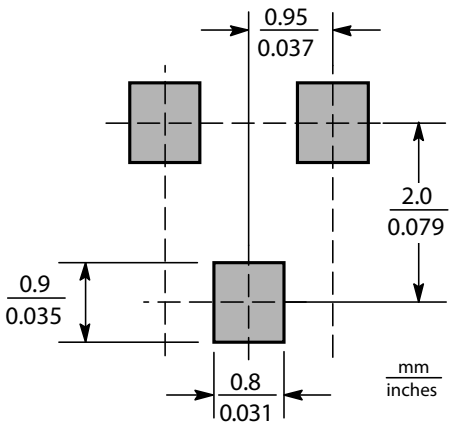
Package Outline Dimensions



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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