
SuperSOT™
80V NPN SILICON LOW SATURATION TRANSISTOR

SUMMARY
 $V_{CE0}=80V$; $R_{SAT} = 90m\Omega$; $I_C= 0.5A$
DESCRIPTION

Enhancing the existing SuperSOT range this 80V NPN transistor utilises the Zetex matrix structure combined with advanced assembly techniques. Users are provided with high Hfe and very low sat performance ensuring low on state losses.

FEATURES

- Extremely Low Equivalent On Resistance
- Extremely Low Saturation Voltage
- h_{FE} characterised up to 3.0A
- $I_C=1.5A$ Continuous Collector Current
- SOT23 package

APPLICATIONS

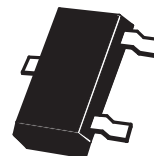
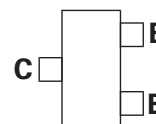
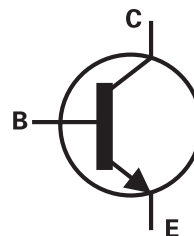
- DC - DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
FMMT620TA	7	8mm embossed	3000 units
FMMT620TC	13	8mm embossed	10000 units

DEVICE MARKING

620


SOT23


Top View

FMMT620

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	5	A
Continuous Collector Current	I_C	1.5	A
Base Current	I_B	500	mA
Power Dissipation at $T_A=25^{\circ}\text{C}$ (a) Linear Derating Factor	P_D	625 5	mW mW/ $^{\circ}\text{C}$
Power Dissipation at $T_A=25^{\circ}\text{C}$ (b) Linear Derating Factor	P_D	806 6.4	mW mW/ $^{\circ}\text{C}$
Operating and Storage Temperature Range	$T_J:T_{stg}$	-55 to +150	$^{\circ}\text{C}$

THERMAL RESISTANCE

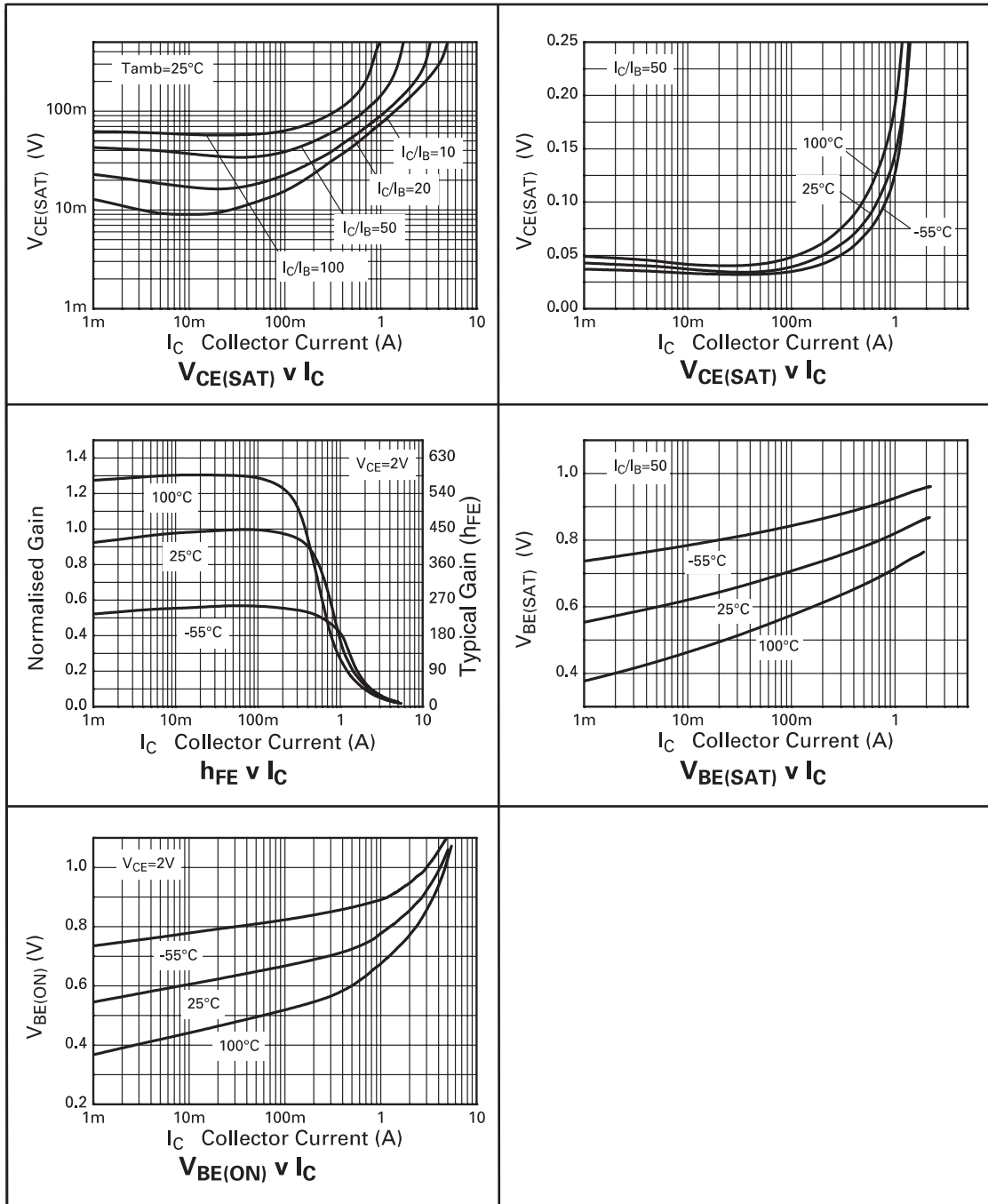
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	200	$^{\circ}\text{C/W}$
Junction to Ambient (b)	$R_{\theta JA}$	155	$^{\circ}\text{C/W}$

NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.

TYPICAL CHARACTERISTICS



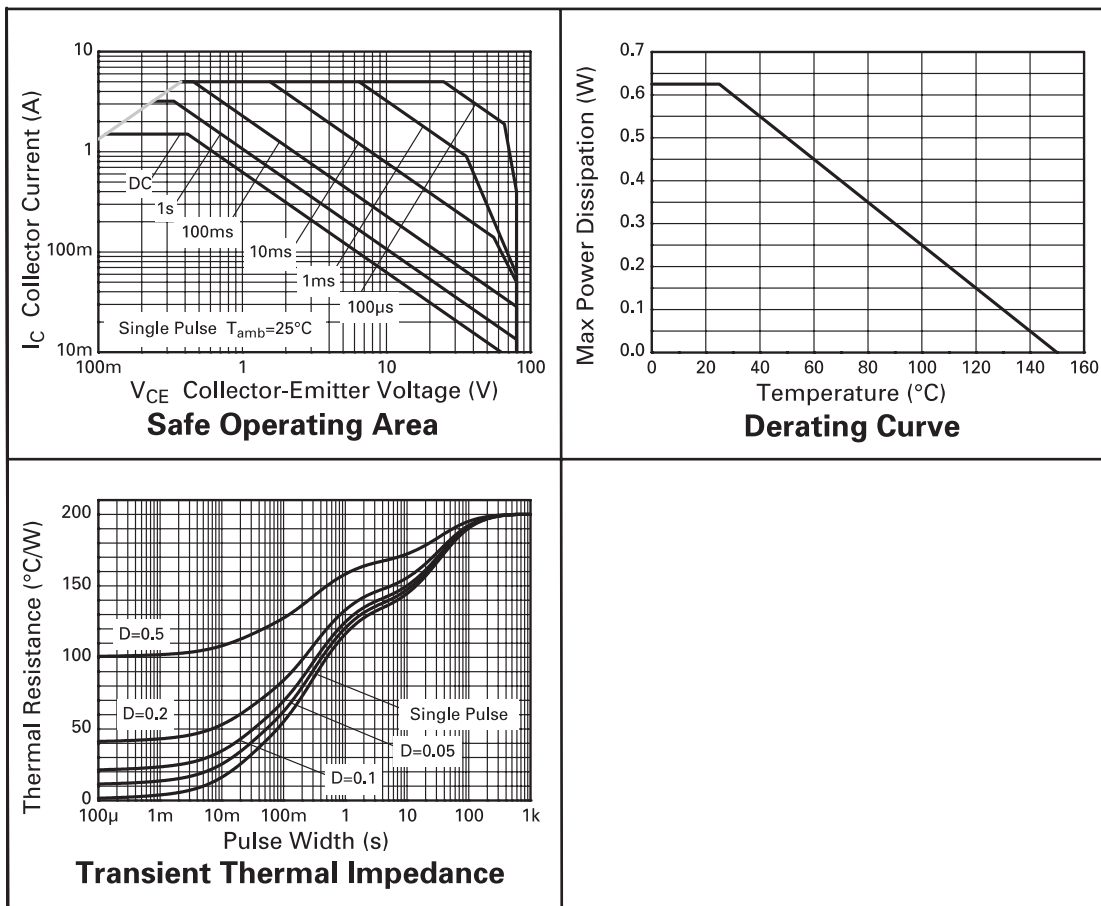
FMMT620

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

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

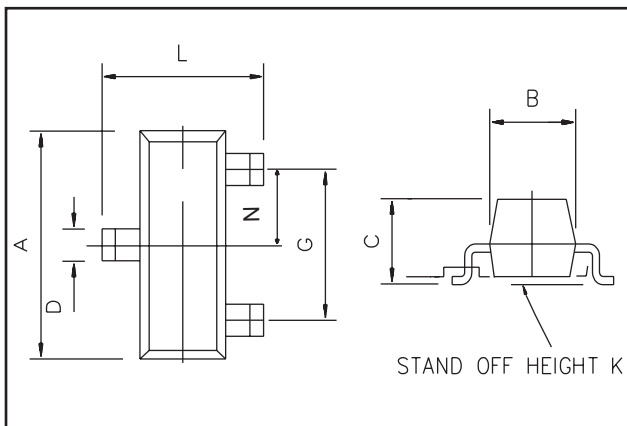
*Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS



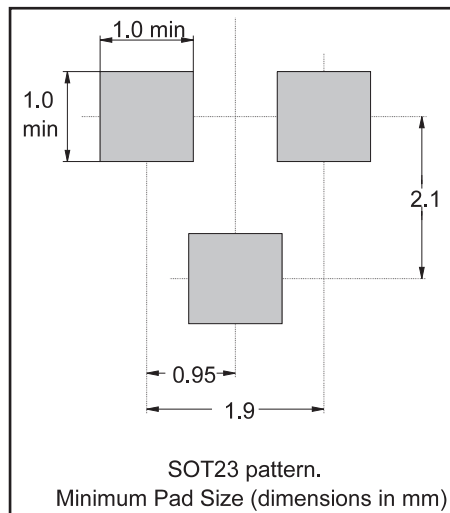
FMMT620

PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	2.67	3.05	0.105	0.120
B	1.20	1.40	0.047	0.055
C	—	1.10	—	0.043
D	0.37	0.53	0.0145	0.021
F	0.085	0.15	0.0033	0.0059
G	NOM 1.9		NOM 0.075	
K	0.01	0.10	0.0004	0.004
L	2.10	2.50	0.0825	0.0985
N	NOM 0.95		NOM 0.037	

PAD LAYOUT DETAILS



ZETEX Zetex plc.
 Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
 Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
 Fax: (44)161 622 4420

Zetex GmbH
 Streifeldstraße 19
 D-81673 München
 Germany
 Telefon: (49) 89 45 49 49 0
 Fax: (49) 89 45 49 49 49

Zetex Inc.
 47 Mall Drive, Unit 4
 Commack NY 11725
 USA
 Telephone: (516) 543-7100
 Fax: (516) 864-7630

Zetex (Asia) Ltd.
 3510 Metroplaza, Tower 2
 Hing Fong Road,
 Kwai Fong, Hong Kong
 Telephone: (852) 26100 611
 Fax: (852) 24250 494

These are supported by
 agents and distributors in
 major countries world-wide
 © Zetex plc 2001

<http://www.zetex.com>

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.