

FMMT620

SuperSOT™ 80V NPN SILICON LOW SATURATION TRANSISTOR

SUMMARY

$V_{CE0}=80V$; $R_{SAT} = 90m\Omega$; $I_C= 1.5A$

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 h_{fe} 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

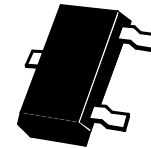
- DC - DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

ORDERING INFORMATION

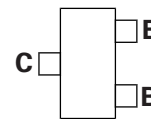
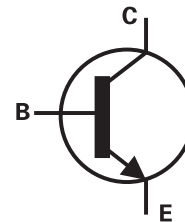
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
FMMT620TA	7	8mm embossed	3000 units
FMMT620TC	13	8mm embossed	10000 units

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	$^\circ\text{C}/\text{W}$
Junction to Ambient (b)	$R_{\theta JA}$	155	$^\circ\text{C}/\text{W}$

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

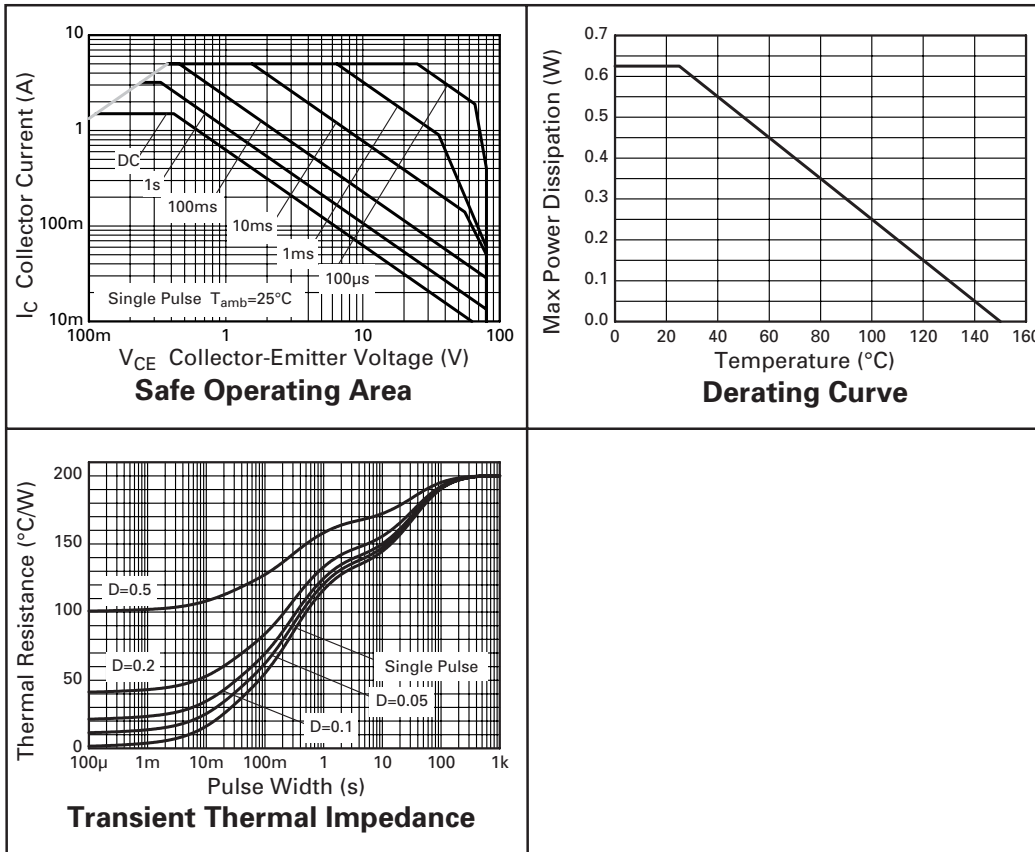
(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.



ISSUE 2 - JUNE 2006

FMMT620

TYPICAL CHARACTERISTICS



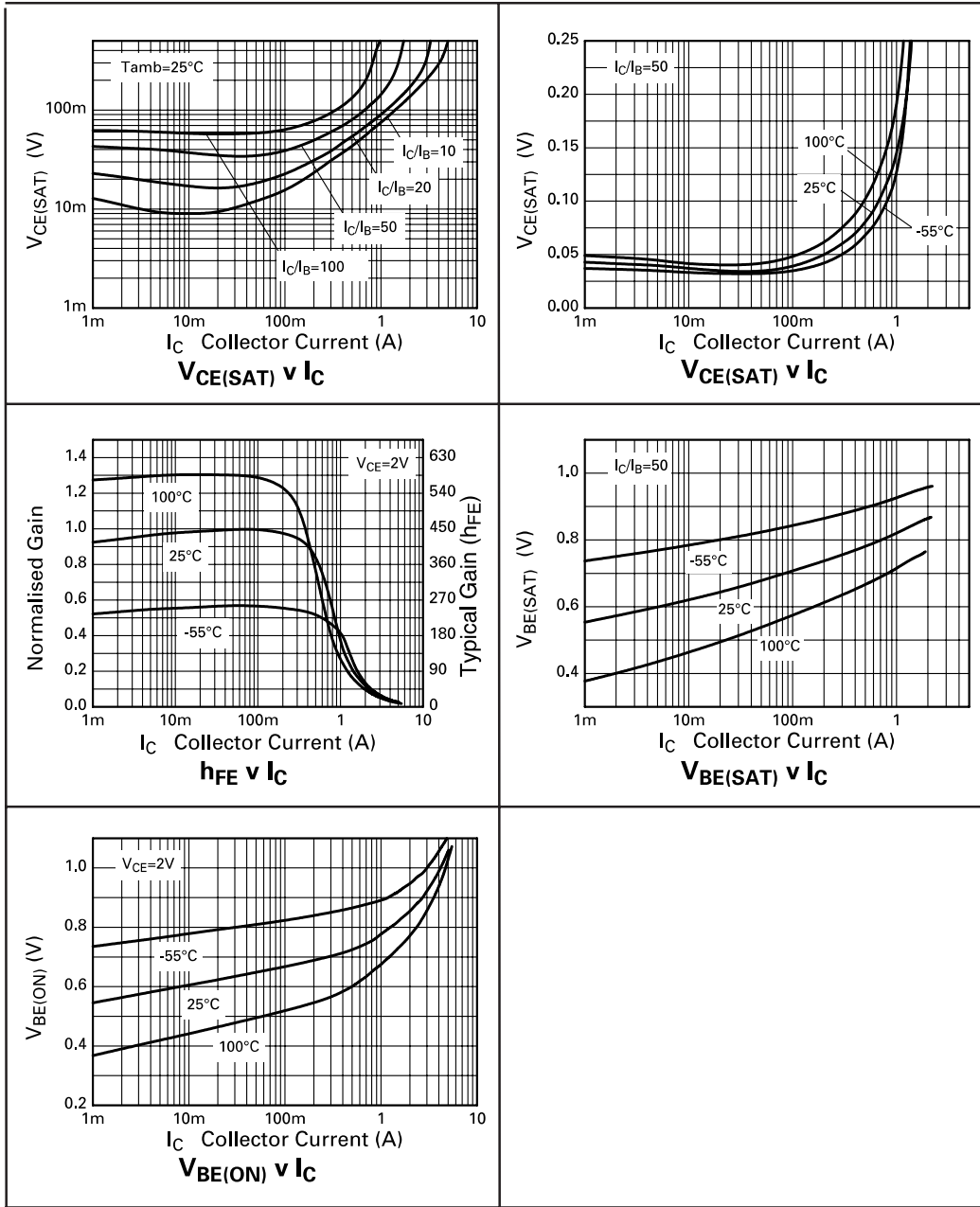
FMMT620

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	

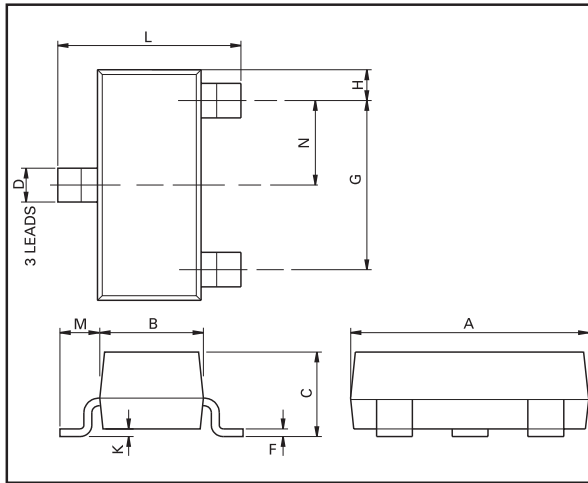
*Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS

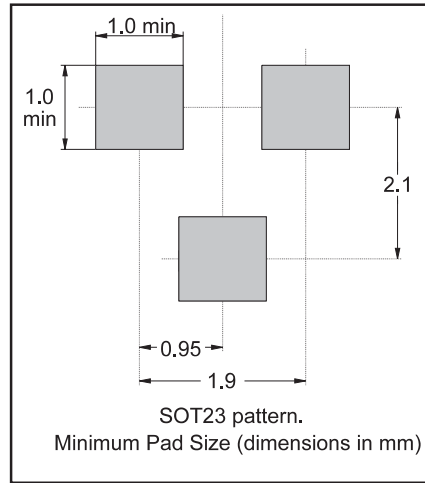


FMMT620

PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Max	Max
A	2.67	3.05	0.105	0.120	H	0.33	0.51	0.013	0.020
B	1.20	1.40	0.047	0.055	K	0.01	0.10	0.0004	0.004
C	—	1.10	—	0.043	L	2.10	2.50	0.083	0.0985
D	0.37	0.53	0.015	0.021	M	0.45	0.64	0.018	0.025
F	0.085	0.15	0.0034	0.0059	N	0.95 NOM		0.0375 NOM	
G	1.90 NOM		0.075 NOM		—	—		—	

© Zetex Semiconductors plc 2006

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park Chadderton, Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europa.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

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.

For the latest product information, log on to www.zetex.com



ISSUE 2 - JUNE 2006