

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

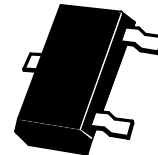
- DC - DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

ORDERING INFORMATION

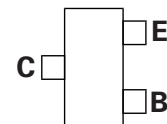
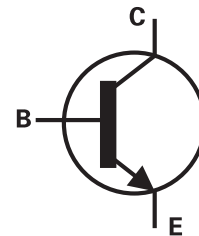
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
FMMT620TA	7	8mm embossed	3000 units
FMMT620TC	13	8mm embossed	10000 units

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

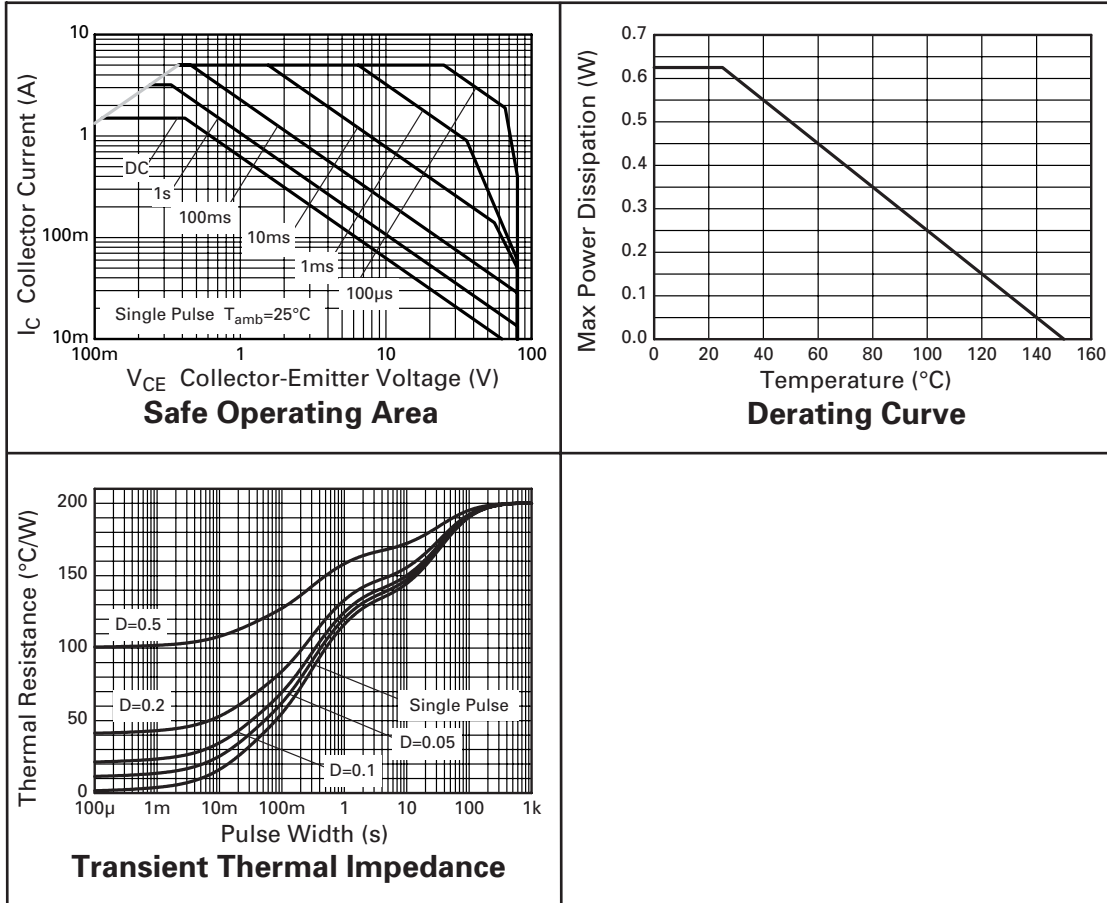
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Junction to Ambient (b)	$R_{\theta JA}$	155	$^\circ\text{C}/\text{W}$

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.

TYPICAL CHARACTERISTICS



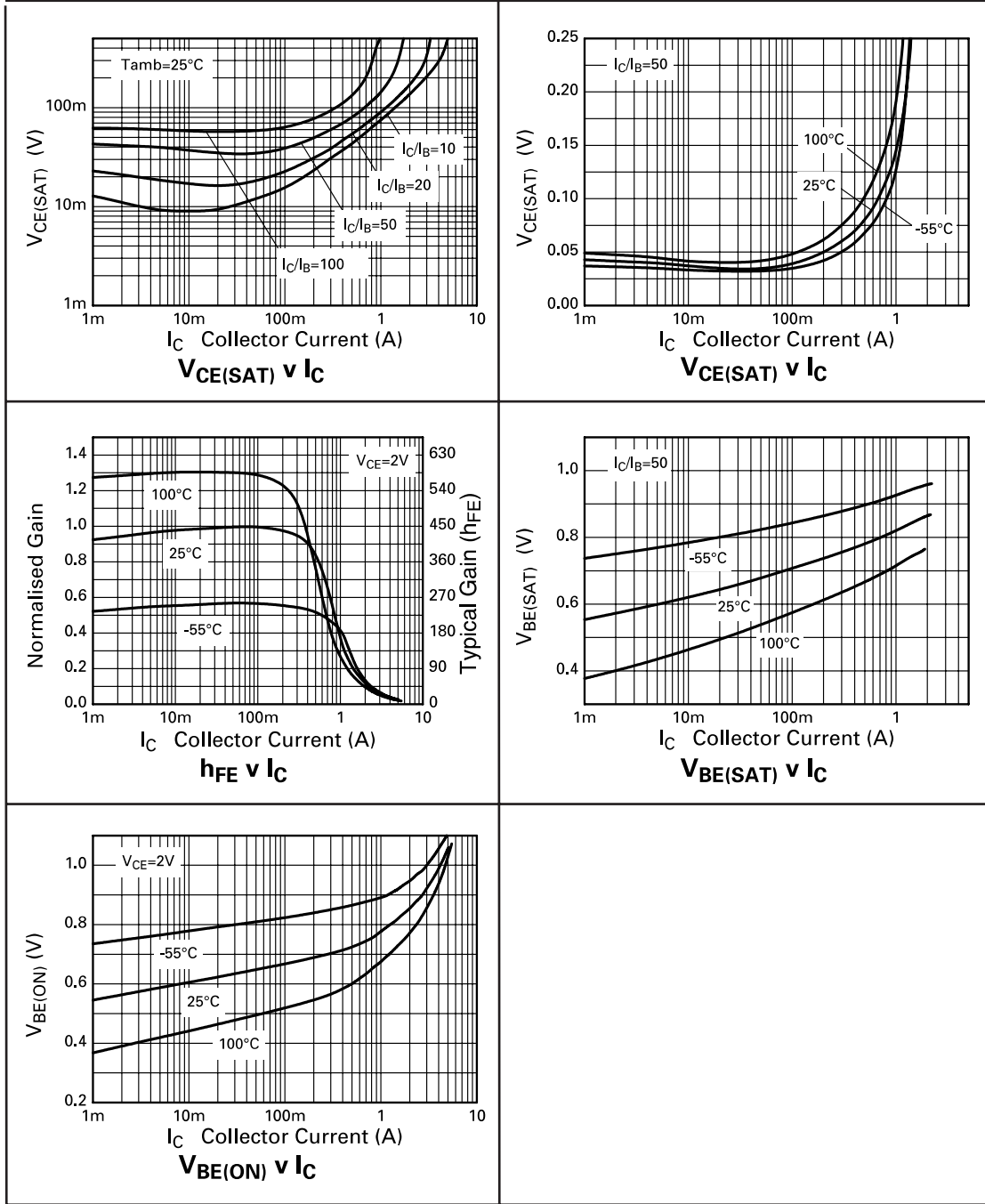
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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

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	

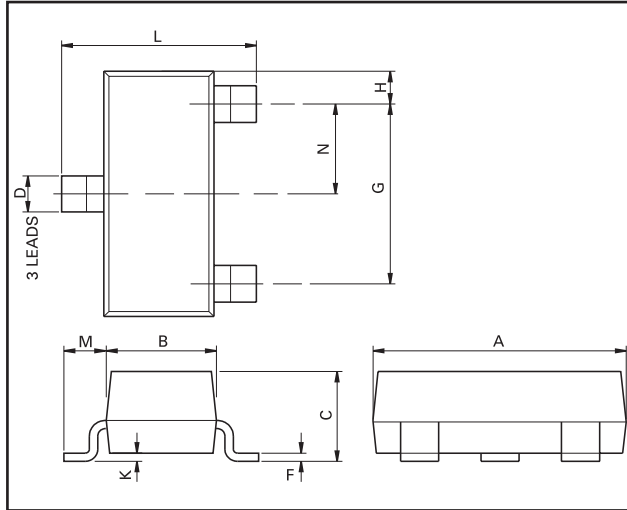
*Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS

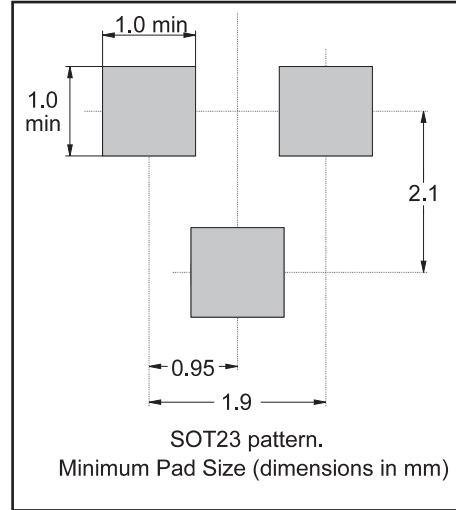


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PACKAGE DIMENSIONS



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		—	—		—	

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