

# FMMT620

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**SuperSOT™**  
**80V NPN SILICON LOW SATURATION TRANSISTOR**

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## 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

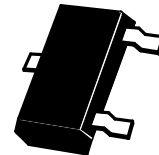
- DC - DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

## ORDERING INFORMATION

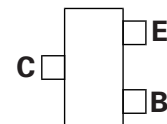
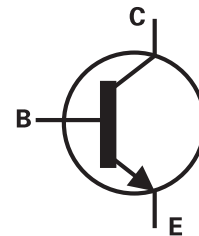
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
FMMT620TA	7	8mm embossed	3000 units
FMMT620TC	13	8mm embossed	10000 units

## 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	$^\circ\text{C}/\text{W}$

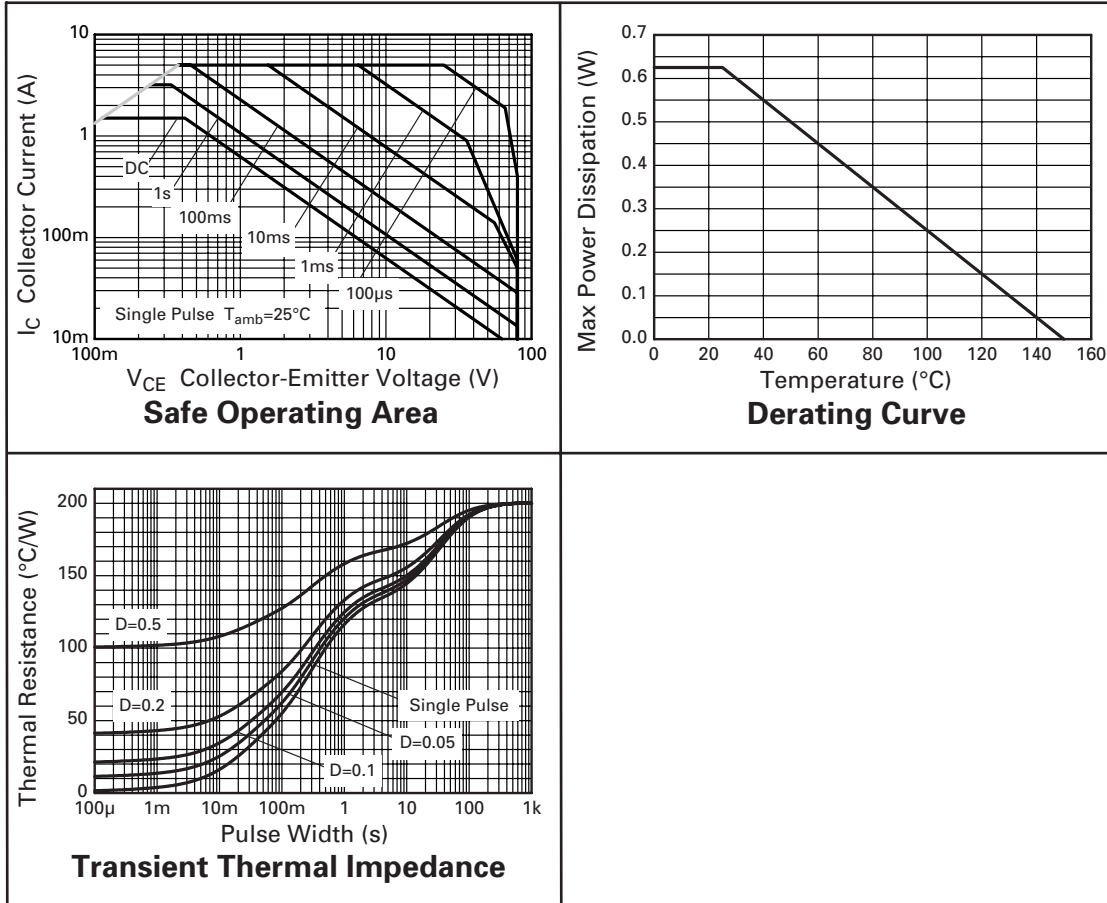
### NOTES

(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.

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## TYPICAL CHARACTERISTICS



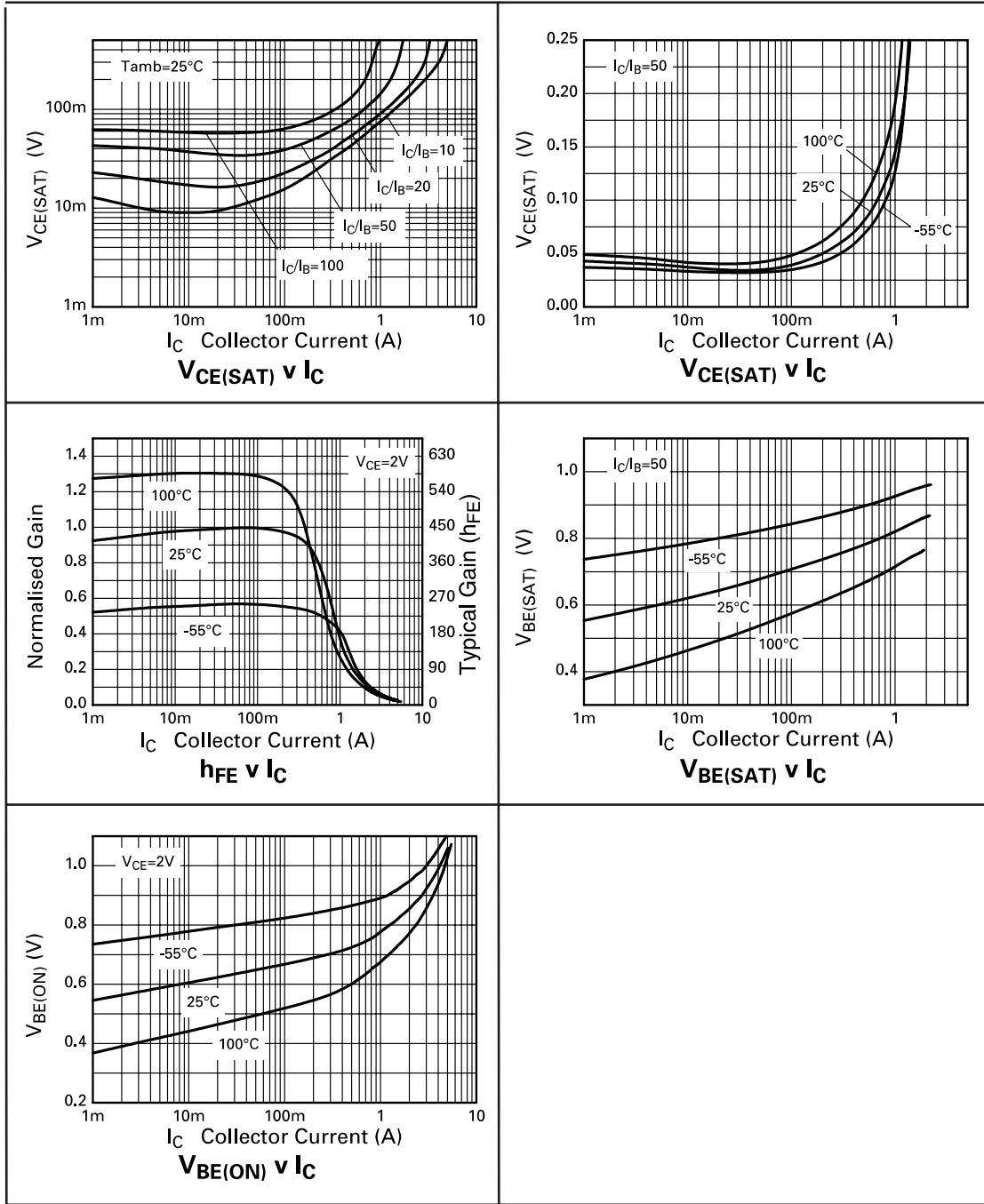
# FMMT620

## 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	

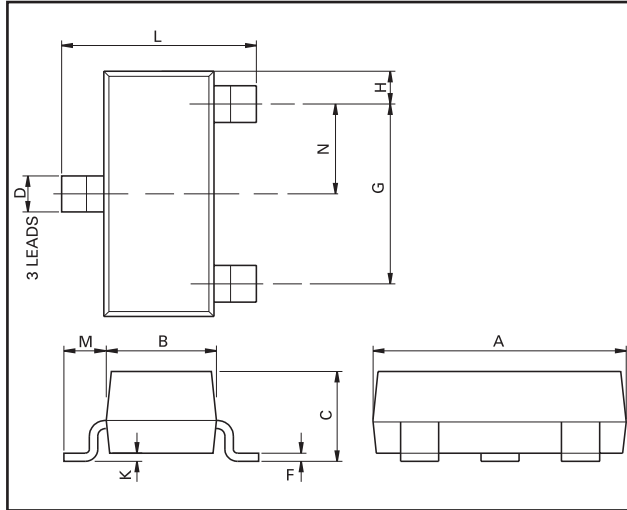
\*Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$

TYPICAL CHARACTERISTICS

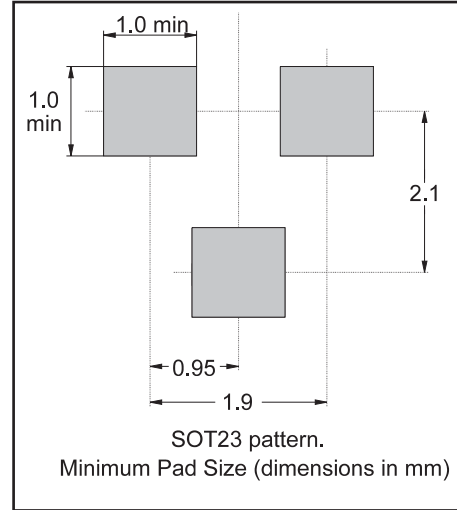


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## PACKAGE DIMENSIONS



## 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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