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

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

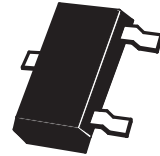
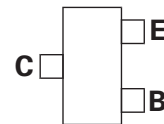
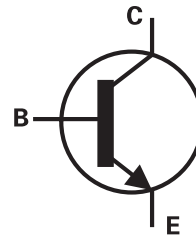
- DC - DC Modules
- Power Management Functions
- CCFL Backlighting Inverters
- Motor control and drive functions

**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

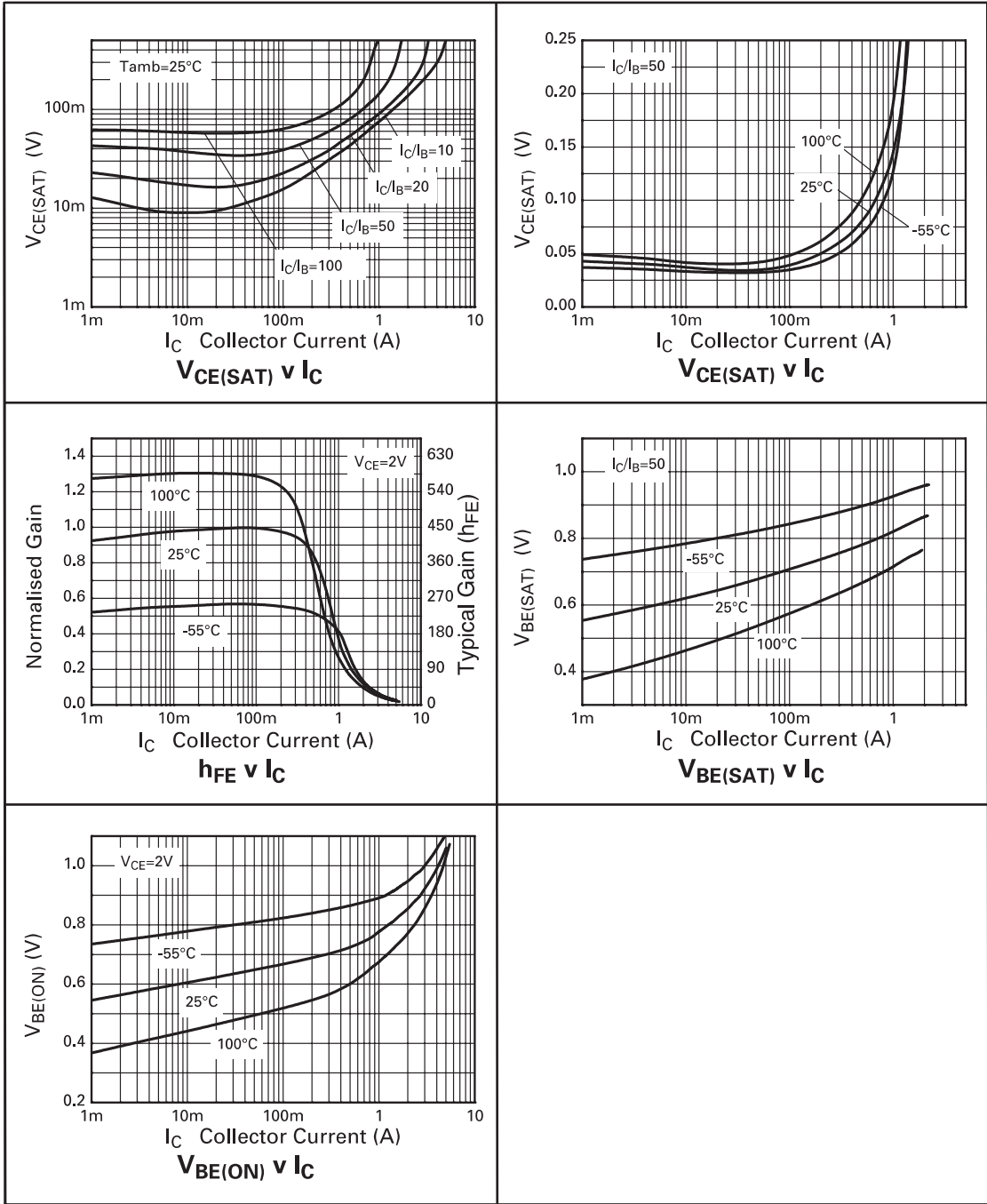
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Junction to Ambient (b)	$R_{\theta JA}$	155	$^\circ\text{C}/\text{W}$

### 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



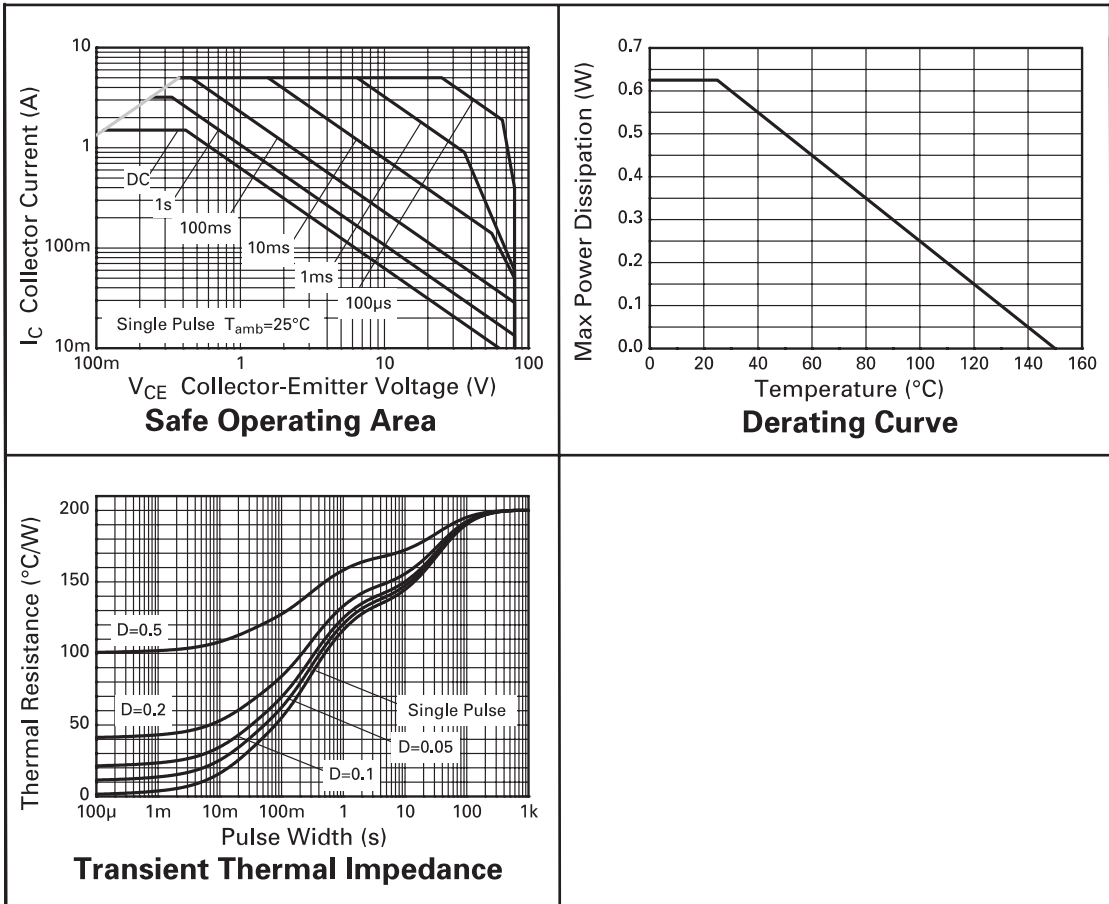
# FMMT620

## 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	

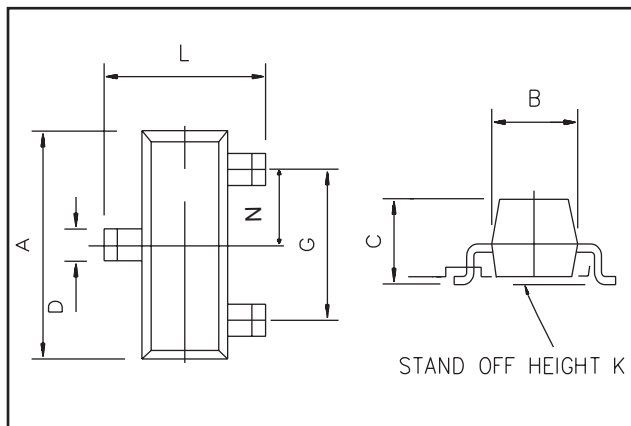
\*Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$

TYPICAL CHARACTERISTICS

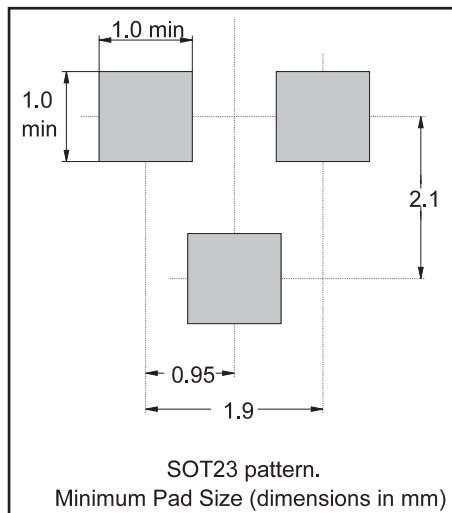


# FMMT620

## PACKAGE DIMENSIONS



## PAD LAYOUT DETAILS



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	

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