

# SuperSOT

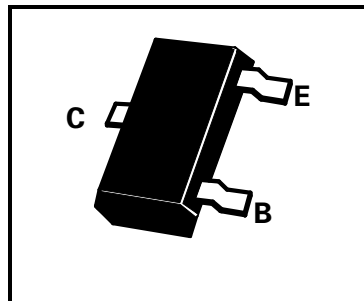
## SOT23 NPN SILICON POWER (SWITCHING) TRANSISTORS

ISSUE 3 - NOVEMBER 1995

FMMT617 FMMT618  
FMMT619 FMMT624  
FMMT625

### FEATURES

- \* **625mW POWER DISSIPATION**
- \*  **$I_C$  CONT 3A**
- \* 12A Peak Pulse Current
- \* Excellent  $H_{FE}$  Characteristics Up To 12A (pulsed)
- \* Extremely Low Saturation Voltage E.g. 8mV Typ.
- \* Extremely Low Equivalent On Resistance;  $R_{CE(sat)}$



DEVICE TYPE	COMPLEMENT	PARTMARKING	$R_{CE(sat)}$
FMMT617	FMMT717	617	<b>50mΩ at 3A</b>
FMMT618	FMMT718	618	<b>50mΩ at 2A</b>
FMMT619	FMMT720	619	<b>75mΩ at 2A</b>
FMMT624	FMMT723	624	-
FMMT625	-	625	-

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FMMT 617	FMMT 618	FMMT 619	FMMT 624	FMMT 625	UNIT
Collector-Base Voltage	$V_{CBO}$	15	20	50	125	150	V
Collector-Emitter Voltage	$V_{CEO}$	15	20	50	125	150	V
Emitter-Base Voltage	$V_{EBO}$	5	5	5	5	5	V
Peak Pulse Current**	$I_{CM}$	12	6	6	3	3	A
<b>Continuous Collector Current</b>	<b><math>I_C</math></b>	<b>3</b>	<b>2.5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>A</b>
Base Current	$I_B$	500					mA
<b>Power Dissipation at <math>T_{amb}=25^{\circ}C^*</math></b>	<b><math>P_{tot}</math></b>	<b>625</b>					<b>mW</b>
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150					$^{\circ}C$

\* Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 15x15x0.6mm

\*\* Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%  
Spice parameter data is available upon request for these devices

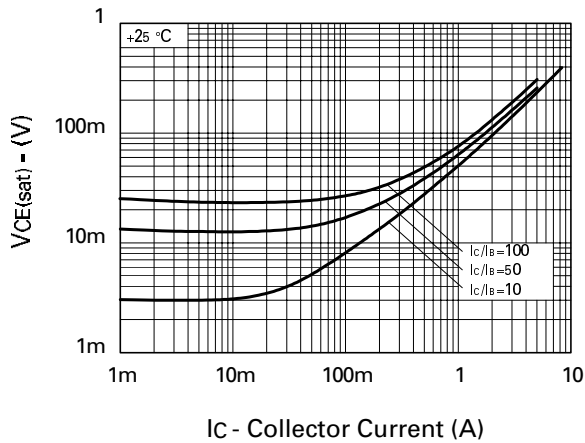
# FMMT618 FMMT619

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

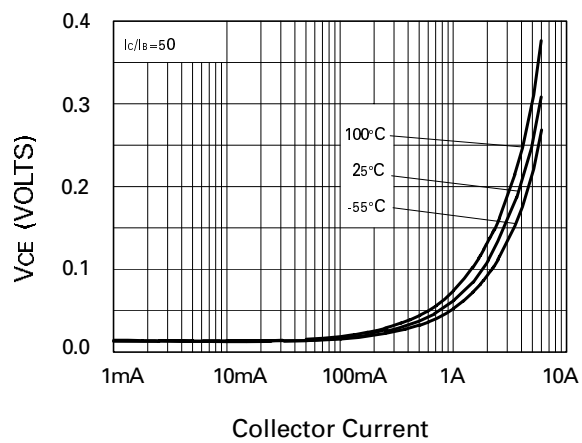
PARAMETER	SYMBOL	FMMT618			FMMT619			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	100		50	190		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	20	27		50	65		V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.3		5	8.3		V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			100			100	nA nA	$V_{CB}=16\text{V}$ $V_{CB}=40\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			100			100	nA	$V_{EB}=4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$			100			100	nA nA	$V_{CES}=16\text{V}$ $V_{CES}=40\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		8 70 130	15 150 200		10 125 150	20 200 220	mV mV mV mV	$I_C=0.1\text{A}, I_B=10\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=2\text{A}, I_B=50\text{mA}^*$ $I_C=2.5\text{A}, I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.89	1.0		0.87	1.0	V V	$I_C=2\text{A}, I_B=50\text{mA}^*$ $I_C=2.5\text{A}, I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.79	1.0		0.80	1.0	V V	$I_C=2\text{A}, V_{CE}=2\text{V}^*$ $I_C=2.5\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	200 300	400 450		200 300 200	400 450 400			$I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=200\text{mA}, V_{CE}=2\text{V}^*$ $I_C=1\text{A}, V_{CE}=2\text{V}^*$ $I_C=2\text{A}, V_{CE}=2\text{V}^*$ $I_C=6\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	$f_T$	100	140		100	165		MHz	$I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=100\text{MHz}$
Output Capacitance	$C_{obo}$		23	30		12	20	pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Turn-On Time	$t_{(on)}$		170			170		ns	$V_{CC}=10\text{V}, I_C=1\text{A}$
Turn-Off Time	$t_{(off)}$		400			750		ns	$I_{B1}=-I_{B2}=10\text{mA}$

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

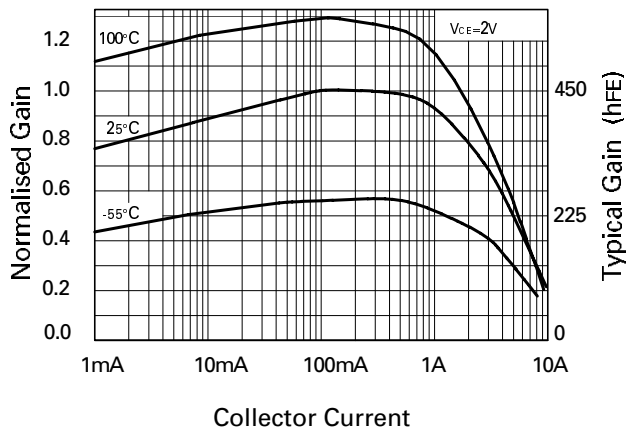
## TYPICAL CHARACTERISTICS



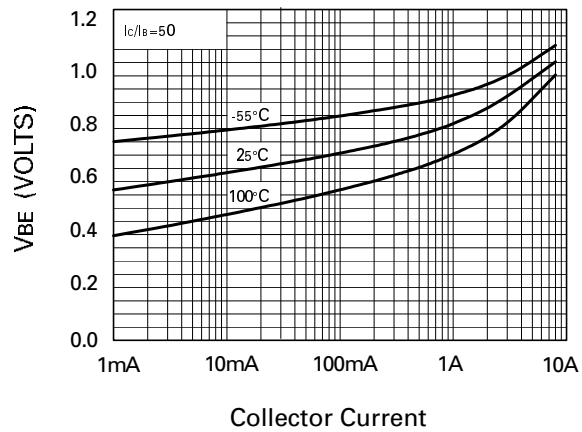
**$V_{CE(SAT)}$  v  $I_C$**



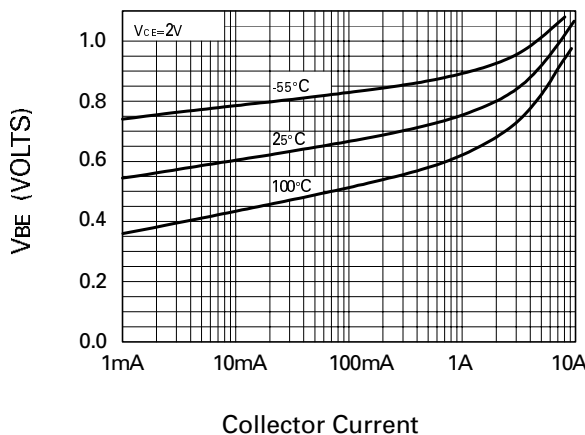
**$V_{CE(SAT)}$  vs  $I_C$**



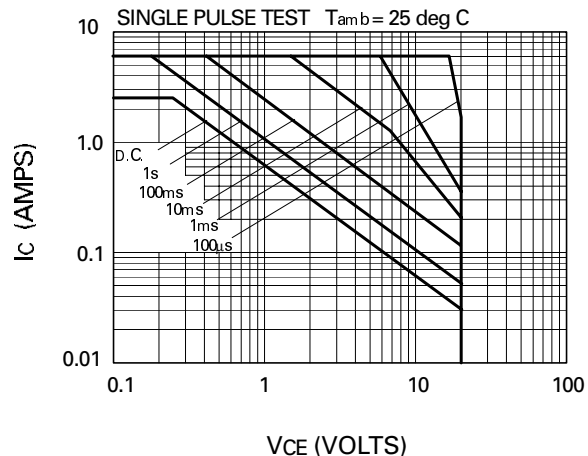
**hFE vs  $I_C$**



**$V_{BE(SAT)}$  vs  $I_C$**



**$V_{BE(ON)}$  vs  $I_C$**



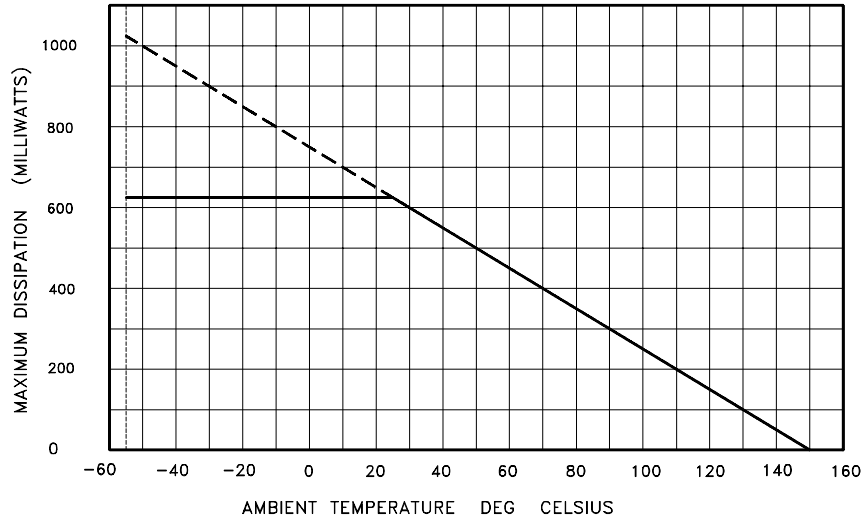
**Safe Operating Area**

FMMT617 FMMT624  
 FMMT618 FMMT625  
 FMMT619

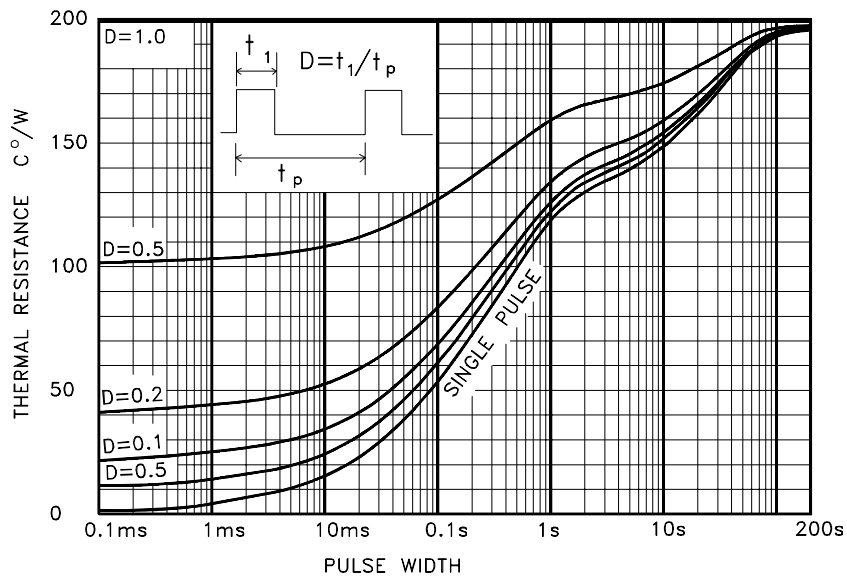
## SuperSOT Series

FMMT717 FMMT722  
 FMMT718 FMMT723  
 FMMT720

### THERMAL CHARACTERISTICS AND DERATING INFORMATION



DERATING CURVE



MAXIMUM TRANSIENT THERMAL RESISTANCE

\* Reference above figures, Devices were mounted on a 15mmx15mm ceramic substrate