

# SuperSOT

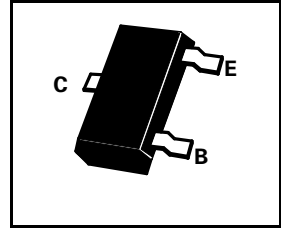
## SOT23 NPN SILICON POWER (SWITCHING) TRANSISTORS

ISSUE 3 - NOVEMBER 1995

FMMT617 FMMT618  
FMMT619 FMMT624  
FMMT625

### FEATURES

- \* **625mW POWER DISSIPATION**
- \* **I<sub>C</sub> CONT 3A**
- \* 12A Peak Pulse Current
- \* Excellent H<sub>FE</sub> Characteristics Up To 12A (pulsed)
- \* Extremely Low Saturation Voltage E.g. 8mV Typ.
- \* Extremely Low Equivalent On Resistance; R<sub>CE(sat)</sub>



DEVICE TYPE	COMPLEMENT	PARTMARKING	R <sub>CE(sat)</sub>
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 <sub>CBO</sub>	15	20	50	125	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	15	20	50	125	150	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	5	5	5	5	V
Peak Pulse Current**	I <sub>CM</sub>	12	6	6	3	3	A
<b>Continuous Collector Current</b>	<b>I<sub>C</sub></b>	<b>3</b>	<b>2.5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>A</b>
Base Current	I <sub>B</sub>	500					mA
<b>Power Dissipation at T<sub>amb</sub>=25°C*</b>	<b>P<sub>tot</sub></b>	<b>625</b>					<b>mW</b>
Operating and Storage Temperature Range	T <sub>j</sub> ; T <sub>stg</sub>	-55 to +150					°C

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

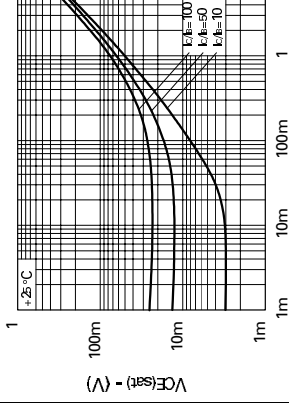
\*\*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%  
Spice parameter data is available upon request for these devices

# FMMT618 FMMT619

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

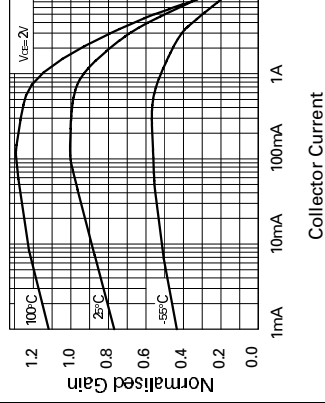
PARAMETER	SYMBOL	FMMT618			FMMT619			CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	100		50	190		$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	20	27		50	65		$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.3		5	8.3		$I_E = 100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			100			100	$V_{CB} = 16\text{V}$ $V_{CE} = 40\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			100			100	$V_{EB} = 4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$			100			100	$V_{CE} = 16\text{V}$ $V_{CE} = 40\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		8 70 130	15 150 200		10 125 150	20 200 220	$I_C = 0.1\text{A}, I_B = 10\text{mA}^*$ $I_C = 1\text{A}, I_B = 10\text{mA}^*$ $I_C = 2\text{A}, I_B = 50\text{mA}^*$ $I_C = 2.5\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.89	1.0		0.87	1.0	$I_C = 2\text{A}, I_B = 50\text{mA}^*$ $I_C = 2.5\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.79	1.0		0.80	1.0	$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 2.5\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	200 300	400 450		200 300	400 450		$I_C = 10\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 200\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 2\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 6\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	$f_T$	100	140		100	165		$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	$C_{ob0}$		23	30		12	20	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

## TYPICAL CHARACTERISTICS



$I_C$  - Collector Current (A)

$V_{CE(sat)}$  v  $I_C$



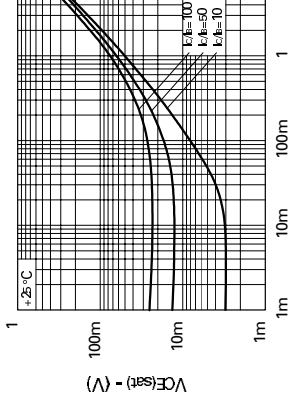
$h_{FE}$  vs  $I_C$

# FM6T618 FM6T619

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

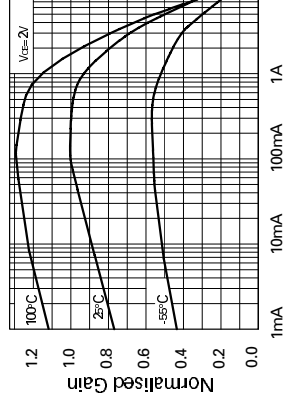
PARAMETER	SYMBOL	FM6T618			FM6T619			CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	100		50	190		$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	20	27		50	65		$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.3		5	8.3		$I_E = 100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			100			100	$V_{CB} = 16\text{V}$ $V_{CE} = 40\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			100			100	$V_{EB} = 4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$			100			100	$V_{CE} = 16\text{V}$ $V_{CE} = 40\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		8 70 130	15 150 200		10 125 150	20 200 220	$I_C = 0.1\text{A}, I_B = 10\text{mA}^*$ $I_C = 1\text{A}, I_B = 10\text{mA}^*$ $I_C = 2\text{A}, I_B = 50\text{mA}^*$ $I_C = 2.5\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.89	1.0		0.87	1.0	$I_C = 2\text{A}, I_B = 50\text{mA}^*$ $I_C = 2.5\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.79	1.0		0.80	1.0	$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 2.5\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	200 300	400 450		200 300	400 450		$I_C = 10\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 200\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 2\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 6\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	$f_T$	100	140		100	165		$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	$C_{obo}$		23	30		12	20	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

## TYPICAL CHARACTERISTICS



$I_C$  - Collector Current (A)

$V_{CE(sat)}$  v  $I_C$



Collector Current

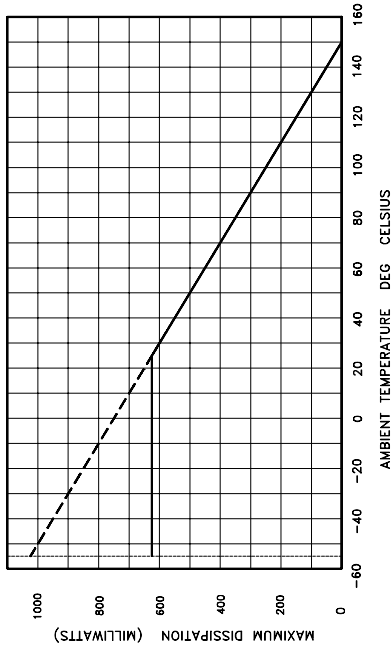
$h_{FE}$  vs  $I_C$

FMMT617 FMMT624  
FMMT618 FMMT625  
FMMT619

## SuperSOT Series

FMMT717 FMMT722  
FMMT718 FMMT723  
FMMT720

### THERMAL CHARACTERISTICS AND DERATING INFORMATION



### DERATING CURVE

