

SuperSOT

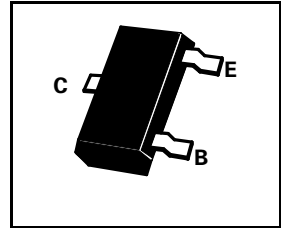
SOT23 NPN SILICON POWER (SWITCHING) TRANSISTORS

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	50mΩ at 3A
FMMT618	FMMT718	618	50mΩ at 2A
FMMT619	FMMT720	619	75mΩ at 2A
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
Continuous Collector Current	I_C	3	2.5	2	1	1	A
Base Current	I _B	500					mA
Power Dissipation at T_{amb}=25°C*	P_{tot}	625					mW
Operating and Storage Temperature Range	T _j ; T _{stg}	-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

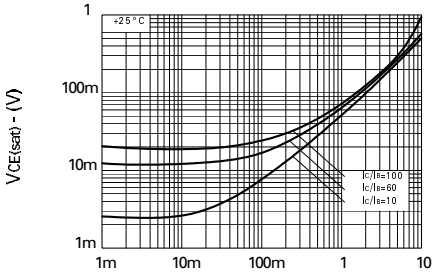
FMMT617

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

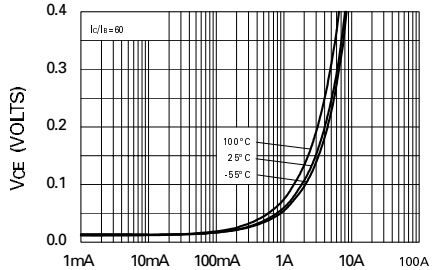
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	15	70		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	15	18		V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.2		V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			100	nA	$V_{CB}=10\text{V}$
Emitter Cut-Off Current	I_{EBO}			100	nA	$V_{EB}=4\text{V}$
Collector Emitter Cut-Off Current	I_{CES}			100	nA	$V_{CES}=10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		8 70 150	14 100 200	mV mV mV	$I_C=0.1\text{A}, I_B=10\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=3\text{A}, I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.0	V	$I_C=3\text{A}, I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.84	1.0	V	$I_C=3\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	200 300 200 150	415 450 320 240 80			$I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=200\text{mA}, V_{CE}=2\text{V}^*$ $I_C=3\text{A}, V_{CE}=2\text{V}^*$ $I_C=5\text{A}, V_{CE}=2\text{V}^*$ $I_C=12\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	f_T	80	120		MHz	$I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output Capacitance	C_{obo}		30	40	pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Turn-On Time	$t_{(on)}$		120		ns	$V_{CC}=10\text{V}, I_C=3\text{A}$ $I_{B1}=I_{B2}=50\text{mA}$
Turn-Off Time	$t_{(off)}$		160		ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

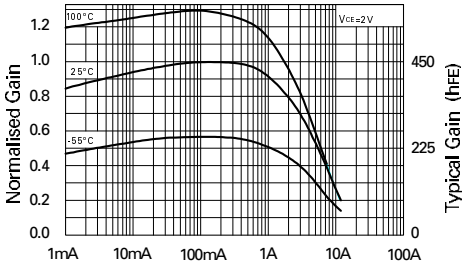
TYPICAL CHARACTERISTICS



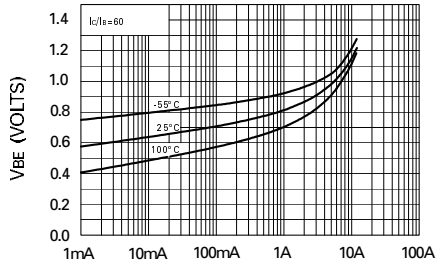
IC - Collector Current (A)
VCE(SAT) v IC



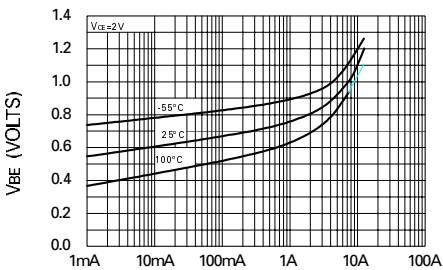
Collector Current
VCE(SAT) vs IC



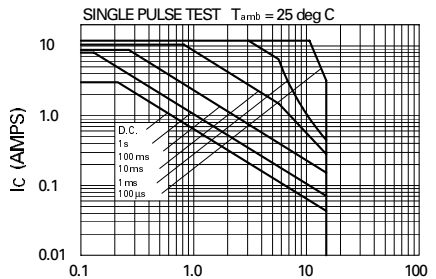
Collector Current
hFE vs IC



Collector Current
VBE(SAT) vs IC



Collector Current
VBE(ON) vs IC



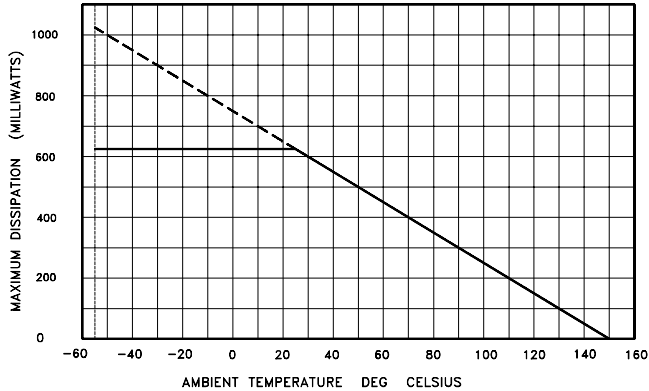
Safe Operating Area

FMMT617 FMMT624
 FMMT618 FMMT625
 FMMT619

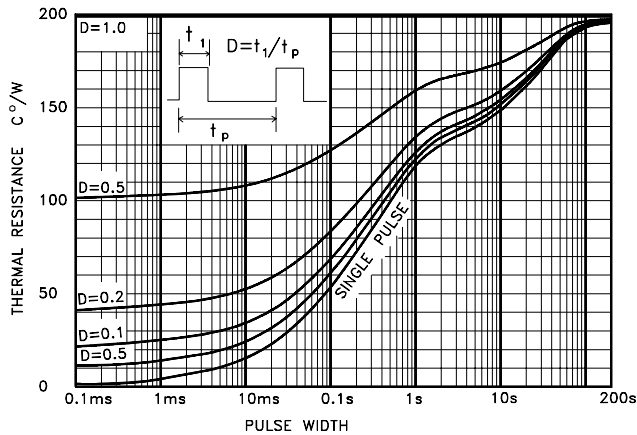
SuperSOT Series

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