

SuperSOT

SOT23 NPN SILICON POWER

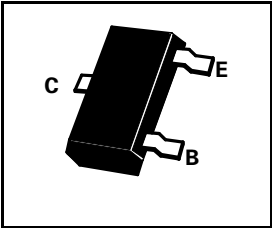
(SWITCHING) TRANSISTORS

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

FMMT618

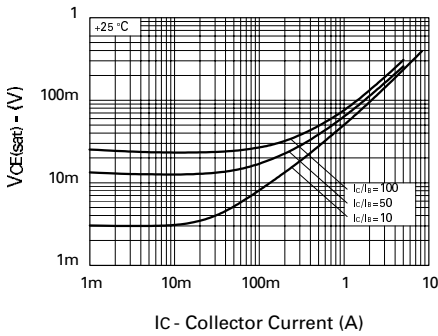
FMMT619

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

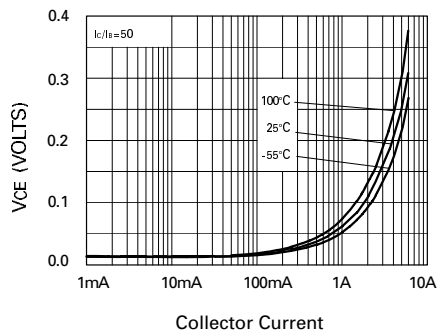
PARAMETER	SYMBOL	FMMT618			FMMT619			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	20	100		50	190		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	20	27		50	65		V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	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	15		10	20	mV	$I_C=0.1\text{A}, I_B=10\text{mA}^*$
			70	150		125	200	mV	$I_C=1\text{A}, I_B=10\text{mA}^*$
						150	220	mV	$I_C=2\text{A}, I_B=50\text{mA}^*$
			130	200				mV	$I_C=2.5\text{A}, I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$					0.87	1.0	V	$I_C=2\text{A}, I_B=50\text{mA}^*$
			0.89	1.0				V	$I_C=2.5\text{A}, I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$					0.80	1.0	V	$I_C=2\text{A}, V_{CE}=2\text{V}^*$
			0.79	1.0				V	$I_C=2.5\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	200	400		200	400			$I_C=10\text{mA}, V_{CE}=2\text{V}^*$
		300	450		300	450			$I_C=200\text{mA}, V_{CE}=2\text{V}^*$
					200	400			$I_C=1\text{A}, V_{CE}=2\text{V}^*$
		200	360		100	225			$I_C=2\text{A}, V_{CE}=2\text{V}^*$
		100	180			40			$I_C=6\text{A}, V_{CE}=2\text{V}^*$
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 μs . Duty cycle $\leq 2\%$

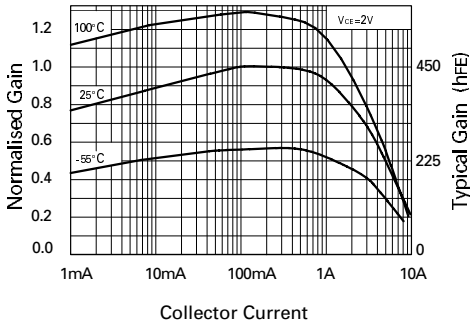
TYPICAL CHARACTERISTICS



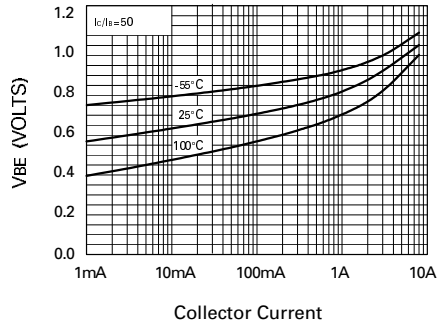
$V_{CE(sat)}$ v I_C



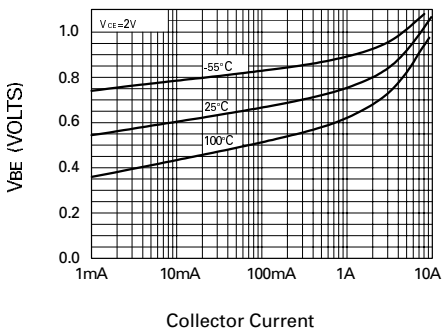
$V_{CE(sat)}$ vs I_C



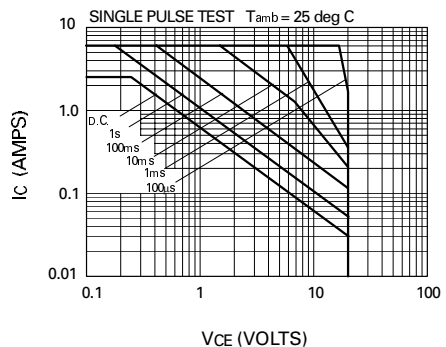
hFE vs I_C



$V_{BE(sat)}$ vs I_C



$V_{BE(ON)}$ vs I_C



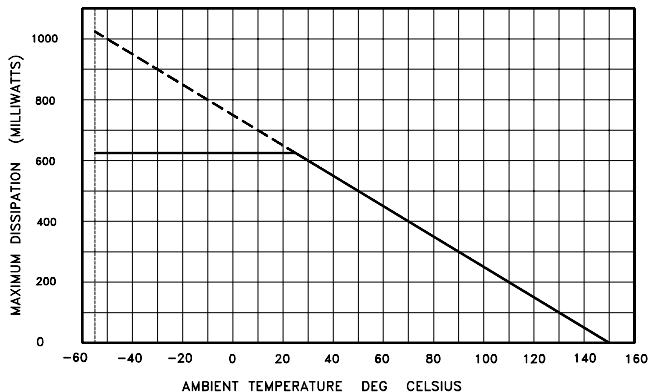
Safe Operating Area

FMMT617 FMMT624
FMMT618 FMMT625
FMMT619

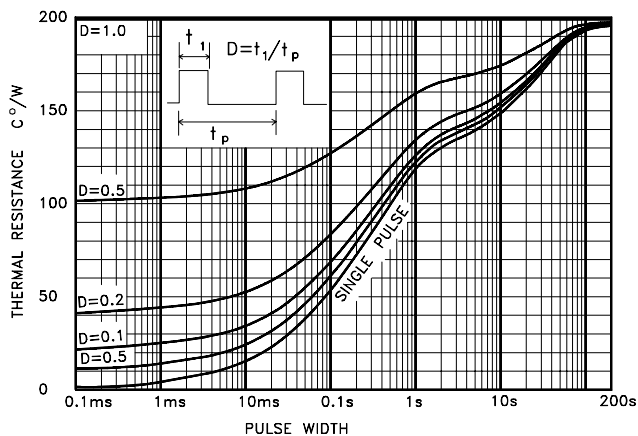
SuperSOT Series

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