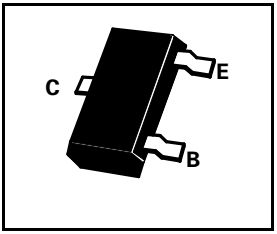
SuperSOT
SOT23 NPN SILICON POWER (SWITCHING) TRANSISTORS

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

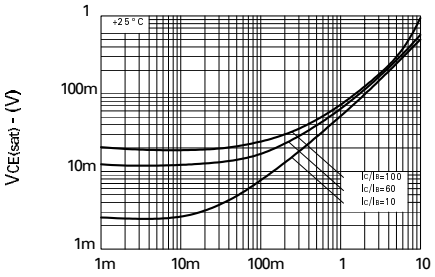
FMMT617

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

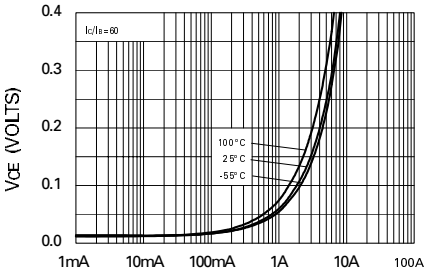
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	15	70		V	I_C=100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	15	18		V	I_C=10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.2		V	I_E=100μA
Collector Cut-Off Current	I_{CBO}			100	nA	V_{CB}=10V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

*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%

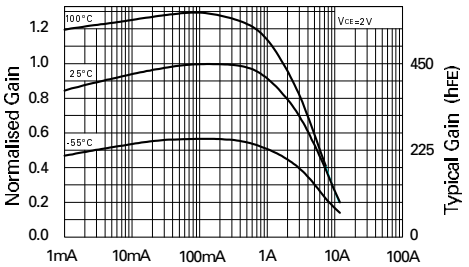
TYPICAL CHARACTERISTICS



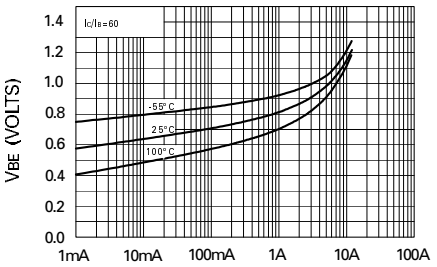
VCE(SAT) v IC



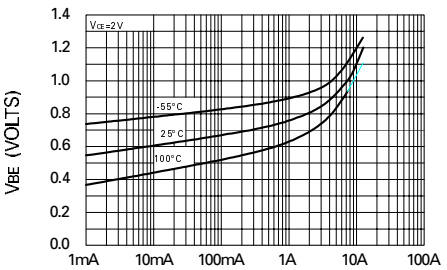
VCE(SAT) vs IC



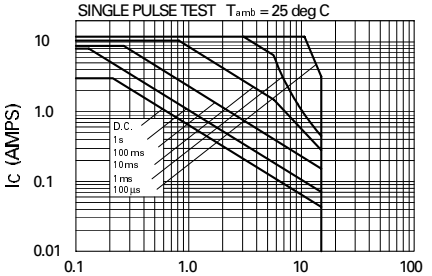
hFE vs IC



VBE(SAT) vs IC

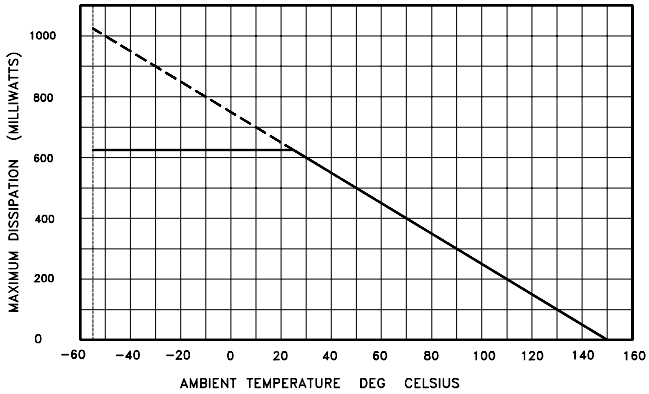


VBE(ON) vs IC

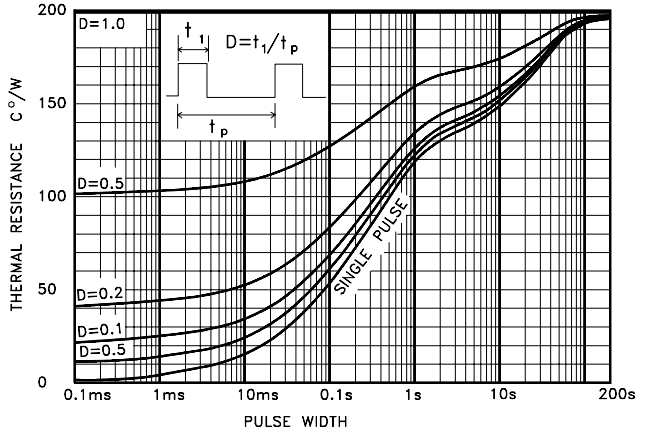


Safe Operating Area

THERMAL CHARACTERISTICS AND DERATING INFORMATION



DERATING CURVE



MAXIMUM TRANSIENT THERMAL RESISTANCE

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