

SuperSOT

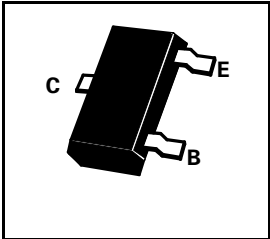
SOT23 PNP SILICON POWER (SWITCHING) TRANSISTORS

FMMT717 FMMT718
FMMT720 FMMT722
FMMT723

ISSUE 3 JUNE 1996

FEATURES

- * **625mW POWER DISSIPATION**
- * **I_C CONT 2.5A**
- * I_C Up To 10A Peak Pulse Current
- * Excellent h_{fe} Characteristics Up To 10A (pulsed)
- * Extremely Low Saturation Voltage E.g. 10mV Typ.
- * Exhibits extremely low equivalent on-resistance; $R_{CE(sat)}$



DEVICE TYPE	COMPLEMENT	PARTMARKING	$R_{CE(sat)}$
FMMT717	FMMT617	717	72mΩ at 2.5A
FMMT718	FMMT618	718	97mΩ at 1.5A
FMMT720	FMMT619	720	163mΩ at 1.5A
FMMT722	–	722	-
FMMT723	FMMT624	723	-

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	FMMT 717	FMMT 718	FMMT 720	FMMT 722	FMMT 723	UNIT
Collector-Base Voltage	V_{CBO}	-12	-20	-40	-70	-100	V
Collector-Emitter Voltage	V_{CEO}	-12	-20	-40	-70	-100	V
Emitter-Base Voltage	V_{EBO}	-5	-5	-5	-5	-5	V
Peak Pulse Current**	I_{CM}	-10	-6	-4	-3	-2.5	A
Continuous Collector Current	I_C	-2.5	-1.5	-1.5	-1.5	-1	A
Base Current	I_B	-500					mA
Power Dissipation at $T_{amb}=25^{\circ}C^*$	P_{tot}	625					mW
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

FMMT718

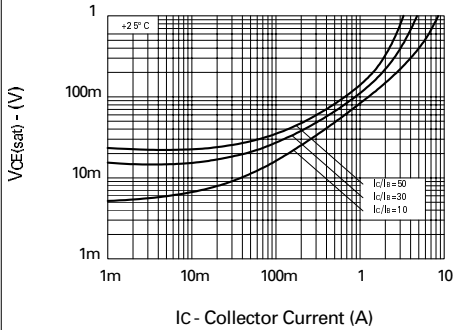
FMMT720

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

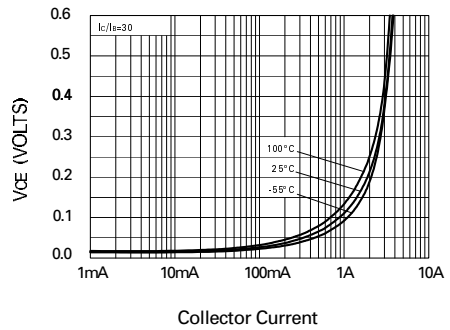
PARAMETER	SYMBOL	FMMT718			FMMT720			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-20	-65		-40	-95		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-20	-55		-40	-85		V	$I_C = -10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-8.8		-5	-8.8		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			-100			-100	nA nA	$V_{CB} = -15\text{V}$ $V_{CB} = -35\text{V}$
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	$V_{CES} = -15\text{V}$ $V_{CES} = -35\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-16	-40		-25	-40	mV	$I_C = -0.1\text{A}, I_B = -10\text{mA}^*$ $I_C = -1\text{A}, I_B = -20\text{mA}^*$ $I_C = -1\text{A}, I_B = -50\text{mA}^*$ $I_C = -1.5\text{A}, I_B = -50\text{mA}^*$ $I_C = -1.5\text{A}, I_B = -100\text{mA}^*$
			-130	-200		-150	-220	mV	
			-145	-220		-245	-330	mV	
								mV	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.87	-1.0		-0.89	-1.0	V V	$I_C = -1.5\text{A}, I_B = -50\text{mA}^*$ $I_C = -1.5\text{A}, I_B = -75\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.81	-1.0		-0.80	-1.0	V V	$I_C = -2\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -1.5\text{A}, V_{CE} = -2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	300	475		300	480			$I_C = -10\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -0.1\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -1\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -1.5\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -2\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -3\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -4\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -6\text{A}, V_{CE} = -2\text{V}^*$
		300	450		300	450			
					180	290			
					60	130			
					12	22			
Transition Frequency	f_T	150	180		150	190		MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}		21	30		19	25	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(on)}$		40					ns	$V_{CC} = -10\text{V}, I_C = -1\text{A}$ $I_{B1} = I_{B2} = -20\text{mA}$
Turn-Off Time	$t_{(off)}$		670					ns	
Turn-On Time	$t_{(on)}$					40		ns	$V_{CC} = -15\text{V}, I_C = -0.75\text{A}$ $I_{B1} = I_{B2} = -15\text{mA}$
Turn-Off Time	$t_{(off)}$					435		ns	

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

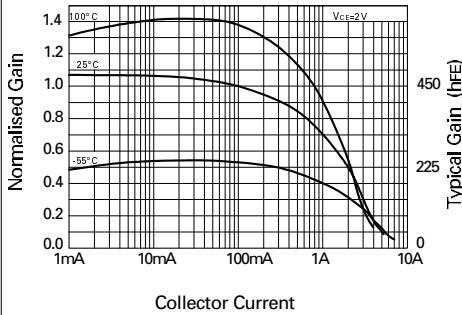
TYPICAL CHARACTERISTICS



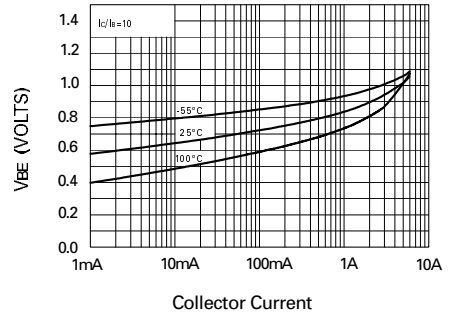
$V_{CE(sat)}$ v I_C



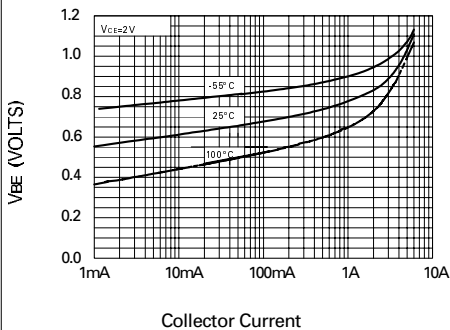
$V_{CE(sat)}$ vs I_C



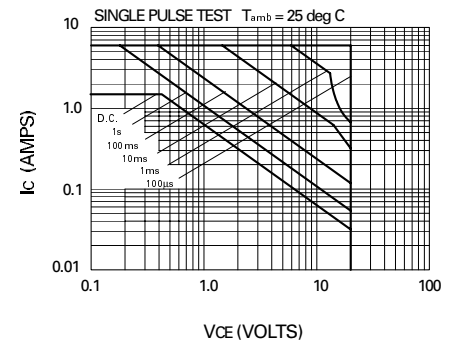
hFE vs I_C



$V_{BE(sat)}$ vs I_C



$V_{BE(ON)}$ vs I_C



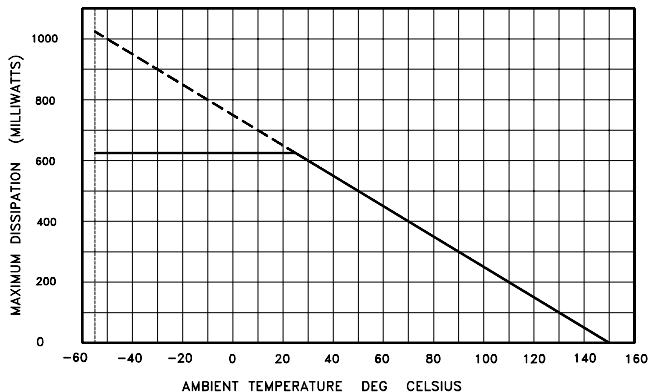
Safe Operating Area

FMMT617 FMMT624
FMMT618 FMMT625
FMMT619

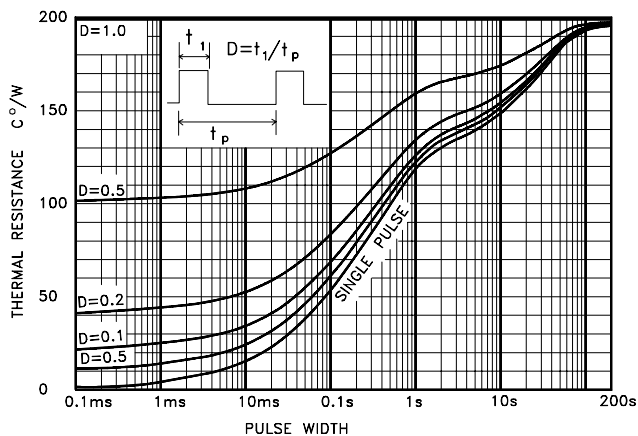
SuperSOT Series

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