

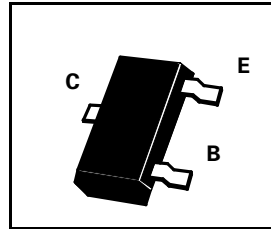
SOT23 NPN SILICON PLANAR SWITCHING TRANSISTORS

ISSUE 2 – SEPTEMBER 94

FMMT3903 FMMT3904

COMPLIMENTARY TYPES – FMMT3903 - FMMT3905
FMMT3904 - FMMT3906

PARTMARKING DETAIL – FMMT3903 - 1W
FMMT3904 - 1A



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	60	V
CollectorEmitter Voltage	V_{CEO}	40	V
EmitterBase Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	200	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	330	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

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

PARAMETER	SYMBOL	FMMT3903		FMMT3904		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Collector Base Breakdown Voltage	$V_{(BR)CBO}$	60		60		V	$I_C=10\mu A, I_E=0$
CollectorEmitter Breakdown Voltage	$V_{(BR)CEO}$	40		40		V	$I_C=1mA, I_B=0^*$
EmitterBase Breakdown Voltage	$V_{(BR)EBO}$	6		6		V	$I_E=10\mu A, I_C=0$
CollectorEmitter CutOff Current	I_{CEX}		50		50	nA	$V_{CE}=30V, V_{BE(off)}=3V$
Base CutOff Current	I_{BEX}		50		50	nA	$V_{CE}=30V, V_{EB(off)}=3V$
Static Forward Current Transfer Ratio	h_{FE}	20 35 50 30 15	150	40 70 100 60 30	300		$I_C=0.1mA, V_{CE}=1V^*$ $I_C=1mA, V_{CE}=1V^*$ $I_C=10mA, V_{CE}=1V^*$ $I_C=50mA, V_{CE}=1V^*$ $I_C=100mA, V_{CE}=1V^*$
CollectorEmitter Saturation Voltage	$V_{CE(sat)}$		0.2 0.3		0.2 0.3	V	$I_C=10mA, I_B=1mA^*$ $I_C=50mA, I_B=5mA^*$
BaseEmitter Saturation Voltage	$V_{BE(sat)}$	0.65	0.85 0.95	0.65	0.85 0.95	V	$I_C=10mA, I_B=1mA^*$ $I_C=50mA, I_B=5mA^*$
Transition Frequency	f_T	250		300		MHz	$I_C=10mA, V_{CE}=20V$ $f=100MHz$
Output Capacitance	C_{obo}		4		4	pF	$V_{CB}=5V, I_E=0, f=100KHz$
Input Capacitance	C_{ibo}		8		8	pF	$V_{BE}=0.5V, I_C=0, f=100KHz$



FMMT3903

FMMT3904

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

PARAMETER	SYMBOL	FMMT3903		FMMT3904		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Noise Figure	N		6		5	dB	$V_{CE}=5\text{V}$ $I_C=200\mu\text{A}$, $R_g=2\text{K}\Omega$ $f=30\text{Hz}$ to 15KHz at -3dB points
Delay Time	t_d		35		35	ns	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $I_{B1}=1\text{mA}$ $V_{BE(off)}=0.5\text{V}$ (See Figure1)
Rise Time	t_r		35		35	ns	
Storage Time	t_s		175		200	ns	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$ $I_{B1}=I_{B2}=1\text{mA}$ (See Figure2)
Fall Time	t_f		50		50	ns	

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



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