

# SOT23 NPN SILICON PLANAR SWITCHING TRANSISTORS

## FMMT2222 FMMT2222A

ISSUE 3 – FEBRUARY 1996

### FEATURES

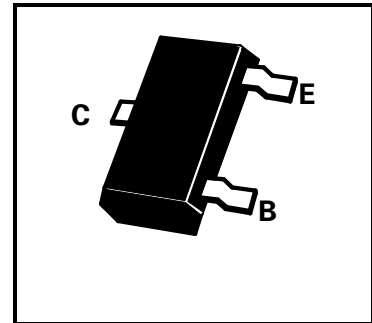
\* Fast switching

### PARTMARKING DETAILS

FMMT2222 – 1BZ                      FMMT2222A – 1P  
FMMT2222R – 2P                      FMMT2222AR – 3P

### COMPLEMENTARY TYPES

FMMT2222 – FMMT2907  
FMMT2222A – FMMT2907A



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FMMT2222	FMMT2222A	UNIT
Collector-Base Voltage	$V_{CBO}$	60	75	V
Collector-Emitter Voltage	$V_{CEO}$	30	40	V
Emitter-Base Voltage	$V_{EBO}$	5	6	V
Continuous Collector Current	$I_C$	600		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	FMMT2222		FMMT2222A		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60		75		V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30		40		V	$I_C=10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5		6		V	$I_E=10\mu A, I_C=0$
Collector Cut-Off Current	$I_{CBO}$		10		10	nA $\mu A$	$V_{CB}=50V, I_E=0$ $V_{CB}=60V, I_E=0$ $V_{CB}=50V, I_E=0, T_{amb}=150^{\circ}C$ $V_{CB}=60V, I_E=0, T_{amb}=150^{\circ}C$
Emitter Cut-Off Current	$I_{EBO}$		10		10	nA	$V_{EB}=3V, I_C=0$
Collector-Emitter Cut-Off Current	$I_{CEX}$		10		10	nA	$V_{CE}=60V, V_{EB(off)}=3V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.3 1.0		0.3 1.0	V V	$I_C=150mA, I_B=15mA^*$ $I_C=500mA, I_B=50mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.6	2.0 2.6	0.6	1.2 2.0	V V	$I_C=150mA, I_B=15mA^*$ $I_C=500mA, I_B=50mA^*$
Static Forward Current Transfer Ratio	$h_{FE}$	35 50 75 35 100 50 30		35 50 75 35 100 50 40			$I_C=0.1mA, V_{CE}=10V^*$ $I_C=1mA, V_{CE}=10V$ $I_C=10mA, V_{CE}=10V^*$ $I_C=10mA, V_{CE}=10V, T_{amb}=-55^{\circ}C$ $I_C=150mA, V_{CE}=10V^*$ $I_C=150mA, V_{CE}=1V^*$ $I_C=500mA, V_{CE}=10V^*$

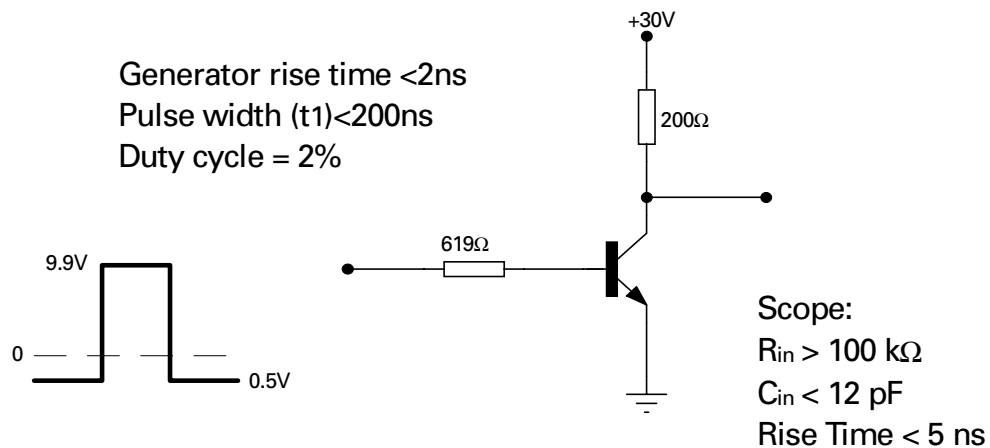
\*Measured under pulsed conditions. Pulse width=300 $\mu s$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

# FMMT2222 FMMT2222A

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

PARAMETER	SYMBOL	FMMT2222		FMMT2222A		UNIT	CONDITIONS.
		MIN.	MAX.	MIN.	MAX.		
Transition Frequency	$f_T$	250		300		MHz	$I_C=20\text{mA}$ , $V_{CE}=20\text{V}$ $f=100\text{MHz}$
Output Capacitance	$C_{obo}$		8		8	pF	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=140\text{KHz}$
Input Capacitance	$C_{ibo}$		30		25	pF	$V_{EB}=0.5\text{V}$ , $I_C=0$ $f=140\text{KHz}$
Delay Time	$t_d$		10		10	ns	$V_{CC}=30\text{V}$ , $V_{BE(off)}=0.5\text{V}$ $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$ (See Delay Test Circuit)
Rise Time	$t_r$		25		25	ns	
Storage Time	$t_s$		225		225	ns	$V_{CC}=30\text{V}$ , $I_C=150\text{mA}$ $I_{B1}=I_{B2}=15\text{mA}$ (See Storage Test Circuit)
Fall Time	$t_f$		60		60	ns	

### DELAY AND RISE – TEST CIRCUIT



### STORAGE TIME AND FALL TIME – TEST CIRCUIT

