

SOT223 NPN SILICON PLANAR SWITCHING TRANSISTOR

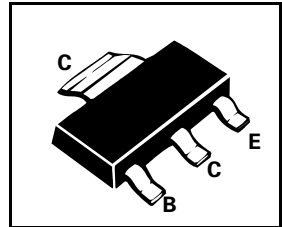
ISSUE 3 - OCTOBER 1995

FEATURES

- * 40 Volt V_{CEO}
- * Fast switching

COMPLEMENTARY TYPE - FZT2907A
PARTMARKING DETAIL - FZT2222A

FZT2222A



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	600	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	2	W
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	VALUE		UNIT	CONDITIONS.
		MIN.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75		V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40		V	$I_C=10mA, I_B=0^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6		V	$I_E=10\mu A, I_C=0$
Collector Cut-Off Current	I_{CBO}		10 10	nA μA	$V_{CB}=50V, I_E=0$ $V_{CB}=50V, I_E=0, T_{amb}=150^{\circ}C$
Emitter Cut-Off Current	I_{EBO}		10	nA	$V_{EB}=3V, I_C=0$
Collector-Emitter Cut-Off Current	I_{CEX}		10	nA	$V_{CE}=60V, V_{EB(off)}=3V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		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	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 40	300		$I_C=0.1mA, V_{CE}=10V^*$ $I_C=1mA, V_{CE}=10V^*$ $I_C=10mA, V_{CE}=10V^*$ $I_C=10mA, V_{CE}=10V, T_{amb}=-55^{\circ}C^*$ $I_C=150mA, V_{CE}=10V^*$ $I_C=150mA, V_{CE}=1V^*$ $I_C=500mA, V_{CE}=10V^*$

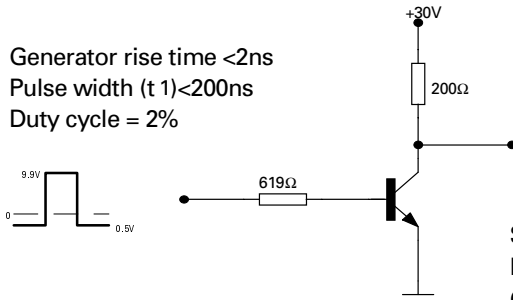
*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$
Spice parameter data is available upon request for this device

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

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

DELAY AND RISE – TEST CIRCUIT

Generator rise time $< 2\text{ns}$
Pulse width (t_1) $< 200\text{ns}$
Duty cycle = 2%



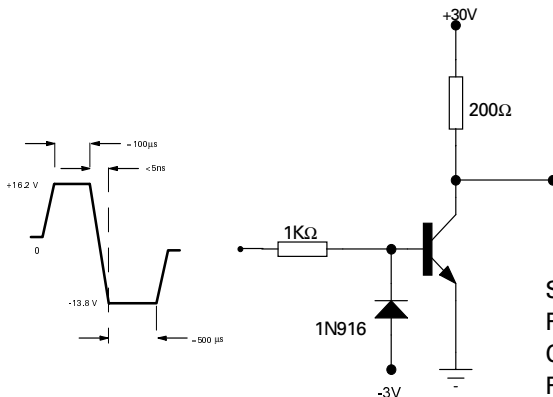
Scope:

$R_{in} > 100\text{ k}\Omega$

$C_{in} < 12\text{ pF}$

Rise Time $< 5\text{ ns}$

STORAGE TIME AND FALL TIME – TEST CIRCUIT



Scope:

$R_{in} > 100\text{ k}\Omega$

$C_{in} < 12\text{ pF}$

Rise Time $< 5\text{ ns}$

Duty cycle = 2%