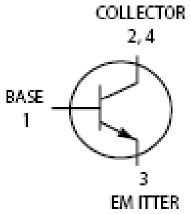
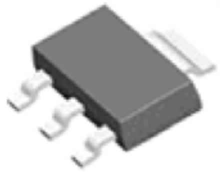
SMD General Purpose Transistor (NPN)

Features

- NPN Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications
- RoHS compliance





SOT-223

RoHS
Compliant

Mechanical Data

Case:	SOT-223, Plastic Case
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	Approx. 0.04 gram

Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	PZT2222A	Unit
	Marking Code	GT2222A	
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6.0	V
$I_{C(DC)}$	Collector Current	600	mA
P_{tot}	Total Device Dissipation T_A=25°C	1.5	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65 to +150	° C

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	Min.	Max.	Unit	Conditions
h_{FE}	D.C. Current Gain	35	-		V_{CE}=10V, I_C=0.1mA
		50	-		V_{CE}=10V, I_C=1mA
		70	-		V_{CE}=10V, I_C=10mA
		35	-		V_{CE}=10V, I_C=10mA, T_A=-55 ºC
		100	300		V_{CE}=10V, I_C=150mA
		50	-		V_{CE}=1V, I_C=150mA
		40	-		V_{CE}=10V, I_C=500mA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	75	-	V	I_C=10μA, I_E=0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	40	-	V	I_C=10mA, I_B=0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	6.0	-	V	I_E=10μA, I_C=0
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	-	0.3	V	I_C=150mA, I_B=15mA
		-	1.0		I_C=500mA, I_B=50mA
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	0.6	1.2	V	I_C=150mA, I_B=15mA
		-	2.0		I_C=500mA, I_B=50mA
I_{BEX}	Base-Emitter Cut-off Current	-	20	nA	V_{BE}=3V, V_{CE}=60V
I_{CEX}	Collector-Emitter Cut-off Current	-	10	nA	V_{BE}=3V, V_{CE}=60V
I_{EBO}	Emitter-Base Cutoff Current	-	100	nA	V_{EB}=3V, I_C=0
I_{CBO}	Collector-Base Cutoff Current	-	10	nA	V_{CB}=60V, I_E=0
		-	10	uA	V_{CB}=60V, I_E=0, T_A=125 ºC
f_T	Current Gain-Bandwidth Product	300	-	MHz	V_{CE}=20V, I_C=20mA, f=100MHz
C_c	Output Capacitance	-	8.0	pF	V_{CB}=10V, I_E=0, f=1MHz
C_e	Input Capacitance	-	25	pF	V_{EB}=0.5V, I_C=0 f=1MHz
h_{ie}	Input Impedance	2.0	8.0	kΩ	V_{CE}=10V, I_C=1mA, f=1KHz
		0.25	1.25		V_{CE}=10V, I_C=10mA, f=1KHz
h_{re}	Voltage Feedback Radio	-	8.0×10^{-4}		V_{CE}=10V, I_C=1mA, f=1KHz
		-	4.0×10^{-4}		V_{CE}=10V, I_C=10mA, f=1KHz

Symbol	Description	Min.	Max.	Unit	Conditions
h_{fe}	Small Signal Current Gain	50	300		V_{CE}=10V, I_C=1mA, f=1KHz
		75	375		V_{CE}=10V, I_C=10mA, f=1KHz
h_{oe}	Output Admittance	5.0	35	µmhos	V_{CE}=10V, I_C=1mA, f=1KHz
		25	200		V_{CE}=10V, I_C=10mA, f=1KHz
NF	Noise Figure	-	4.0	dB	V_{CE}=10V, I_C=100µA, f=1KHz
t_d	Delay Time	-	10	nS	V_{CC}=30V, $V_{EB(off)}$=0.5V, $I_{B(on)}$=15mA, I_C=150mA, Figure 1
t_r	Rise Time	-	25		
t_s	Storage Time	-	225		V_{CC}=30V, I_C=150mA $I_{B(on)}$=$I_{B(off)}$=15mA, Figure 2
t_f	Fall Time	-	60		

Note: Device mounted on an epoxy printed circuit board 1.575"x1.575"x0.059"; mounting pad for the collector lead min. 0.93"x0.93".

Input Waveform and Test Circuit

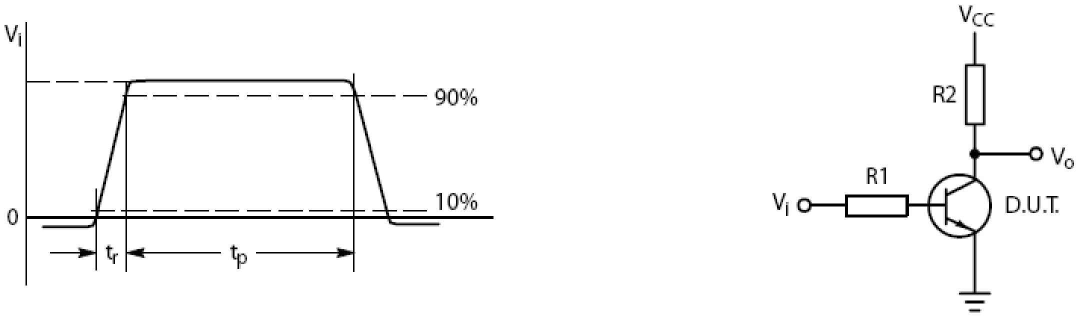


FIG.1 Input Waveform and Test Circuit for Determining Delay Time and Rise Time

V_i = - 0.5 V to +9.9 V , V_{CC} = +30 V, R1 = 619Ω , R2 = 200Ω .

PULSE GENERATOR:			
PULSE DURATION	t_p	≤	200 ns
RISE TIME	t_r	≤	2 ns
DUTY FACTOR	δ	=	0.02

OSCILLOSCOPE:			
INPUT IMPEDANCE	Z_i	>	100 kΩ
INPUT CAPACITANCE	C_i	<	12 pF
RISE TIME	t_r	<	5 ns

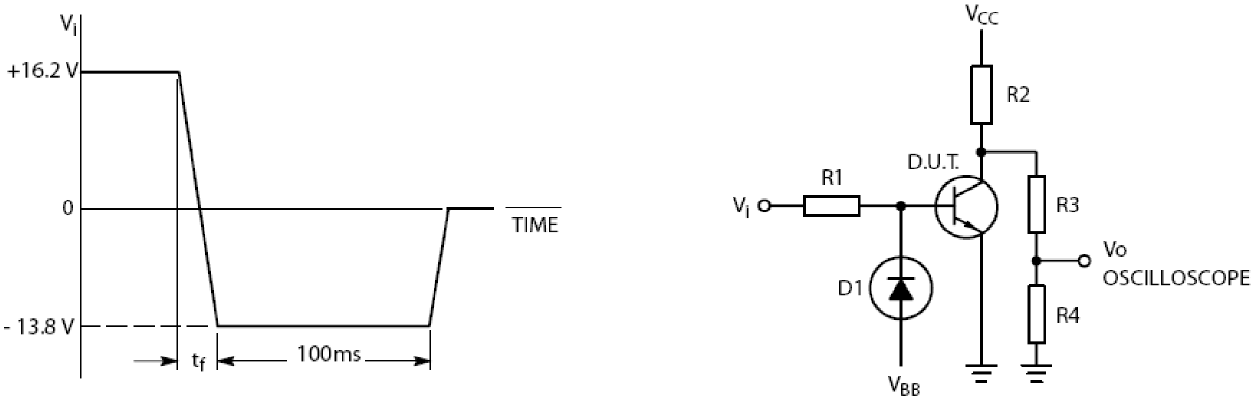
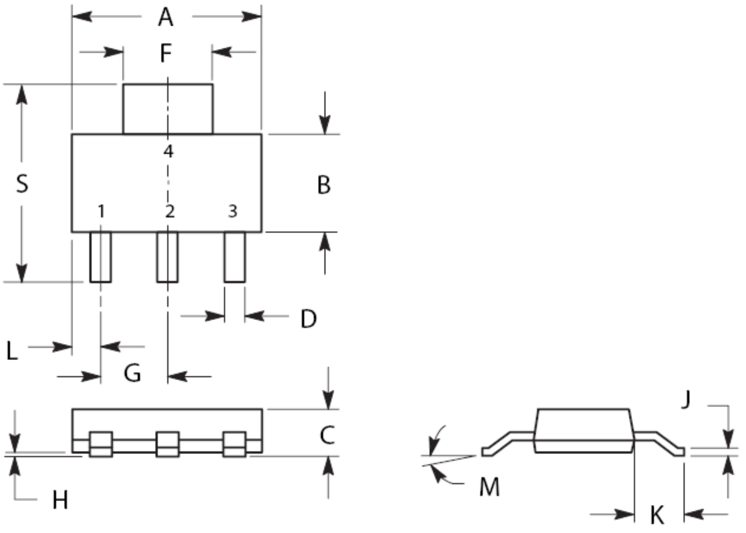


FIG.2 Input Waveform and Test Circuit for Determining Storage Time and Fall Time

Dimensions in mm



	MILLIMETERS	
DIM	MIN	MAX
A	6.30	6.70
B	3.30	3.70
C	1.50	1.75
D	0.60	0.89
F	2.90	3.20
G	2.20	2.40
H	0.020	0.100
J	0.24	0.35
K	1.50	2.00
L	0.85	1.05
M	0°	10°
S	6.70	7.30

SOT-223

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