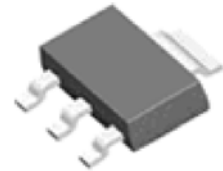
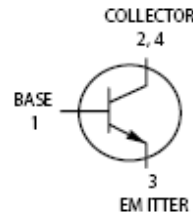


SMD General Purpose Transistor (NPN)

Features

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



SOT-223



Mechanical Data

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

Maximum Ratings ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	PZT2222A	Unit
	Marking Code	GT2222A	
V_{CB0}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EB0}	Emitter-Base Voltage	6.0	V
I_{C(DC)}	Collector Current	600	mA
P_{tot}	Total Device Dissipation $T_A=25^{\circ}C$	1.5	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65 to +150	$^{\circ}C$

SMD General Purpose Transistor (NPN)

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Electrical Characteristics ($T_{Ambient}=25^{\circ}\text{C}$ 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 °C
		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	μA	V _{CB} =60V, I _E =0, T _A =125 °C
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 Ratio	-	8.0 x 10 ⁻⁴		V _{CE} =10V, I _C =1mA, f=1KHz
		-	4.0 x 10 ⁻⁴		V _{CE} =10V, I _C =10mA, f=1KHz

SMD General Purpose Transistor (NPN)

PZT2222A

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

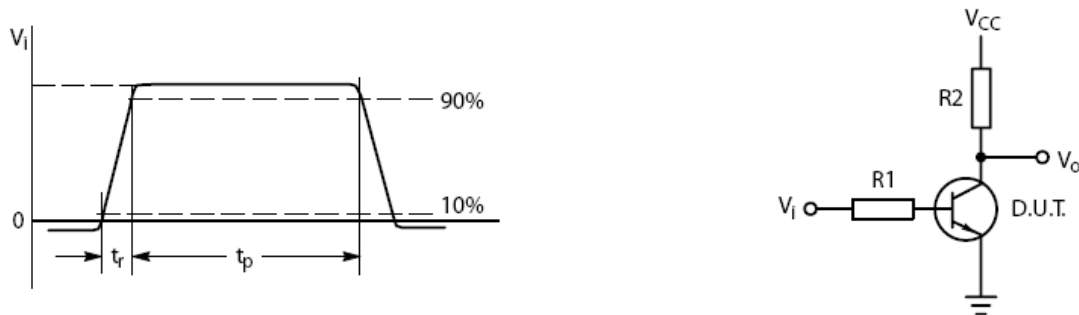


FIG.1 Input Waveform and Test Circuit for Determining Delay Time and Rise Time

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

PULSE GENERATOR:

PULSE DURATION $t_p \leq 200 \text{ ns}$
 RISE TIME $t_r \leq 2 \text{ ns}$
 DUTY FACTOR $\delta = 0.02$

OSCILLOSCOPE:

INPUT IMPEDANCE $Z_i > 100 \text{ k}\Omega$
 INPUT CAPACITANCE $C_i < 12 \text{ pF}$
 RISE TIME $t_r < 5 \text{ ns}$

SMD General Purpose Transistor (NPN)

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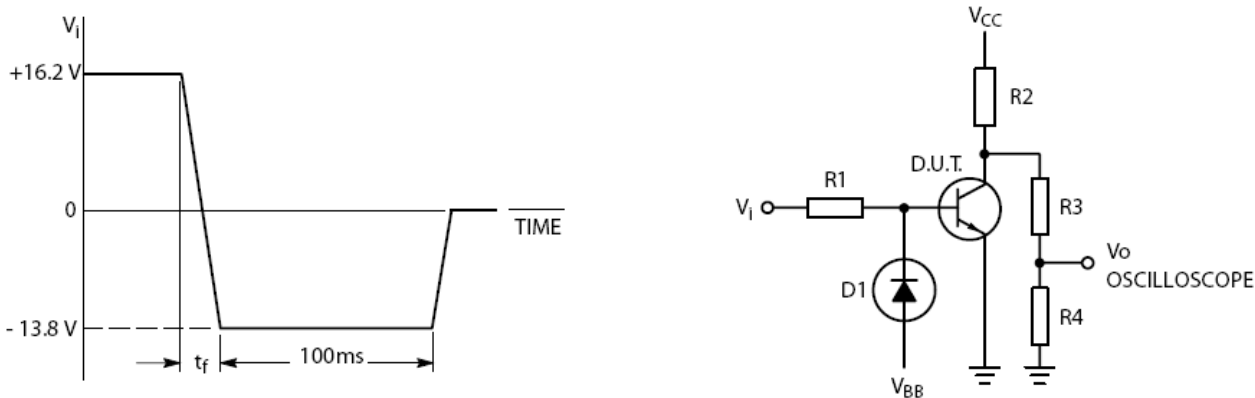
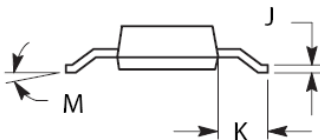
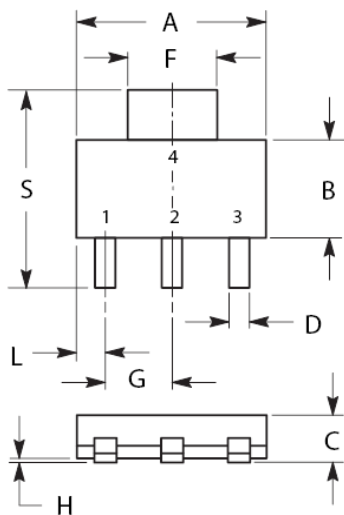


FIG.2 Input Waveform and Test Circuit for Determining Storage Time and Fall Time

Dimensions in mm



SOT-223

	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

SMD General Purpose Transistor (NPN)

PZT2222A

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