STZT2222A

SMALL SIGNAL NPN TRANSISTOR

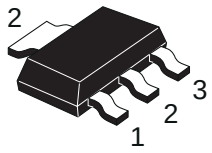
PRELIMINARY DATA

Type	Marking
STZT2222A	N22A

- SILICON EPITAXIAL PLANAR NPN TRANSISTOR
- SOT-223 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE PNP COMPLEMENTARY TYPE IS STZT2907A

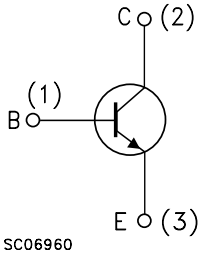
APPLICATIONS

- WELL SUITABLE FOR SMD MOTHER BOARD ASSEMBLY
- SMALL LOAD SWITCH TRANSISTOR WITH HIGH GAIN AND LOW SATURATION VOLTAGE



SOT-223

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	75	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	40	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	6	V
I_C	Collector Current	0.6	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	0.8	A
P_{tot}	Total Dissipation at T_{amb} = 25 °C	1.3	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}amb}$ •	Thermal Resistance Junction-Ambient	Max	96.1	°C/W

• Device mounted on a PCB area of 1 cm^2

ELETRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = 50 V V_{CB} = 50 V T_j = 125 °C			10 10	nA µA
I_{CEX}	Collector Cut-off Current (V_{BE} = -3V)	V_{CE} = 60 V			10	nA
I_{BEX}	Base Cut-off Current (V_{BE} = -3V)	V_{CE} = 60 V			20	nA
I_{EBO}	Emitter Cut-off Current (I_E = 0)	V_{EB} = 3 V			10	nA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_E = 0)	I_C = 10 µA	75			V
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = 10 µA	6			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 150 mA I_B = 15 mA I_C = 500 mA I_B = 50 mA			0.3 1	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 150 mA I_B = 15 mA I_C = 500 mA I_B = 50 mA	0.6		1.2 2	V V
h_{FE}*	DC Current Gain	I_C = 0.1 mA V_{CE} = 10 V I_C = 1 mA V_{CE} = 10 V I_C = 10 mA V_{CE} = 10 V I_C = 150 mA V_{CE} = 10 V I_C = 150 mA V_{CE} = 1 V I_C = 500 mA V_{CE} = 10 V	35 50 75 100 50 40		 300	
h_{fe}	Small Signal Current Gain	I_C = 1 mA V_{CE} = 10 V f = 1 KHz I_C = 10 mA V_{CE} = 10 V f = 1 KHz	50 75		300 375	
h_{ie}	Input Impedance	I_C = 1 mA V_{CE} = 10 V f = 1 KHz I_C = 10 mA V_{CE} = 10 V f = 1 KHz	2 0.25		8 1.25	Ω Ω
h_{re}	Reverse Voltage Ratio	I_C = 1 mA V_{CE} = 10 V f = 1 KHz I_C = 10 mA V_{CE} = 10 V f = 1 KHz			$8x10^{-4}$ $4x10^{-4}$	
h_{oe}	Output Impedance	I_C = 1 mA V_{CE} = 10 V f = 1 KHz I_C = 10 mA V_{CE} = 10 V f = 1 KHz	5 25		35 200	µS µS
f_T	Transition Frequency	I_C = 20 mA V_{CE} = 20 V f = 100 MHz		270		MHz
C_{CBO}	Collector-Base Capacitance	I_E = 0 V_{CB} = 10 V f = 100 KHz		4	8	pF
C_{EBO}	Emitter-Base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 100 KHz		20	25	pF
NF	Noise Figure	f = 1 KHz ΔF = 200 Hz R_G = 1KΩ I_C = 0.1 mA V_{CE} = 10 V		4		dB

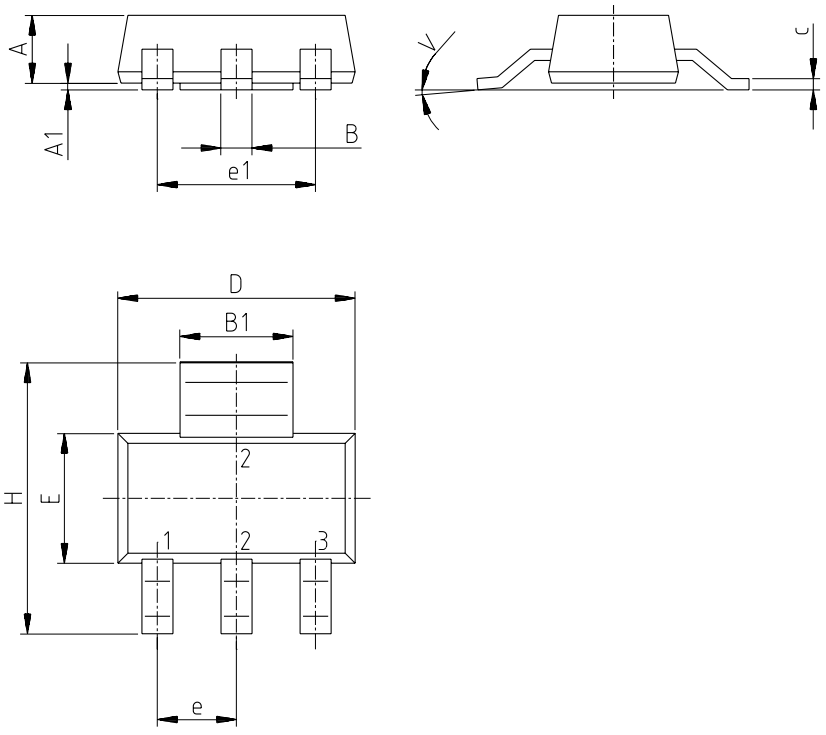
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^{o}C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_d	Delay Time	I_C = 150 mA I_B = 15 mA V_{CC} = 30 V		5	10	ns
t_r	Rise Time			12	25	ns
t_s	Storage Time	I_C = 150 mA V_{CC} = 30 V I_{B1} = -I_{B2} = 15 mA		185	225	ns
t_f	Fall Time			24	60	ns

∗ Pulsed: Pulse duration = 300 µs, duty cycle ≤ 1.5 %

SOT-223 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.80			0.071
B	0.60	0.70	0.80	0.024	0.027	0.031
B1	2.90	3.00	3.10	0.114	0.118	0.122
c	0.24	0.26	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
e		2.30			0.090	
e1		4.60			0.181	
E	3.30	3.50	3.70	0.130	0.138	0.146
H	6.70	7.00	7.30	0.264	0.276	0.287
V			10^o			10^o
A1		0.02				



P008B