

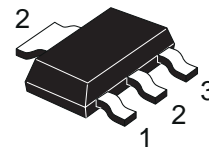


STZT2222 STZT2222A

MEDIUM POWER NPN TRANSISTORS

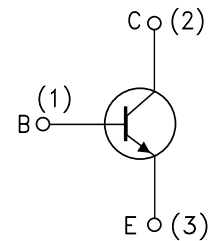
PRELIMINARY DATA

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- GENERAL PURPOSE MAINLY INTENDED FOR USE IN MEDIUM POWER INDUSTRIAL APPLICATION AND FOR AUDIO AMPLIFIER OUTPUT STAGE
- THE COMPLEMENTARY PNP TYPES ARE STZT2907 AND STZT2907A RESPECTIVELY



SOT-223

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		STZT2222	STZT2222A	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	60	75	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	30	40	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5	6	V
I_C	Collector Current	0.8		A
P_{tot}	Total Dissipation at $T_c = 25^\circ\text{C}$	1.5		W
T_{stg}	Storage Temperature	-65 to 150		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150		$^\circ\text{C}$

STZT2222 / STZT2222A

THERMAL DATA

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	83.3	$^{\circ}\text{C}/\text{W}$
$R_{thj-tab}$	Thermal Resistance Junction-Collector Tab	Max	10	$^{\circ}\text{C}/\text{W}$

• Mounted on a ceramic substrate area = 30 x 35 x 0.7 mm

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 50\text{ V}$ $V_{CB} = 50\text{ V}$ $T_{amb} = 125^{\circ}\text{C}$			10 10	nA μA
I_{CEX}	Collector Cut-off Current ($V_{BE} = -3\text{V}$)	$V_{CE} = 60\text{ V}$ for STZT2222A			10	nA
I_{BEX}	Base Cut-off Current ($V_{BE} = -3\text{V}$)	$V_{CE} = 60\text{ V}$ for STZT2222A			20	nA
I_{EBO}	Emitter Cut-off Current ($I_E = 0$)	$V_{EB} = 3\text{ V}$			10	nA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 10\ \mu\text{A}$ for STZT2222 for STZT2222A	60 75			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 10\text{ mA}$ for STZT2222 for STZT2222A	30 40			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = 10\ \mu\text{A}$ for STZT2222 for STZT2222	5 6			V V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$ for STZT2222 for STZT2222A $I_C = 500\text{ mA}$ $I_B = 50\text{ mA}$ for STZT2222 for STZT2222A			0.4 0.3 1.6 1	V V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$ for STZT2222 for STZT2222A $I_C = 500\text{ mA}$ $I_B = 50\text{ mA}$ for STZT2222 for STZT2222A		0.6	1.3 1.2 2.6 2	V V V V
h_{FE}^*	DC Current Gain	$I_C = 0.1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 1\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 10\text{ V}$ for STZT2222 for STZT2222A $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $T_c = -55^{\circ}\text{C}$ for STZT2222A	35 50 75 100 50 30 40 35		300	

ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

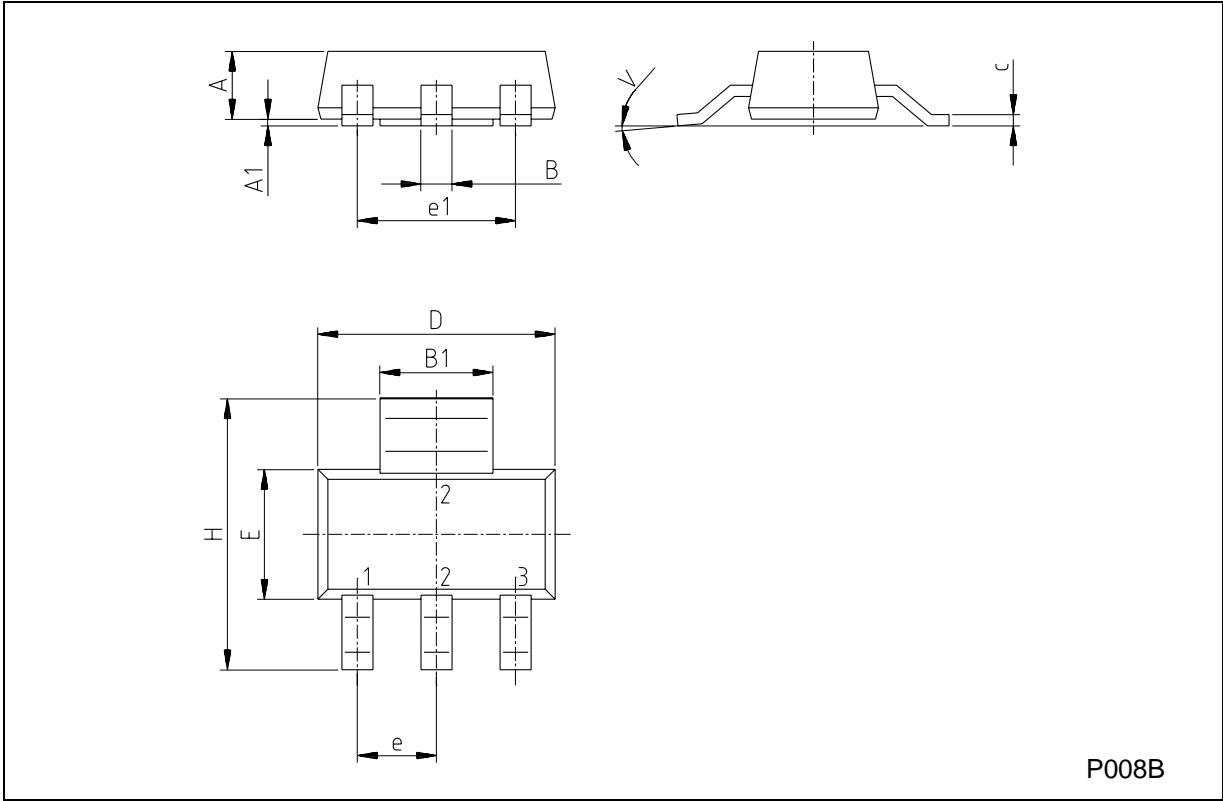
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{fe} **	Small Signal Current Gain	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$	50 75		300 375	
h_{ie} **	Input Impedance	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$	2 0.25		1.25	Ω Ω
h_{re} **	Reverse Voltage Ratio	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$			8×10^{-4} 4×10^{-4}	
h_{oe} **	Output Impedance	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$	5 25		35 200	μS μS
f_T	Transition Frequency	$I_C = 20\text{ mA}$ $V_{CE} = 20\text{ V}$ $f = 100\text{ MHz}$ for STZT2222 for STZT2222A	250 300			MHz MHz
C_{CBO} **	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 100\text{ KHz}$			8	pF
C_{EBO} **	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 100\text{ KHz}$			25	pF
NF**	Noise Figure	$f = 1\text{ KHz}$ $\Delta F = 200\text{ Hz}$ $R_G = 1\text{ K}\Omega$ $I_C = 0.1\text{ mA}$ $V_{CE} = 10\text{ V}$			4	dB
t_d **	Delay Time	$I_C = 150\text{ mA}$ $I_{B1} = 15\text{ mA}$ $V_{BB} = -0.5\text{ V}$ $V_{CC} = 30\text{ V}$			10	ns
t_r **	Rise Time				25	ns
t_s **	Storage Time	$I_C = 150\text{ mA}$ $V_{CC} = 30\text{ V}$ $I_{B1} = -I_{B2} = 15\text{ mA}$			225	ns
t_f **	Fall Time				60	ns

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1.5\%$

** Only for STZT2222A

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°			10°
A1		0.02				



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