



# ST631K

## LOW VOLTAGE PNP POWER TRANSISTOR

PRELIMINARY DATA

### Features

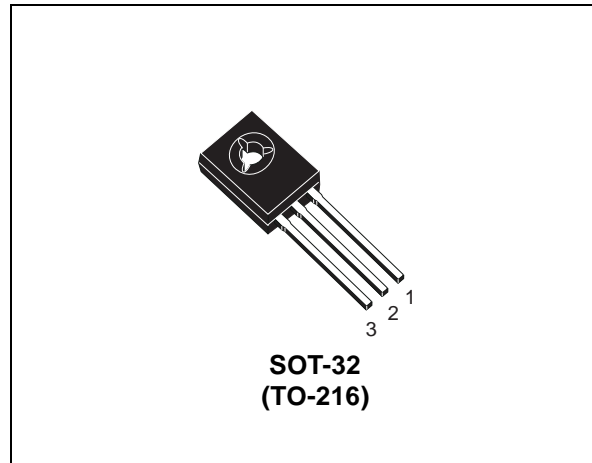
- LOW SATURATION VOLTAGE

### Applications

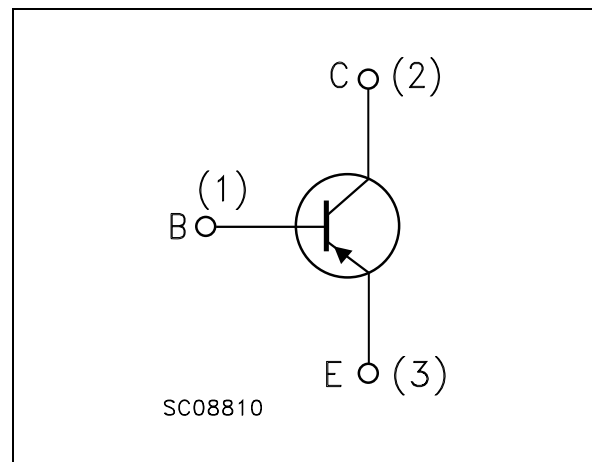
- SCANNING VELOCITY MODULATION IN CRT DISPLAYS
- MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

### Description

The ST631K is manufactured by low voltage Epitaxial Base technology and it is housed in SOT-32 plastic package. The complementary PNP type is ST600K.



### Internal Schematic Diagram



### Order Codes

Part Number	Marking	Package	Packing
ST600K	631K	SOT-32	TUBE

# 1 Absolute Maximum Ratings

**Table 1. Absolute Maximum Rating**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	-120	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-120	V
$V_{EBO}$	Collector-Base Voltage ( $I_C = 0$ )	-5	V
$I_C$	Collector Current	-1	A
$I_{CM}$	Collector Peak Current ( $t_p < 5ms$ )	-2	A
$I_B$	Base Current	-0.5	A
$I_{BM}$	Base Peak Current ( $t_p < 5ms$ )	-1	A
$P_{TOT}$	Total dissipation at $T_c = 25^\circ C$	12.5	W
$T_{STG}$	Storage Temperature	-65 to 150	$^\circ C$
$T_J$	Max. Operating Junction Temperature	150	$^\circ C$

**Table 2. Thermal Data**

Symbol	Parameter	Value	Unit
$R_{thJ-case}$	Thermal Resistance Junction-Case Max	10	$^\circ C/W$
$R_{thJ-amb}$	Thermal Resistance Junction-Case Max	100	$^\circ C/W$

## 2 Electrical Characteristics

**Table 3. Electrical Characteristics** ( $T_{CASE} = 25^{\circ}C$ ; unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = -50V$			-1	$\mu A$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = -4V$			-1	$\mu A$
$V_{(BR)CBO}$ <i>Note: 1</i>	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\mu A$	-120			V
$V_{(BR)CEO}$ <i>Note: 1</i>	Collector-Emitter Breakdown Voltage ( $I_C = 0$ )	$I_E = -1 mA$	-120		1	V
$V_{(BR)EBO}$ <i>Note: 1</i>	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10 mA$	-120		1	V
$V_{CE(sat)}$ <i>Note: 1</i>	Collector-Emitter Saturation Voltage	$I_C = -500 mA$ $I_B = -50 mA$			-0.5	V
$V_{BE(sat)}$ <i>Note: 1</i>	Base-Emitter Saturation Voltage	$I_C = -500 mA$ $I_B = -50 mA$			-1.2	V
$h_{FE}$ <i>Note: 1</i>	DC Current Gain	$I_C = -100 mA$ $V_{CE} = -5 V$ $I_C = -500 mA$ $V_{CE} = -5 V$	120 50		280	
$C_{CBO}$	Collector-Base Capacitance ( $I_B = 0$ )	$V_{CB} = -10 V$ $f=1MHz$		40		pF
$t_{on}$ $t_{off}$ $t_s$	INDUCTIVE LOAD Turn-On Time Turn-Off Time Storage Time	$I_C = -500 mA$ $V_{CC} = -12V$ $I_{B1} = -I_{B2} = -50 mA$ $t_p = 20\mu s$		100 500 800		ns ns ns

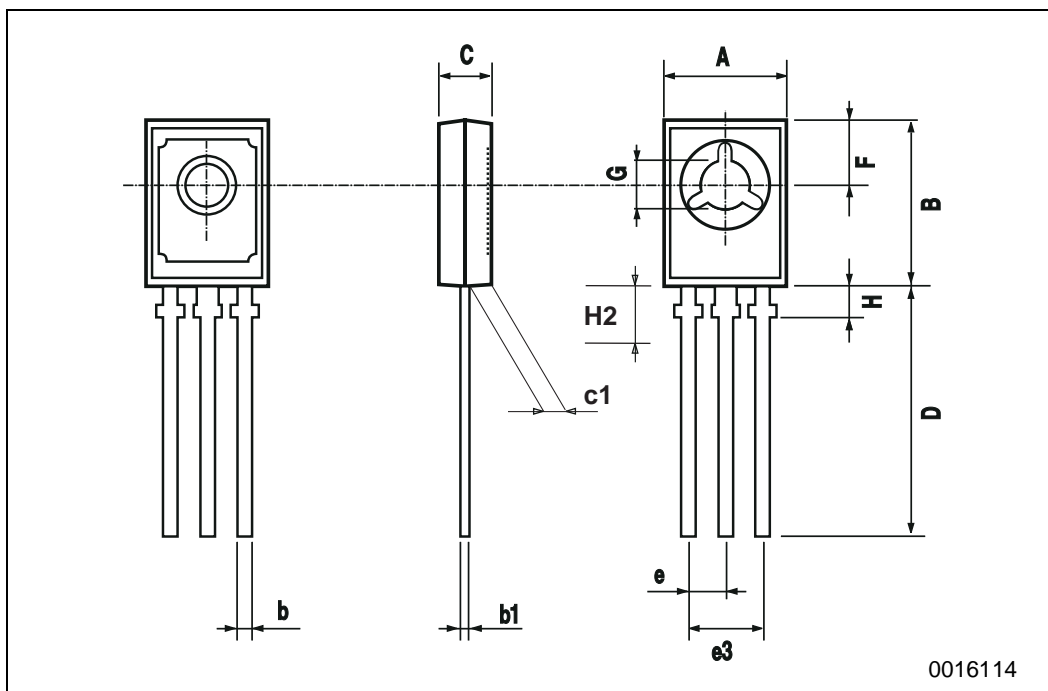
*Note: 1 Pulsed duration = 300  $\mu s$ , duty cycle  $\leq 1.5\%$ .*

### 3 Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com)

**SOT-32 (TO-126) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.040		0.106
c1	1.0		1.3	0.039		0.050
D	15.4		16.0	0.606		0.629
e		2.2			0.087	
e3	4.15		4.65	0.163		0.183
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100
H2		2.15			0.084	



## 4 Revision History

Date	Revision	Changes
26-Jul-2005	1	Initial release.

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