

NPN low voltage transistor

Features

- Low voltage small device for through-hole assembly
- High ruggedness

Applications

- Voltage regulation
- Relay driver
- Generic switch

Description

The STX715 is a NPN transistor manufactured using planar technology and it is housed in TO-92 small plastic package.

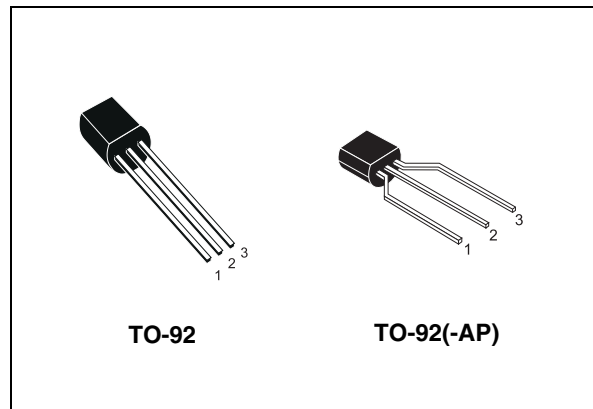


Figure 1. Internal schematic diagram

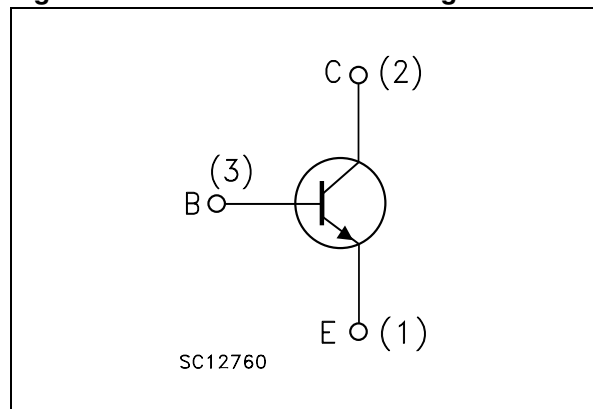


Table 1. Device summary

Order codes	Marking	Package	Packaging
STX715	X715	TO-92	Bag
STX715-AP	X715	TO-92	Ammopack

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	140	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	80	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	1.5	A
I_{CM}	Collector peak current ($t_P < 5$ ms)	2	A
I_B	Base current	0.3	A
I_{BM}	Base peak current ($t_P < 5$ ms)	0.6	A
P_{TOT}	Total dissipation at $T_{amb} = 25$ °C	0.9	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJA}	Thermal resistance junction-ambient max	140	°C/W

2 Electrical characteristics

$T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current ($V_{\text{BE}} = 0$)	$V_{\text{CE}} = 140\text{ V}$			500	μA
I_{CEO}	Collector cut-off current ($I_{\text{B}} = 0$)	$V_{\text{CE}} = 80\text{ V}$			1	mA
I_{EBO}	Emitter cut-off current ($I_{\text{C}} = 0$)	$V_{\text{EB}} = 5\text{ V}$			100	μA
$V_{\text{CEO(sus)}}$	Collector-emitter sustaining voltage ($I_{\text{B}} = 0$)	$I_{\text{C}} = 10\text{ mA}$	80			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 100\text{ mA}$ $I_{\text{B}} = 10\text{ mA}$ $I_{\text{C}} = 1\text{ A}$ $I_{\text{B}} = 100\text{ mA}$			0.25 0.5	V V
$V_{\text{BE(sat)}}^{(1)}$	Base-emitter saturation voltage	$I_{\text{C}} = 100\text{ mA}$ $I_{\text{B}} = 10\text{ mA}$ $I_{\text{C}} = 1\text{ A}$ $I_{\text{B}} = 100\text{ mA}$			1 1.1	V V
$h_{\text{FE}}^{(1)}$	DC current gain	$I_{\text{C}} = 100\text{ }\mu\text{A}$ $V_{\text{CE}} = 2\text{ V}$ $I_{\text{C}} = 500\text{ mA}$ $V_{\text{CE}} = 2\text{ V}$ $I_{\text{C}} = 1\text{ A}$ $V_{\text{CE}} = 2\text{ V}$	140 80 40			
f_{T}	Transition frequency	$I_{\text{C}} = 100\text{ mA}$ $V_{\text{CE}} = 10\text{ V}$		50		MHz

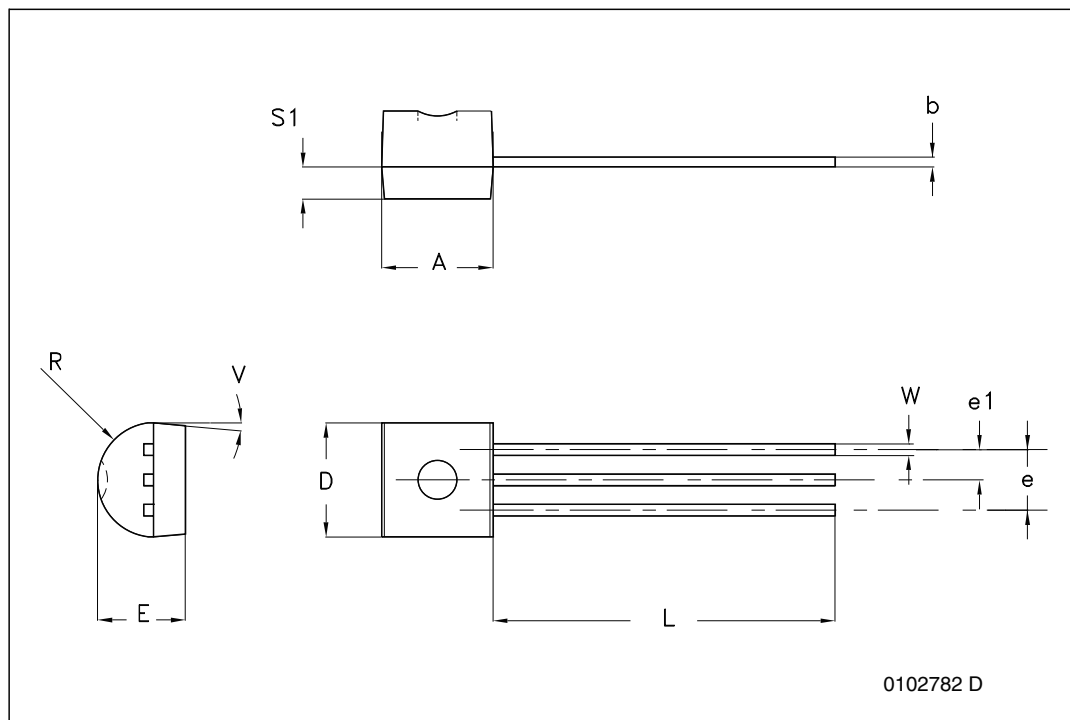
1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

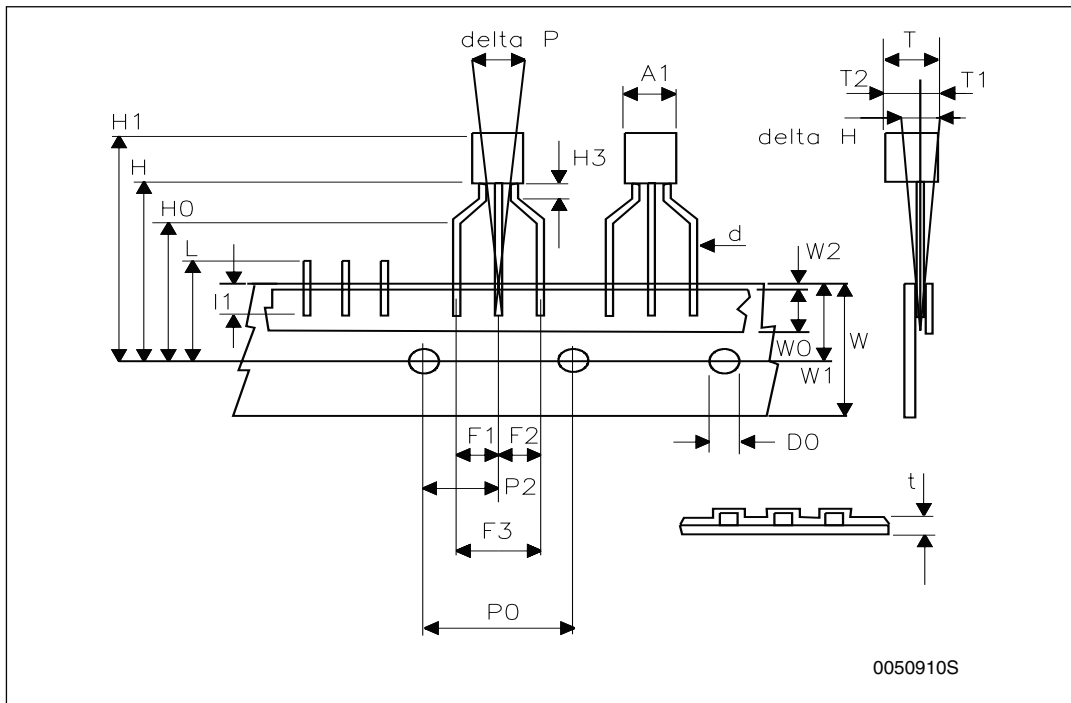
TO-92 bulk shipment mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A	4.32		4.95
b	0.36		0.51
D	4.45		4.95
E	3.30		3.94
e	2.41		2.67
e1	1.14		1.40
L	12.70		15.49
R	2.16		2.41
S1	0.92		1.52
W	0.41		0.56
V		5°	



TO-92 ammpack shipment (suffix"-AP") mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A1			4.80
T			3.80
T1			1.60
T2			2.30
d			0.48
P0	12.50	12.70	12.90
P2	5.65	6.35	7.05
F1,F2	2.44	2.54	2.94
F3	4.98	5.08	5.48
delta H	-2.00		2.00
W	17.50	18.00	19.00
W0	5.70	6.00	6.30
W1	8.50	9.00	9.25
W2			0.50
H	18.50		20.50
H3	0.5	1	1.5
H0	15.50	16.00	16.50
H1			25.00
D0	3.80	4.00	4.20
t			0.90
L			11.00
l1	3.00		
delta P	-1.00		1.00



4 Document revision history

Table 5. Document revision history

Date	Revision	Changes
21-Jun-2004	2	Document migration, no content change
01-Feb-2010	3	Updated package mechanical data

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