



**STL71**

## MEDIUM VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- n MEDIUM VOLTAGE CAPABILITY
- n LOW SPREAD OF DYNAMIC PARAMETERS
- n MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- n VERY HIGH SWITCHING SPEED

### APPLICATIONS

- n COMPACT FLUORESCENT LAMPS (CFLS)

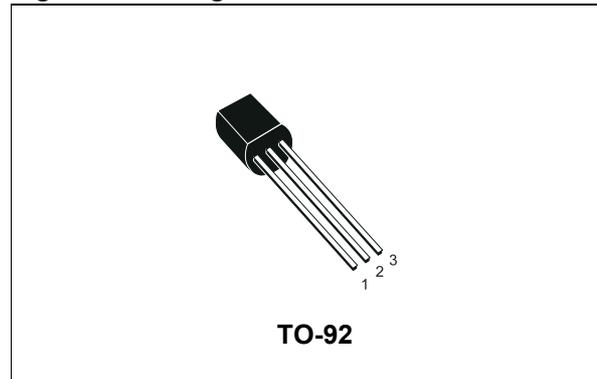
### DESCRIPTION

The device is manufactured using high voltage Multi-Epitaxial Planar technology for high switching speeds and medium voltage capability.

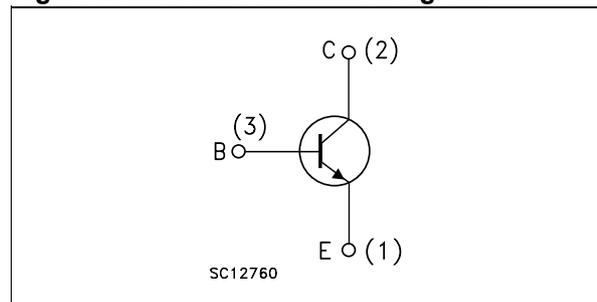
It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining the wide RBSOA.

The STL series is designed for use in Compact Fluorescent Lamps.

**Figure 1: Package**



**Figure 2: Internal Schematic Diagram**



**Table 1: Order Codes**

Part Number	Marking	Package	Packaging
STL71	L71 L or (#) L71 H	TO-92	Bulk

# See:note on page 2

**Table 2: Absolute Maximum Ratings**

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	700	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	400	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	9	V
$I_C$	Collector Current	0.6	A
$I_{CM}$	Collector Peak Current ( $t_p < 5\text{ms}$ )	1.5	A
$I_B$	Base Current	0.4	A
$I_{BM}$	Base Peak Current ( $t_p < 5\text{ms}$ )	0.75	A
$P_{tot}$	Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$	0.95	W
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_J$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

**Table 3: Thermal Data**

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	131.6	$^\circ\text{C/W}$
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**Table 4: Electrical Characteristics ( $T_{case} = 25\text{ }^\circ\text{C}$  unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5\text{ V}$ )	$V_{CE} = 700\text{ V}$			250	$\mu\text{A}$
$I_{EBO}$	Emitter-Cut-off Current ( $I_C = 0$ )	$V_{EB} = 9\text{ V}$			1	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 1\text{ mA}$	400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 0.1\text{ A}$ $I_B = 20\text{ mA}$		0.15	0.4	V
		$I_C = 0.2\text{ A}$ $I_B = 40\text{ mA}$		0.2	0.5	V
		$I_C = 0.3\text{ A}$ $I_B = 60\text{ mA}$		0.4	1	V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 0.2\text{ A}$ $I_B = 40\text{ mA}$		0.8	1	V
$h_{FE}$	DC Current Gain #	$I_C = 0.2\text{ A}$ $V_{CE} = 5\text{ V}$				
		Group L	10		16	
		Group H	15		23	
		$I_C = 0.6\text{ A}$ $V_{CE} = 10\text{ V}$	4		10	
$t_f$	INDUCTIVE LOAD Fall Time	$I_C = 0.2$ $V_{Clamp} = 300\text{ V}$ $I_{B1} = -I_{B2} = 40\text{ mA}$ $L = 3\text{mH}$ (see figure 3)		0.3		$\mu\text{s}$

\* Pulsed: Pulsed duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$ .

# The product is pre-selected in DC current gain (Group L and Group H). STMicroelectronics reserves the right to ship either groups according to production availability. Please contact your nearest STMicroelectronics sales office for delivery details.

Figure 3: Inductive Load Switching Test Circuit

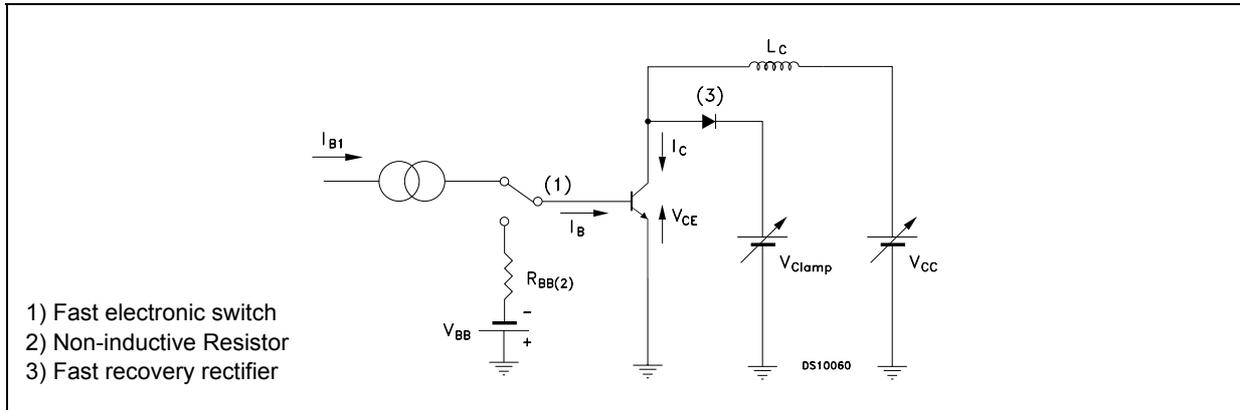
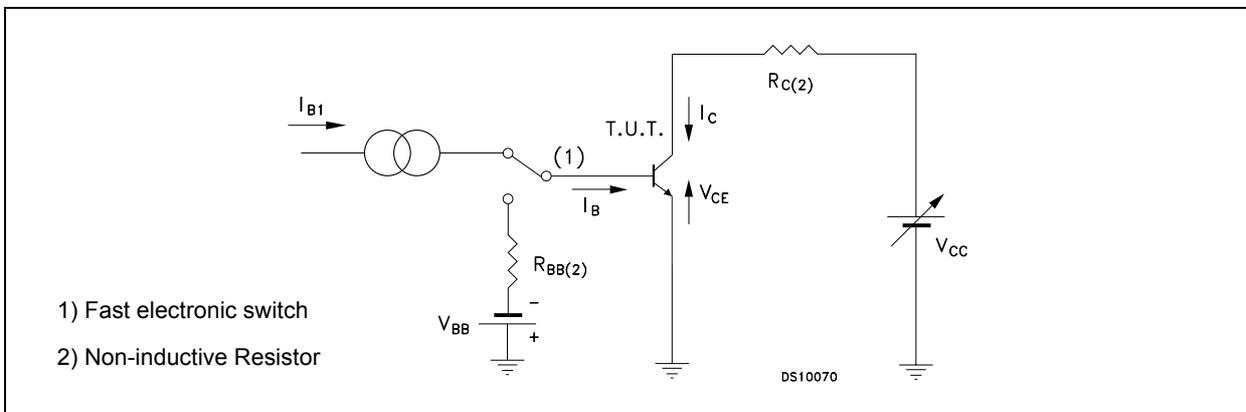
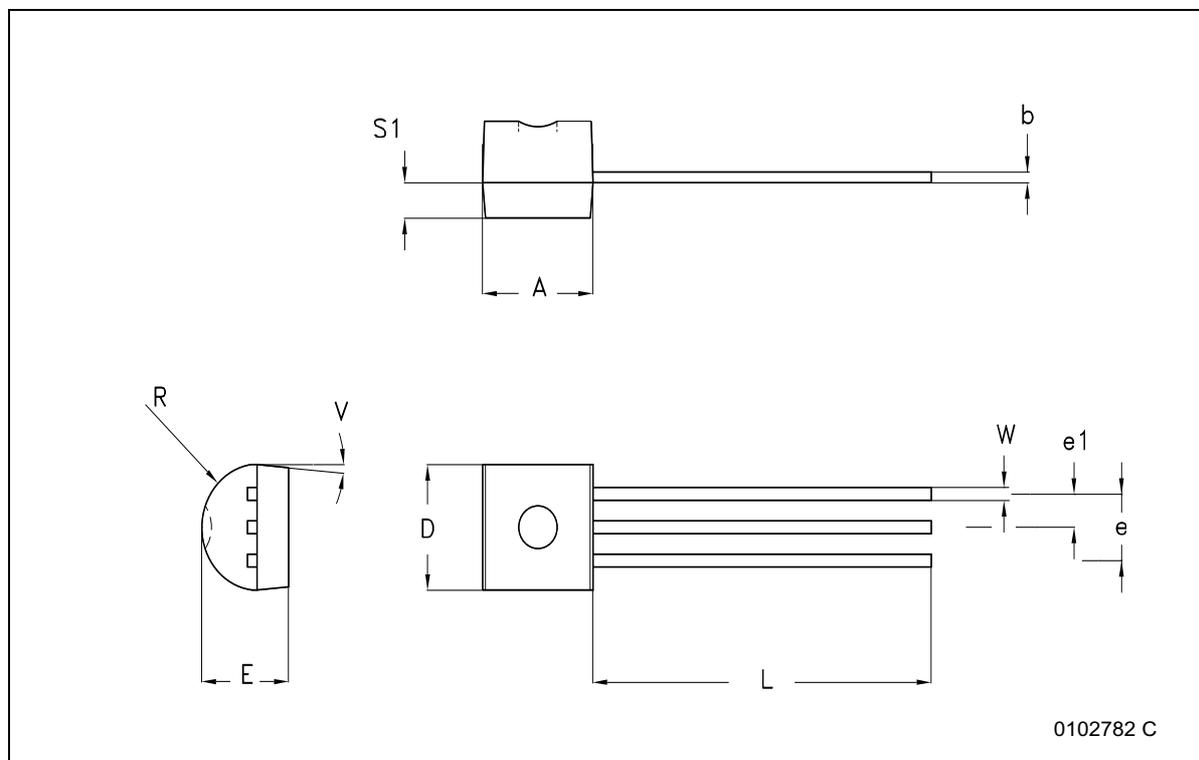


Figure 4: Resistive Load Switching Test Circuit



## 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°	



**Figure 5: Revision History**

<b>Release Date</b>	<b>Version</b>	<b>Change Designator</b>
01-Apr-2005	1	Initial release
12-Jul-2005	2	New hfe range values

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