



STL71

MEDIUM VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

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

APPLICATIONS

- 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

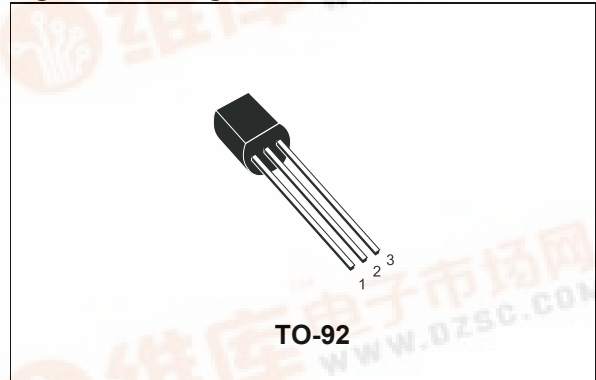


Figure 2: Internal Schematic Diagram

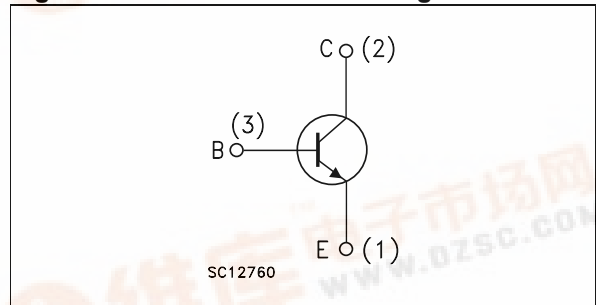


Table 1: Order Codes

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

See:note on page 2

STL71

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	μA
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		μs

* Pulsed: Pulsed duration = 300 μs , 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

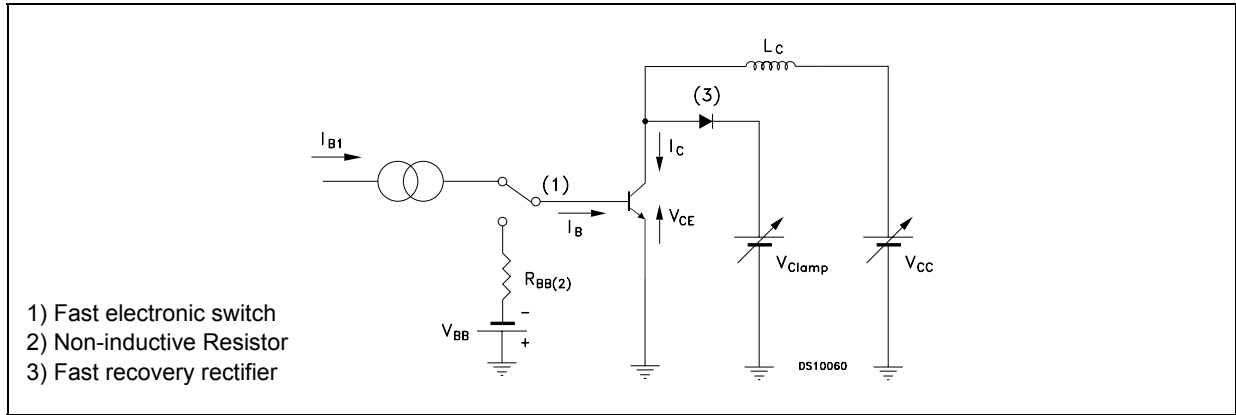
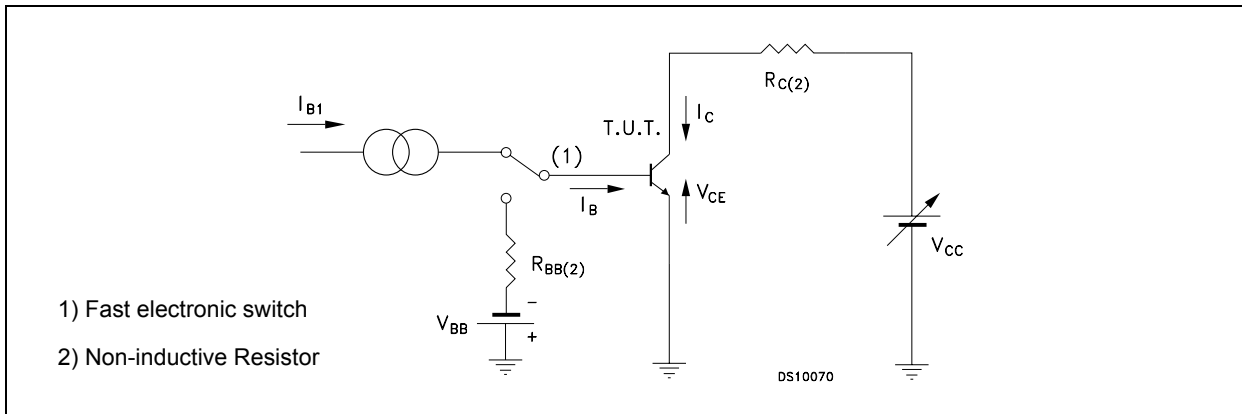


Figure 4: Resistive Load Switching Test Circuit



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°	

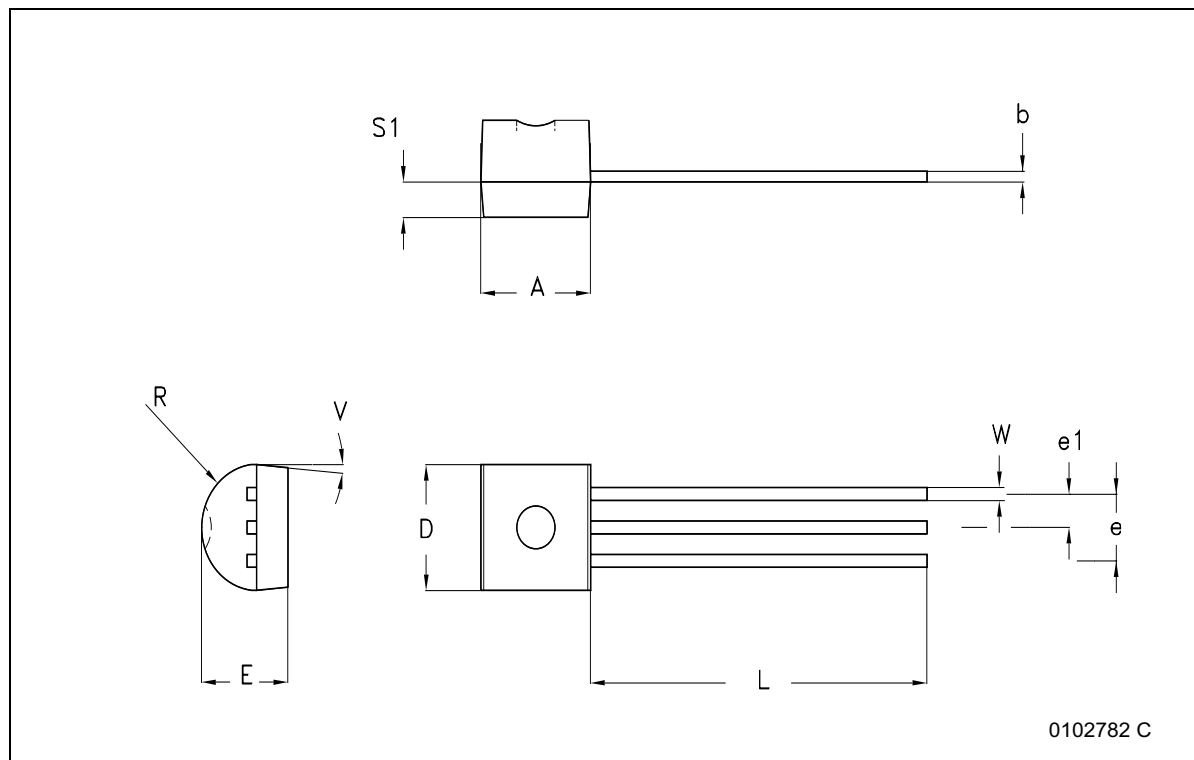


Figure 5: Revision History

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

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