

STL73D

High voltage fast-switching NPN power transistor

Features

- High voltage capability
- Low spread of dynamic parameters
- Very high switching speed
- Integrated antiparallel collector-emitter diode

Application

Electronic ballast for fluorescent lighting

Description

The device is manufactured using high voltage multi-epitaxial planar technology for high switching speeds and high 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.

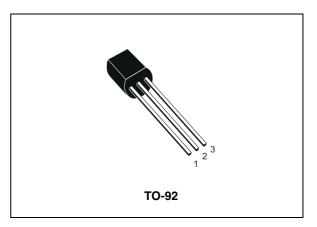


Figure 1. Internal schematic diagram

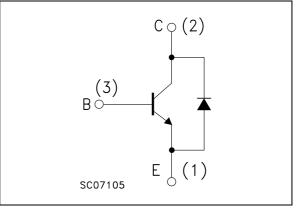


Table 1. Device summary

Order codes	Marking ⁽¹⁾	Package	Packaging
STL73D	L73DL	TO-92	Bag
312730	L73DH	10-92	Bag
STL73D-AP	L73DL	TO-92	Ammonook
	L73DH	10-92	Ammopack

1. The product is classified in DC current gain group L and group H, see *Table 5: hFE classification*. STMicroelectronics reserves the right to ship from any group according to production availability.

1 Electrical ratings

Table 2. Absolute maximum ratir	as
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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 ($I_C = 0$, $I_B = 0.5 \text{ A}$, $t_P < 10 \ \mu \text{s}$)	V _{(BR)EBO}	v
۱ _C	Collector current	1.5	А
I _{CM}	Collector peak current (t _P < 5 ms)	3	А
Ι _Β	Base current	0.5	А
I _{BM}	Base peak current (t _P < 5 ms)	1.5	А
P _{TOT}	Total dissipation at $T_c = 25 \ ^{\circ}C$	1.5	W
T _{STG}	Storage temperature	-65 to 150	°C
TJ	Max. operating junction temperature	150	°C

Table 3.Thermal data

Symbol	Parameter	Value	Unit
R _{thJC}	Thermal resistance junction-case max	83	°C/W



2 Electrical characteristics

 T_{case} = 25 °C unless otherwise specified.

Symbol	Parameter	Test con	ditions	Min.	Тур.	Max.	Unit
I _{CEV}	Collector cut-off current (V _{BE} = - 1.5 V)	V _{CE} = 700 V V _{CE} = 700 V	T _C = 125 °C			1 5	mA mA
V _{(BR)EBO}	Emitter-base breakdown voltage (I _C = 0)	I _E = 10 mA		9		18	V
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage $(I_B = 0)$	I _C = 10 mA		400			V
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$I_{\rm C} = 0.3 \text{ A}$ $I_{\rm C} = 0.6 \text{ A}$ $I_{\rm C} = 1 \text{ A}$	$I_B = 60 \text{ mA}$ $I_B = 120 \text{ mA}$ $I_B = 250 \text{ mA}$		0.15 0.25 0.4	0.4 0.6 1	V V V
V _{BE(sat)} ⁽¹⁾	Base-emitter saturation voltage	I _C = 0.6 A	l _B = 120 mA		0.95	1.1	V
h _{FE}	DC current gain	$I_{\rm C} = 0.6 {\rm A}$ $I_{\rm C} = 1.2 {\rm A}$	V _{CE} = 3 V V _{CE} = 5 V	10 4		21 10	
t _r t _s t _f	Resistive load Rise time Storage time Fall time	$V_{CC} = 125 V$ $I_{B(on)} = - I_{B(off)}$ $T_{P} = 25 \ \mu s$	-			1 4 0.7	μs μs μs
t _s	Inductive load Storage time	$I_{C} = 0.3 \text{ A} V_{C}$ $I_{B(on)} = -I_{B(off)}$ $L = 3 \text{ mH}$			0.3		μs
V _F	Diode forward voltage	I _F = 0.5 A				1.5	V

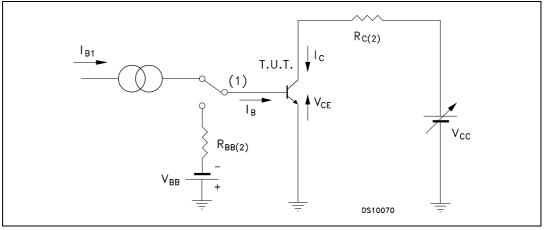
Table 4. Electrical characteristics

1. Pulse test: pulse duration \leq 300 µs, duty cycle \leq 2 %

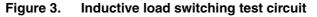
Symbol	Parameter	Group	Value		
			Min.	Max.	Unit
b	DC current gain	L	10	16	
h _{FE}	DC current gain V _{CE} = 3 V, I _C = 0.6 A	Н	15	21	

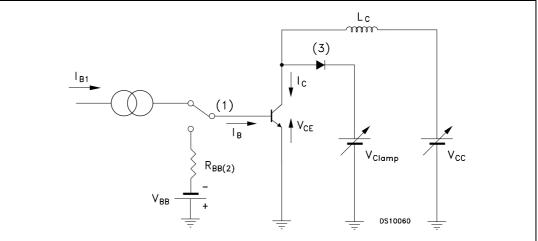
2.1 Test circuits





- 1. Fast electronic switch
- 2. Non-inductive resistor





- 1. Fast electronic switch
- 2. Non-inductive resistor
- 3. Fast recovery rectifier

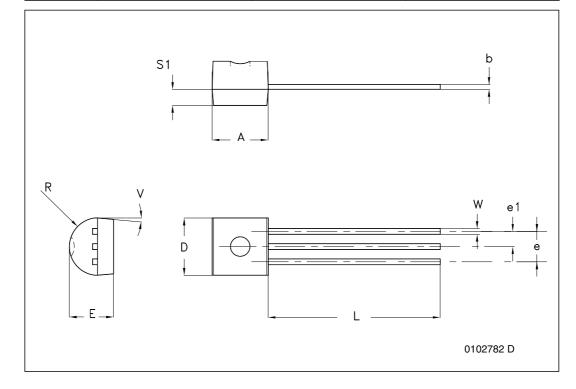


3 Package mechanical data

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.		
Dini.	Min.	Тур.	Max.	
А	4.32		4.95	
b	0.36		0.51	
D	4.45		4.95	
E	3.30		3.94	
е	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 ⁰		



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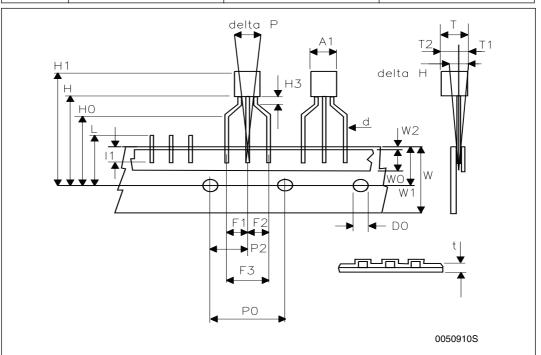


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Dim.	mm.				
	Min.	Тур.	Max.		
A1			4.80		
Т			3.80		
T1			1.60		
T2			2.30		
d			0.48		
P0	12.50	12.70	12.90		
P2	5.65	6.35	7.05		
F1,F2	2.44	2.54	2.94		
F3	4.98	5.08	5.48		
delta H	-2.00		2.00		
W	17.50	18.00	19.00		
WO	5.70	6.00	6.30		
W1	8.50	9.00	9.25		
W2			0.50		
Н	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		
11	3.00				
delta P	-1.00		1.00		

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



4 Revision history

Table 6.Document revision history

Date	Revision	Changes	
12-Nov-2008	1	Initial release.	
25-Nov-2009	2	Added order code STL73D-AP Table 1 on page 1.	



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