

STFN42

High voltage fast-switching NPN power transistor

Features

- High voltage capability
- Very high switching speed

Applications

- Electronic ballasts for fluorescent lighting
- Battery charger

Description

This device is a high voltage fast-switching NPN power transistor, manufactured using high voltage multi-epitaxial planar technology for high switching speeds.

It employs a cellular emitter structure with planar edge termination to enhance switching speeds, while maintaining a wide RBSOA.

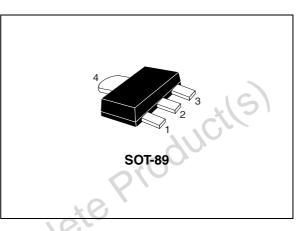


Figure 1. Internal schematic diagram

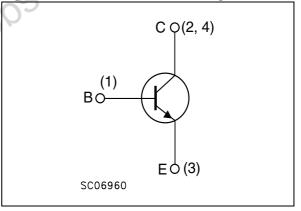


Table 1.	Device	summary
	DCVICC	Summary

Order code	Marking	Packages	Packaging
STFN42	N42	SOT-89	Tape and reel

Electrical ratings 1

Table 2.	Absolute maximum ratings	
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	Aboorato maximum ratingo			
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	
۱ _C	Collector current	1	А	
I _{CM}	Collector peak current (t _P < 5 ms)	2	A	
Ι _Β	Base current	0.5	А	
I _{BM}	Base peak current (t _P < 5 ms)	OP.	А	
P _{TOT}	Total dissipation at $T_a = 25 \text{ °C}$	1.4	W	
T _{stg}	Storage temperature	-65 to 150		
Τ _J	Max. operating junction temperature	150		
Table 3.	Thermal data			
Symbol	Parameter	Value U	nit	

Table 3. Thermal data

	Symbol	Parameter	Value	Unit
	R _{thj-amb}	Thermal resistance junction ambient max	90	°C/W
Obsole	ste P	roducit		



2 Electrical characteristics

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

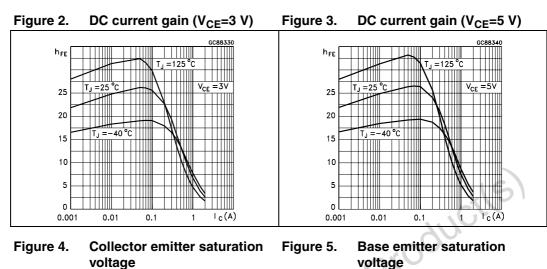
Symbol	Parameter	Test conditions		Тур.	Max.	Unit
I _{CES}	Collector cut-off current $(V_{BE} = 0)$	V _{CE} = 700 V V _{CE} = 700 V; T _C = 125 °C			0.1 0.5	mA mA
I _{EBO}	Collector cut-off current $(I_{C} = 0)$	V _{EB} = 9 V			0.1	mA
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B =0)	I _C = 10 mA	400	JĊ	R	v
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$\begin{array}{ll} I_{C} = 0.25 \mbox{ A} & I_{B} = 0.05 \mbox{ A} \\ I_{C} = 0.5 \mbox{ A} & I_{B} = 0.125 \mbox{ A} \\ I_{C} = 0.75 \mbox{ A} & I_{B} = 0.25 \mbox{ A} \end{array}$	5	0.2 0.3 0.4	0.5 1 1.5	V V V
V _{BE(sat)} ⁽¹⁾	Base-emitter saturation voltage	$I_{C} = 0.25 \text{ A}$ $I_{C} = 0.5 \text{ A}$ $I_{B} = 0.05 \text{ A}$ $I_{B} = 0.125 \text{ A}$			1 1.2	V V
h _{FE} ⁽¹⁾	DC current gain	$I_{C} = 0.4 \text{ A} \qquad V_{CE} = 5 \text{ V}$ $I_{C} = 0.8 \text{ A} \qquad V_{CE} = 5 \text{ V}$	10 5		30 20	
t _f	Inductive load Fall time	I_{C} = 250 mA $I_{B(on)}$ = - $I_{B(off)}$ = 50 mA L = 200 µH		0.3		μs

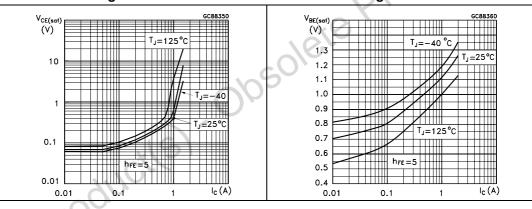
Table 4. Electrical characteristics

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

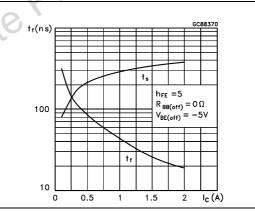


2.1 Electrical characteristics (curve)









Switching time inductive load



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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.

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obsolete Product(s). Obsolete Product(s)

Dim.	mm			
Dim.	Min.	Тур.	Max.	
А	1.40		1.60	
В	0.44		0.56	
B1	0.36		0.48	
С	0.35		0.44	
C1	0.35		0.44	
D	4.40		4.60	
D1	1.62		1.83	
D3		0.90	2170	
E	2.29		2.60	
e	1.42	P	1.57	
e1	2.92	×0`	3.07	
Н	3.94	10,-	4.25	
H1	2.70	50'	3.10	
К	1°	0-	8°	
L	0.89		1.20	
R	16	0.25		
β		90°		
β psolete prof	20			

Table 5.	SOT-89 mechanical data



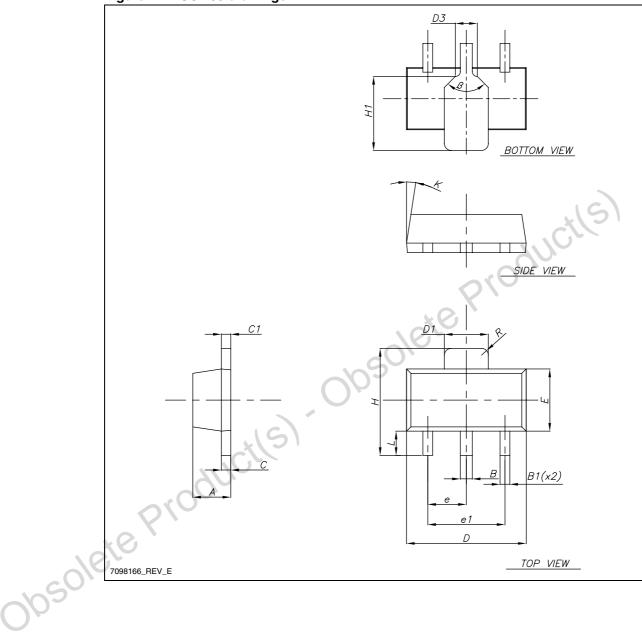


Figure 7. SOT-89 drawings



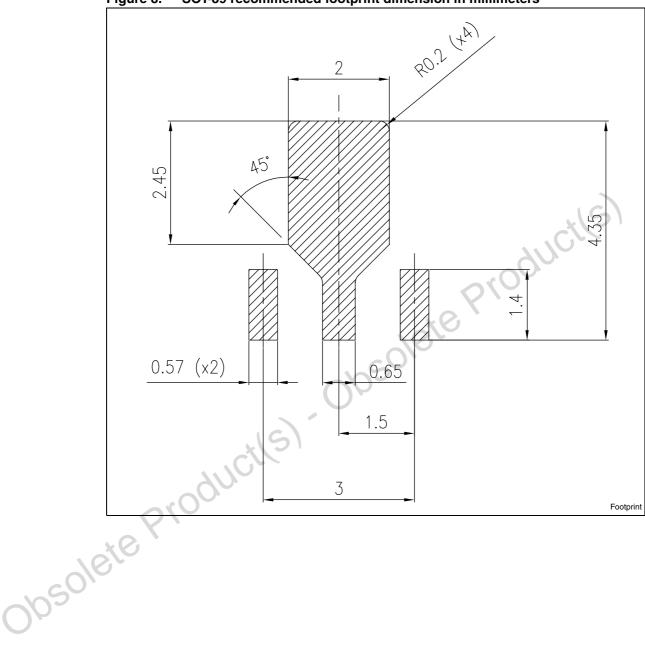


Figure 8. SOT-89 recommended footprint dimension in millimeters



4 Document revision history

Table 6.Document revision history

	Date	Revision	Changes
	16-Mar-2006	1	Initial release.
	25-Jan-2011	2	Updated package mechanical data.
	08-Feb-2012	3	Mechanical data updated
005018	tepro	Juct	economical data updated



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