

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

PRELIMINARY DATA

Ordering Code	Marking	Package / Shipment
STFN42	N42	SOT-89 / Tape & Reel

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

APPLICATIONS:

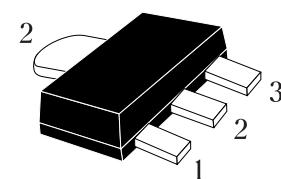
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- BATTERY CHARGER

DESCRIPTION

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

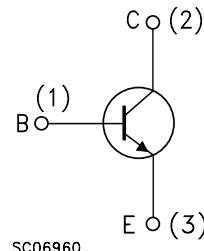
It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining the wide RBSOA.

The STFN42 is designed for use in compact fluorescent lamp application.



SOT-89

INTERNAL SCHEMATIC DIAGRAM



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	1	A
I_{CM}	Collector Peak Current ($t_p < 5 \text{ ms}$)	2	A
I_B	Base Current	0.5	A
I_{BM}	Base Peak Current ($t_p < 5 \text{ ms}$)	1	A
P_{tot}	Total Dissipation at $T_{amb} = 25^\circ\text{C}$	1.4	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

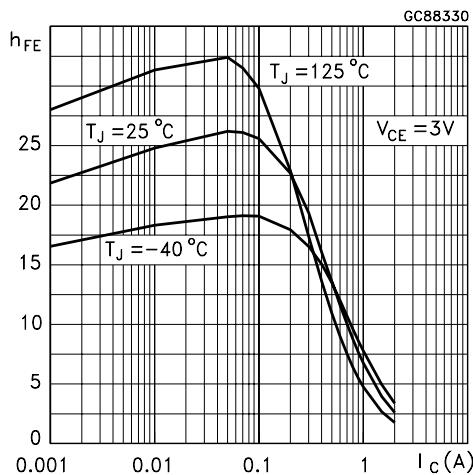
$R_{thj\text{-amb}}$	Thermal Resistance Junction-ambient	Max	90	$^{\circ}\text{C/W}$
• Device mounted on a PCB area of 1 cm ² .				

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

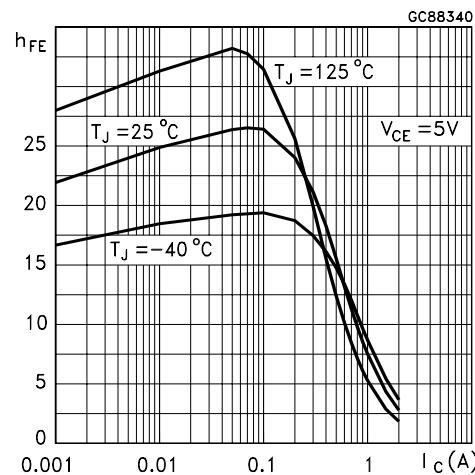
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 700 \text{ V}$ $V_{CE} = 700 \text{ V}$ $T_j = 125^{\circ}$			1 5	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 9 \text{ V}$			1	mA
$V_{CEO(\text{sus})^*}$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 1 \text{ mA}$ $L = 25\text{mH}$	400			V
$V_{CE(\text{sat})^*}$	Collector-Emitter Saturation Voltage	$I_C = 0.25 \text{ A}$ $I_B = 0.05 \text{ A}$ $I_C = 0.5 \text{ A}$ $I_B = 0.125 \text{ A}$ $I_C = 0.75 \text{ A}$ $I_B = 0.25 \text{ A}$		0.2 0.3 0.4	0.5 1 1.5	V V V
$V_{BE(\text{sat})^*}$	Base-Emitter Saturation Voltage	$I_C = 0.25 \text{ A}$ $I_B = 0.05 \text{ A}$ $I_C = 0.5 \text{ A}$ $I_B = 0.125 \text{ A}$			1 1.2	V V
h_{FE}^*	DC Current Gain	$I_C = 0.4 \text{ A}$ $V_{CE} = 5 \text{ V}$ $I_C = 0.8 \text{ A}$ $V_{CE} = 5 \text{ V}$	10 5		30 20	
t_f	INDUCTIVE LOAD Fall Time	$I_C = 0.25 \text{ A}$ $V_{\text{clamp}} = 300 \text{ V}$ $I_{B1} = -I_{B2} = 50 \text{ mA}$ $L = 3 \text{ mH}$		0.3		μs

* Pulsed: Pulse duration = 300 μs , duty cycle = 1.5 %

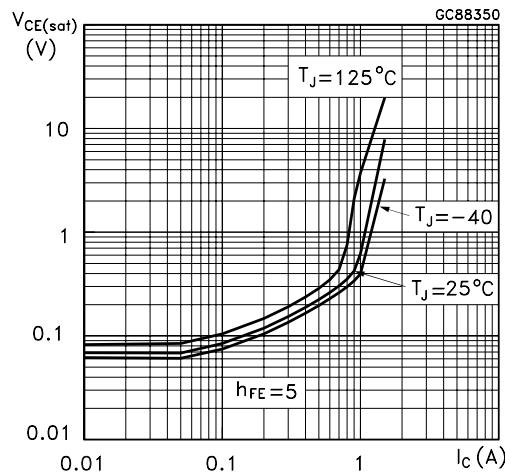
DC Current Gain



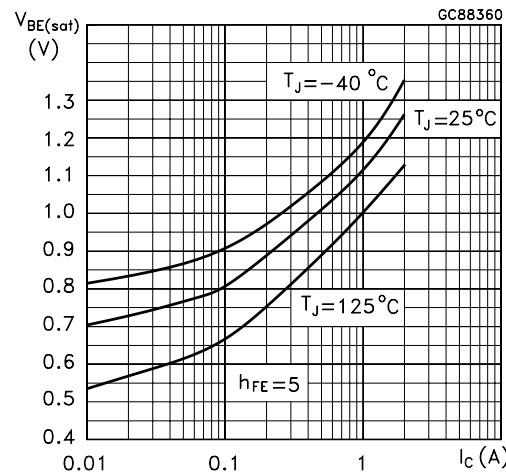
DC Current Gain



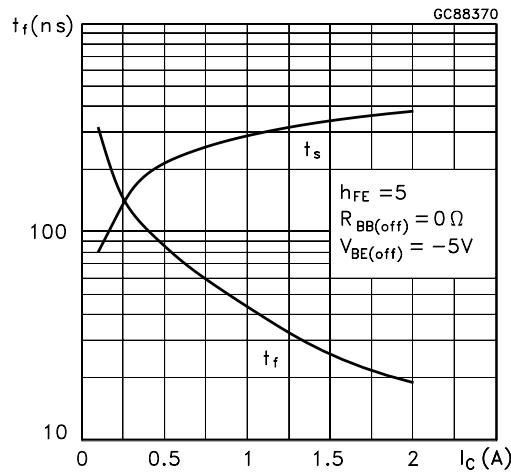
Collector Emitter Saturation Voltage



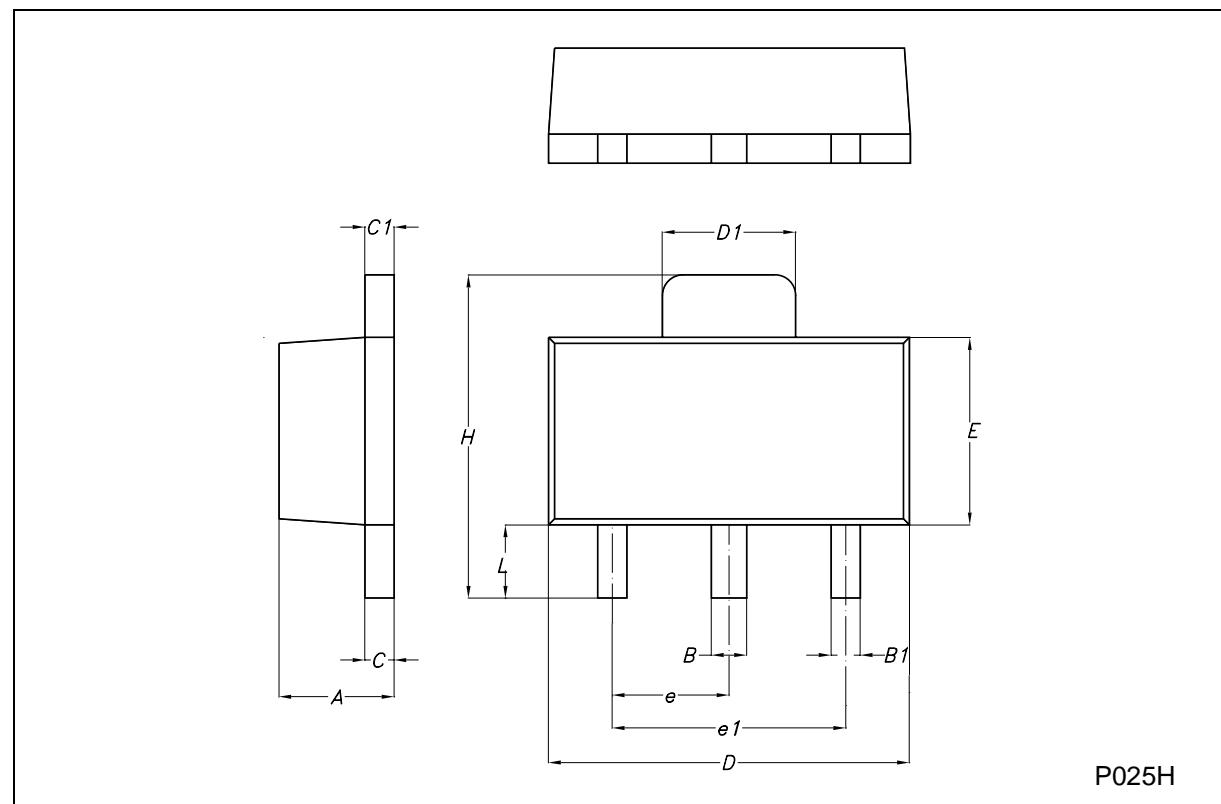
Base Emitter Saturation Voltage



Switching Time Inductive Load



SOT-89 MECHANICAL DATA						
DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.4		1.6	55.1		63.0
B	0.44		0.56	17.3		22.0
B1	0.36		0.48	14.2		18.9
C	0.35		0.44	13.8		17.3
C1	0.35		0.44	13.8		17.3
D	4.4		4.6	173.2		181.1
D1	1.62		1.83	63.8		72.0
E	2.29		2.6	90.2		102.4
e	1.42		1.57	55.9		61.8
e1	2.92		3.07	115.0		120.9
H	3.94		4.25	155.1		167.3
L	0.89		1.2	35.0		47.2



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