STFN42

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:

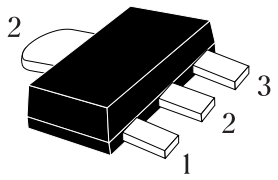
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- BATTERY CHARGER

DESCRIPTION

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

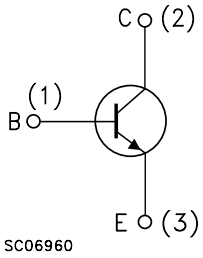
It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining the wide RBSOA.

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

THERMAL DATA

$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	90	$^oC/W$

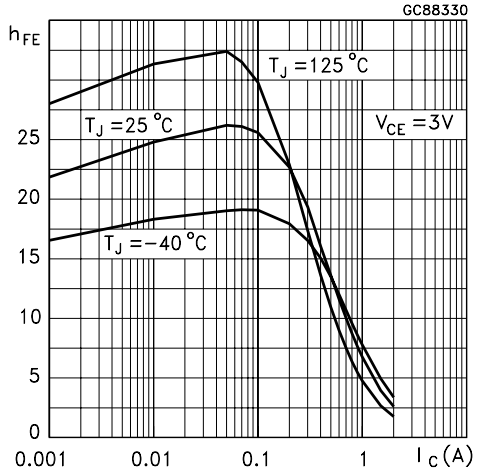
• Device mounted on a PCB area of 1 cm^2.

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

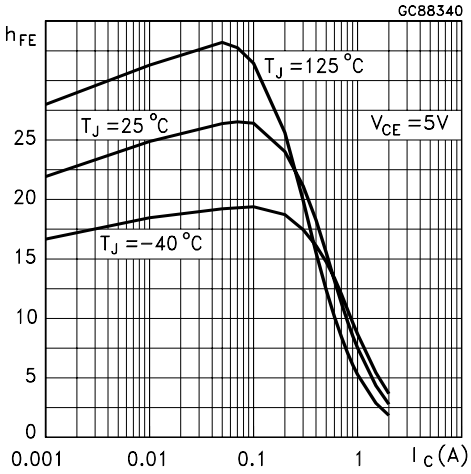
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 700 V V_{CE} = 700 V	 T_j = 125^o			1 5	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 9 V				1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 1 mA L =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

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

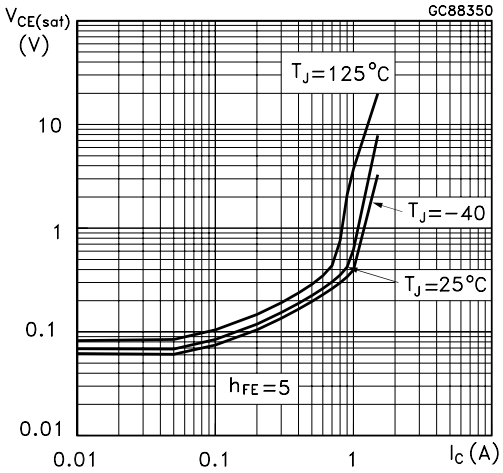
DC Current Gain



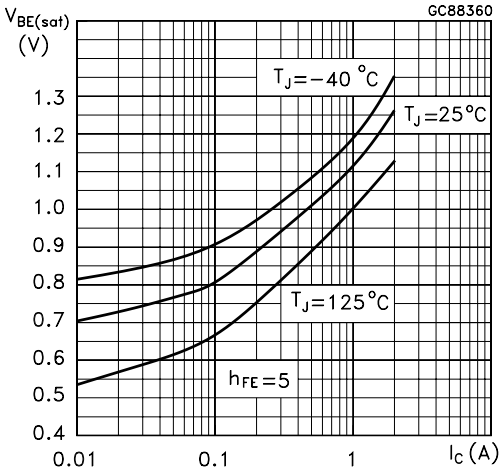
DC Current Gain



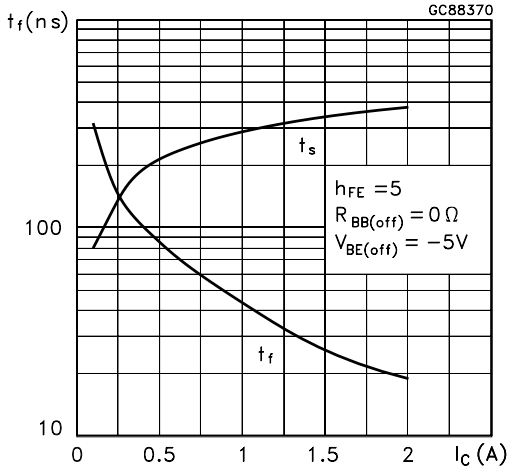
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage

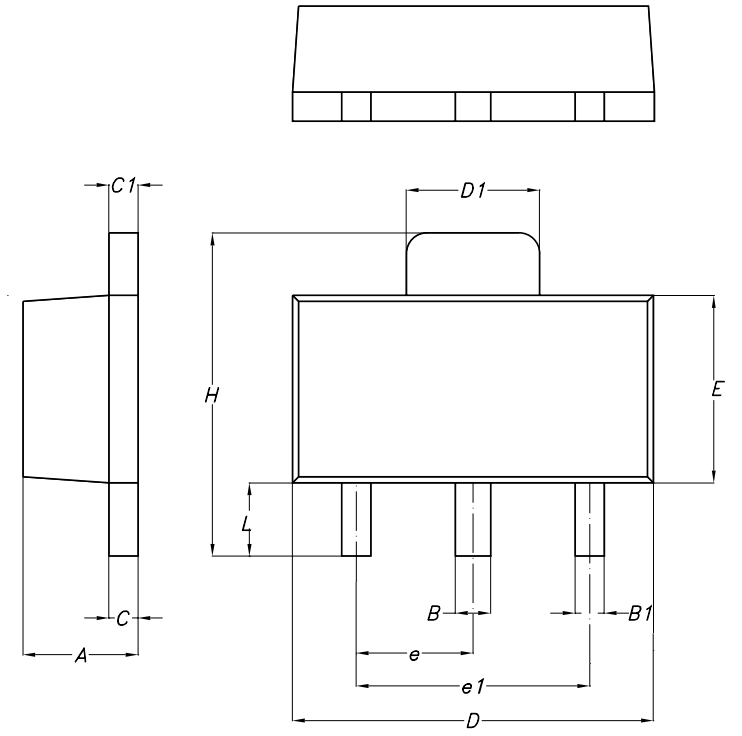


Switching Time Inductive Load



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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