SGS-THOMSON MICROELECTRONICS

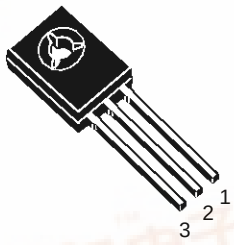
2N5657

SILICON NPN TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR

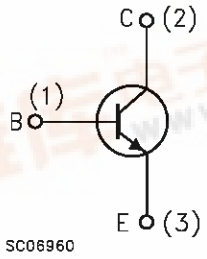
DESCRIPTION

The 2N5657 is a silicon epitaxial-base NPN transistor in Jedec SOT-32 plastic package. It is intended for use output amplifiers, low current, high voltage converters and AC line relays.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	375	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	350	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	6	V
I_C	Collector Current	0.5	A
I_{CM}	Collector Peak Current	1	A
I_B	Base Current	0.25	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	20	W
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

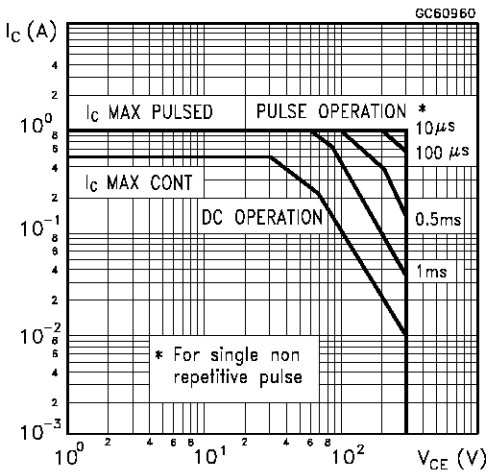
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	6.25	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

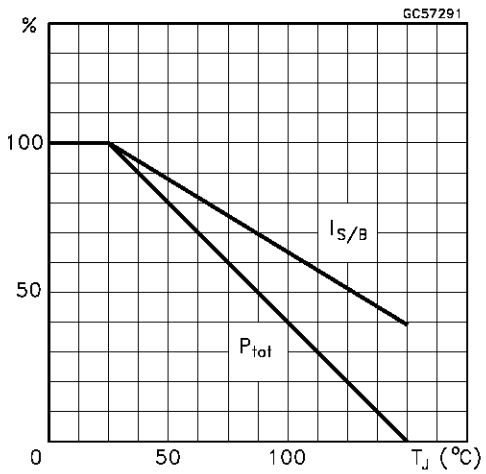
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CE} = 375 V			0.01	mA
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 350 V V_{CE} = 250 V T_c = 100 °C			0.1 1	mA mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 250 V			0.1	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 6 V			0.01	mA
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage	I_C = 1 mA	350			V
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 100 mA L = 50 mH	350			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 0.1 A I_B = 10 mA I_C = 0.25 A I_B = 25 mA I_C = 0.5 A I_B = 0.1 A			1 2.5 10	V V V
V_{BE}*	Base-Emitter Voltage	I_C = 0.1 A V_{CE} = 10 V			1	V
h_{FE}*	DC Current Gain	I_C = 50 mA V_{CE} = 10 V I_C = 0.1 A V_{CE} = 10 V I_C = 0.25 A V_{CE} = 10 V I_C = 0.5 A V_{CE} = 10 V	25 30 15 5		250	
h_{fe}	Small Signal Current Gain	I_C = 0.1 A V_{CE} = 10 V f = 1KHz	20			
f_T	Transition frequency	I_C = 50 mA V_{CE} = 10 V f =10MHz	10			MHz
C_{CBO}	Collector Base Capacitance	V_{CB} = 10 V f = 100KHz			25	pF

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

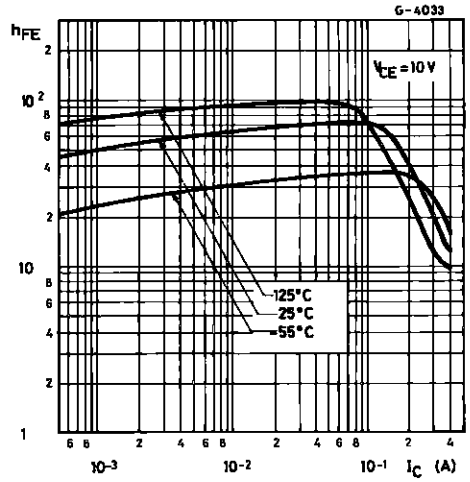
Safe Operating Area



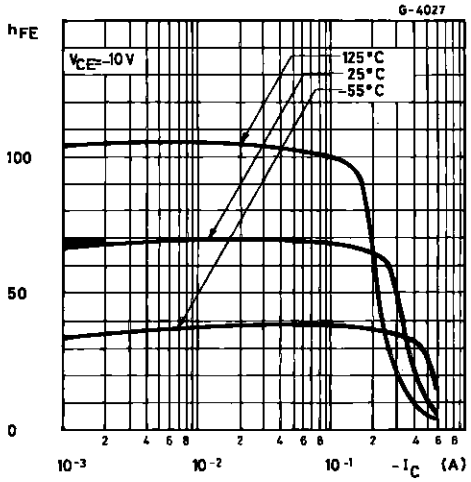
Derating Curve



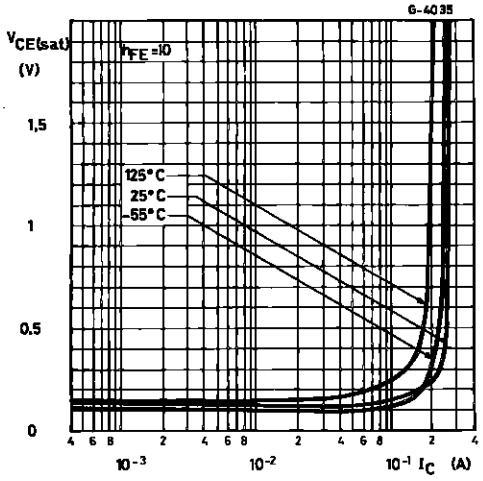
DC Current Gain (NPN type)



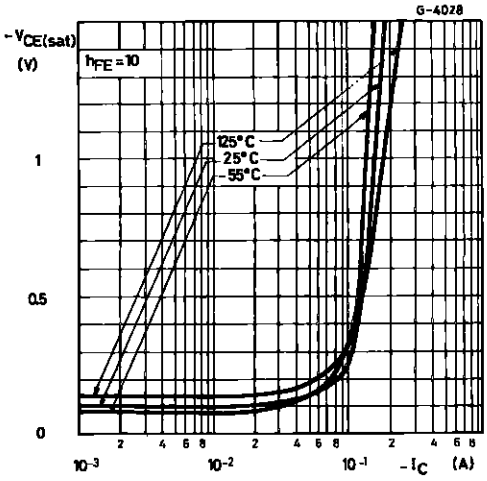
DC Current Gain (PNP type)



Collector Emitter Saturation Voltage (NPN type)

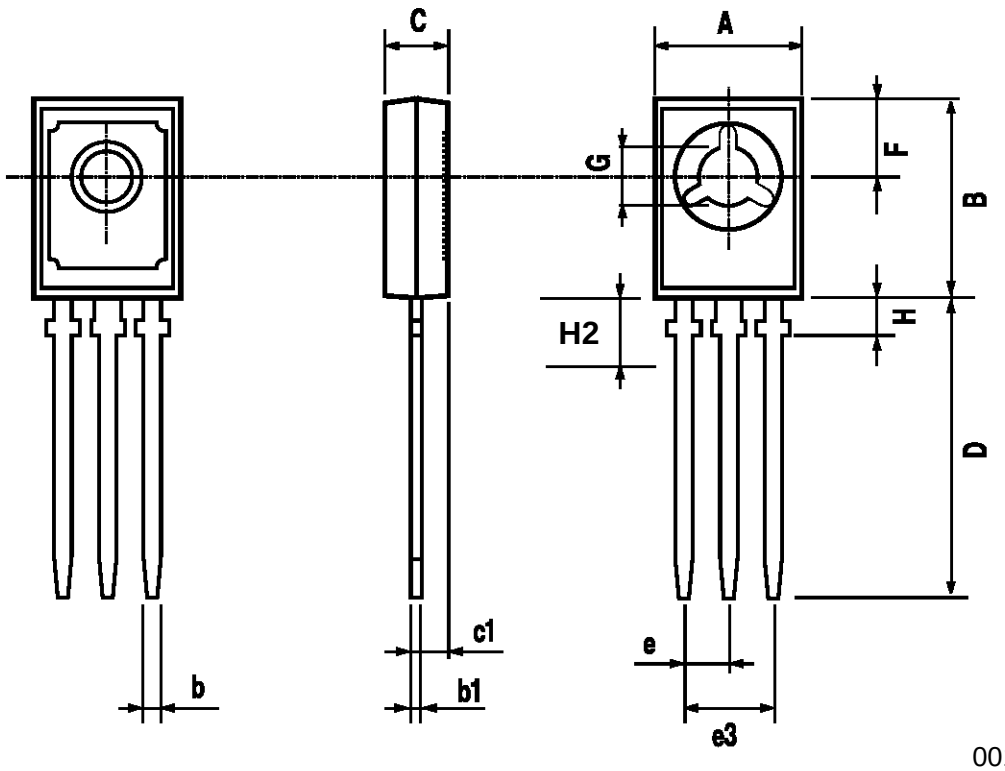


Collector Emitter Saturation Voltage (PNP type)



SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.040		0.106
c1	1.0		1.3	0.039		0.050
D	15.4		16.0	0.606		0.629
e		2.2			0.087	
e3	4.15		4.65	0.163		0.183
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100
H2		2.15			0.084	



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