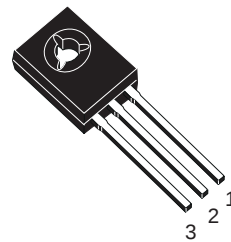


SILICON NPN TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR

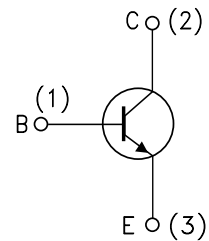
DESCRIPTION

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 $T_c \leq 25^\circ\text{C}$	20	W
T_{stg}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150	$^\circ\text{C}$

THERMAL DATA

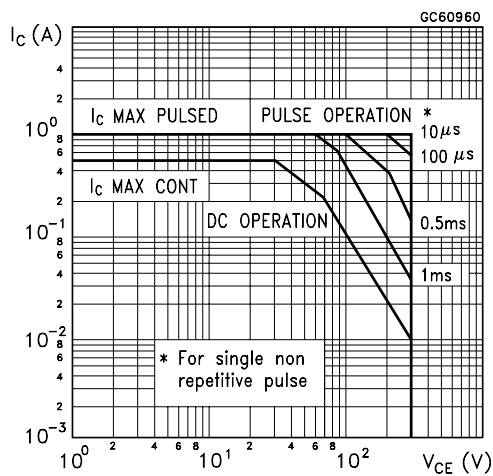
R _{thj-case}	Thermal Resistance Junction-case	Max	6.25	°C/W
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ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

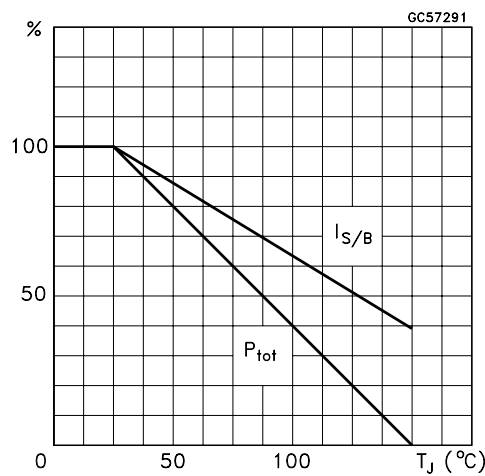
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E = 0)	V _{CE} = 375 V			0.01	mA
I _{CEV}	Collector Cut-off Current (V _{BE} = -1.5V)	V _{CE} = 350 V V _{CE} = 250 V T _C = 100 °C			0.1 1	mA mA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{CE} = 250 V			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 %

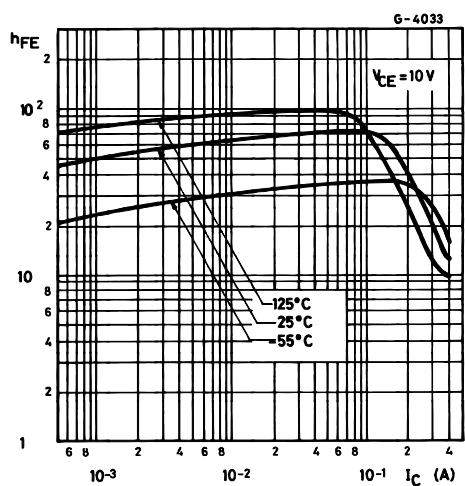
Safe Operating Area



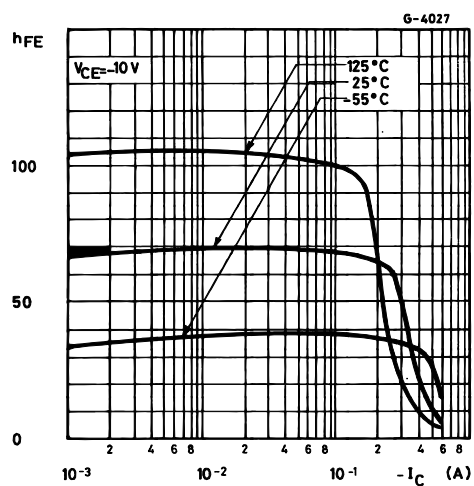
Derating Curve



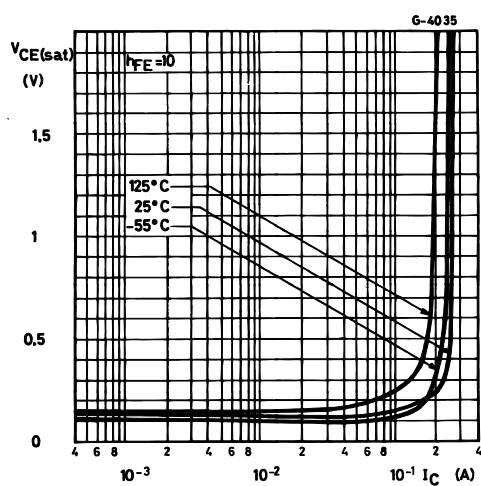
DC Current Gain (NPN type)



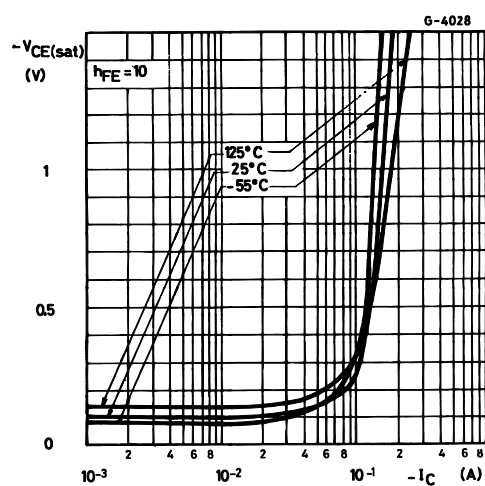
DC Current Gain (PNP type)



Collector Emitter Saturation Voltage (NPN type)

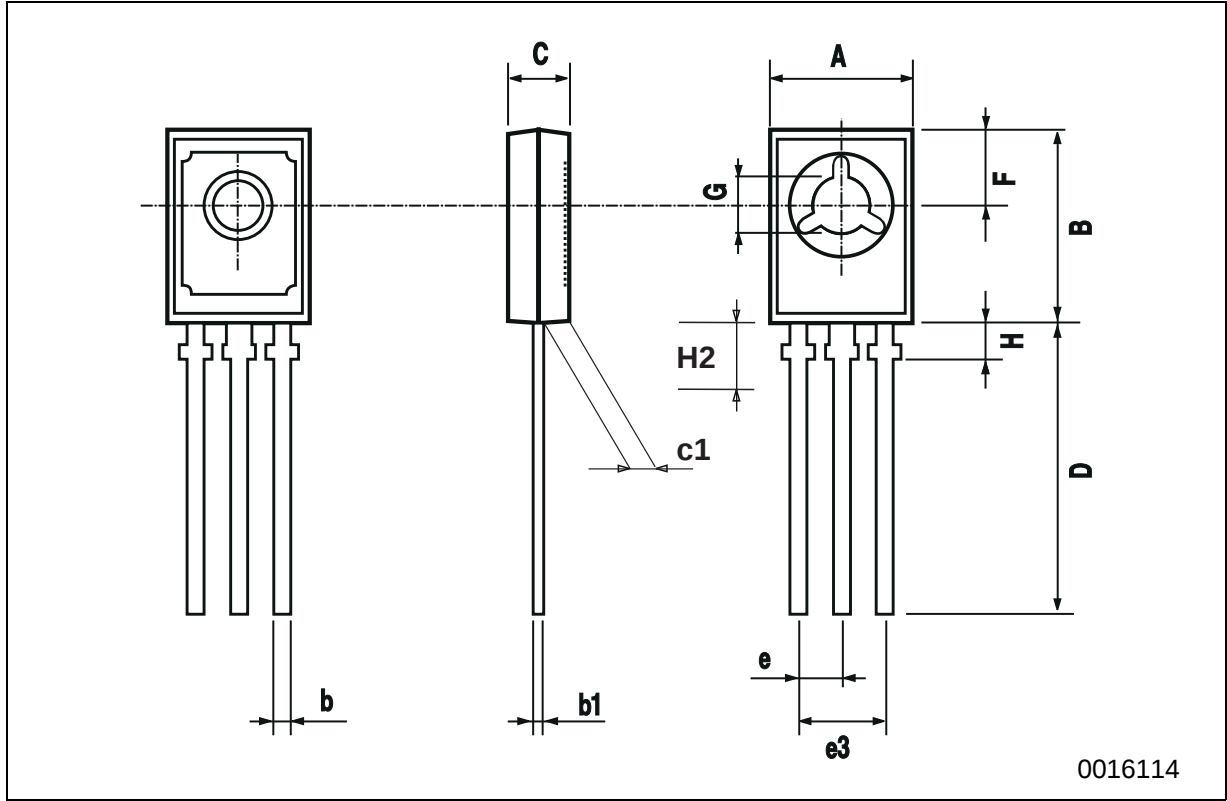


Collector Emitter Saturation Voltage (PNP type)



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



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