

SILICON NPN TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR

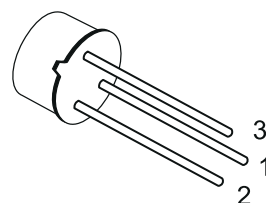
APPLICATIONS

- GENERAL PURPOSE SWITCHING
- GENERAL PURPOSE AMPLIFIERS

DESCRIPTION

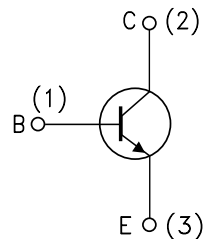
The 2N5681, 2N5682 are high voltage silicon epitaxial planar NPN transistors in Jedec TO-39 metal case intended for use as drivers for high power transistors in general purpose, amplifier and switching applications.

The complementary PNP types are the 2N5679 and 2N5680 respectively.



TO-39

INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		2N5680	2N5682	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	100	120	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	100	120	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	4		V
I_C	Collector Current	1		A
I_B	Base Current	0.5		A
P_{tot}	Total Dissipation at $T_c \leq 25\text{ }^{\circ}\text{C}$	10		W
P_{tot}	Total Dissipation at $T_{amb} \leq 50\text{ }^{\circ}\text{C}$	1		W
T_{stg}	Storage Temperature	-65 to 200		$^{\circ}\text{C}$
T_j	Max. Operating Junction Temperature	200		$^{\circ}\text{C}$

2N5681 / 2N5682

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	17.5	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	175	°C/W

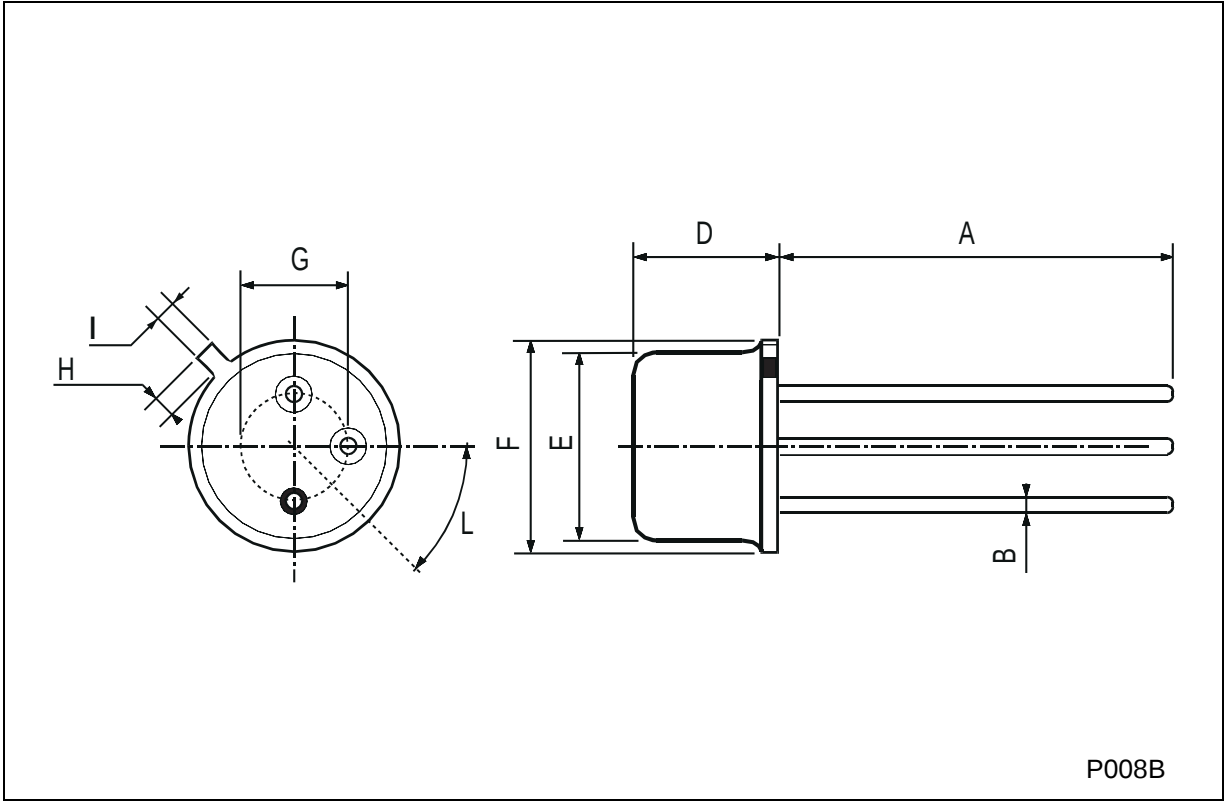
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CEV}	Collector Cut-off Current (V _{BE} = -1.5V)	for 2N5681 V _{CE} = 100 V for 2N5682 V _{CE} = 120 V T _c = 150 °C for 2N5681 V _{CE} = 100 V for 2N5682 V _{CE} = 120 V			1 1 1 1	μA μA μA μA
I _{CBO}	Collector Cut-off Current (I _E = 0)	for 2N5681 V _{CB} = 100 V for 2N5682 V _{CB} = 120 V			1 1	μA μA
I _{CEO}	Collector Cut-off Current (I _B = 0)	for 2N5681 V _{CB} = 70 V for 2N5682 V _{CB} = 80 V			10 10	μA μA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 4 V			1	μA
V _{CEO(sus)} *	Collector-Emitter Sustaining Voltage	I _C = 10 mA for 2N5681 for 2N5682	100 120			V V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 250 mA I _B = 25 mA I _C = 500 mA I _B = 50 mA I _C = 1 A I _B = 200 mA			0.6 1 2	V V V
V _{BE} *	Base-Emitter Voltage	I _C = 250 mA V _{CE} = 2 V			1	V
h _{FE} *	DC Current Gain	I _C = 250 mA V _{CE} = 2 V I _C = 1 A V _{CE} = 2 V	40 5		150	
h _{fe}	Small Signal Current Gain	I _C = 0.2 A V _{CE} = 1.5 V f = 1KHz	40			
f _T	Transition frequency	I _C = 100 mA V _{CE} = 10 V f = 10MHz	30			MHz
C _{CBO}	Collector Base Capacitance	I _E = 0 V _{CB} = 20 V f = 1MHz			50	pF

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

TO-39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



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