

## SILICON NPN TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR

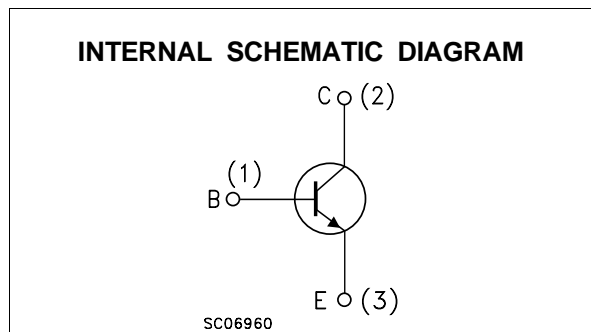
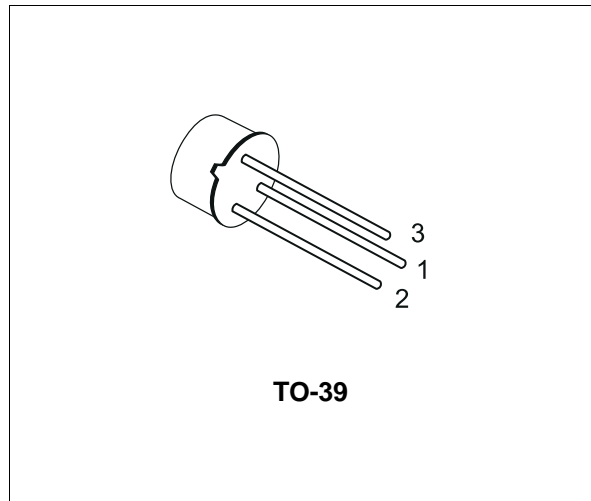
### APPLICATIONS

- 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 2N5682 complementary PNP type is 2N5680.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		2N5681	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 <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	17.5	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	175	°C/W

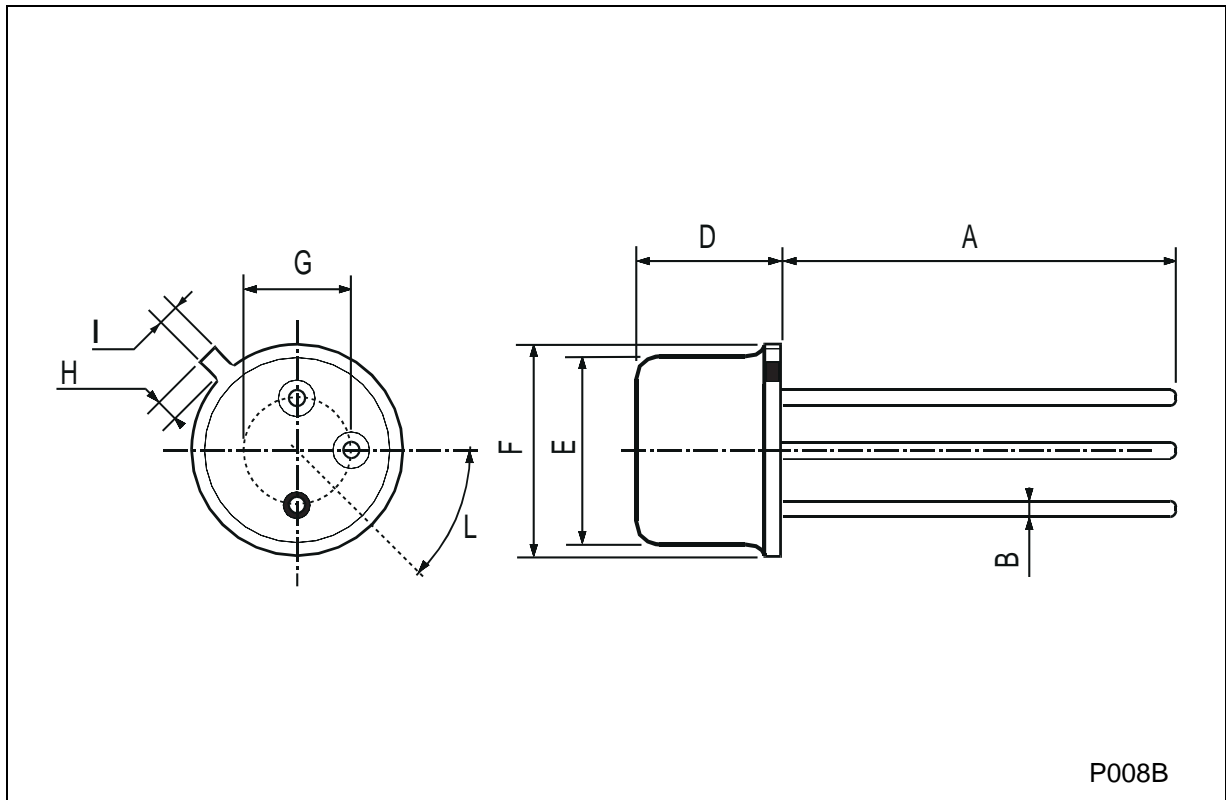
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

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