

## SILICON NPN TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR

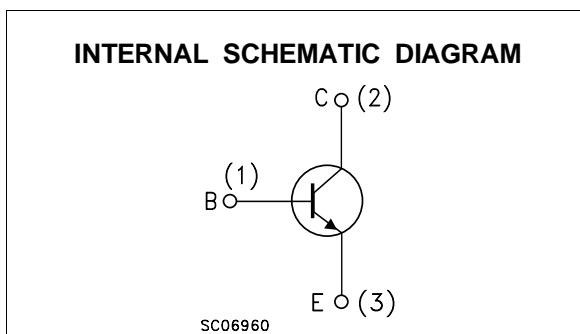
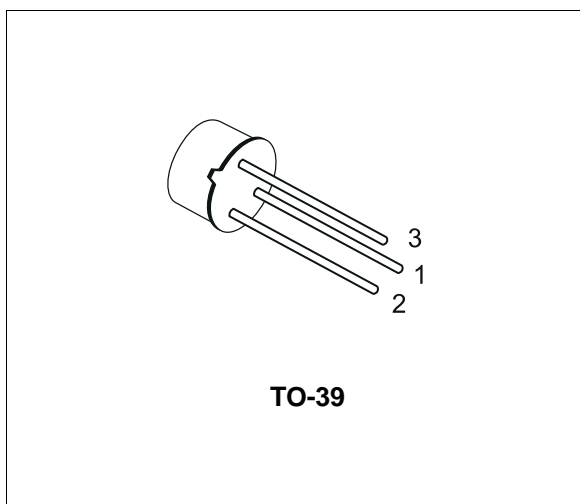
### APPLICATIONS

- 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.



### 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		$^{\circ}\text{C}$

**THERMAL DATA**

$R_{thj-case}$	Thermal Resistance Junction-case	Max	17.5	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	175	$^{\circ}C/W$

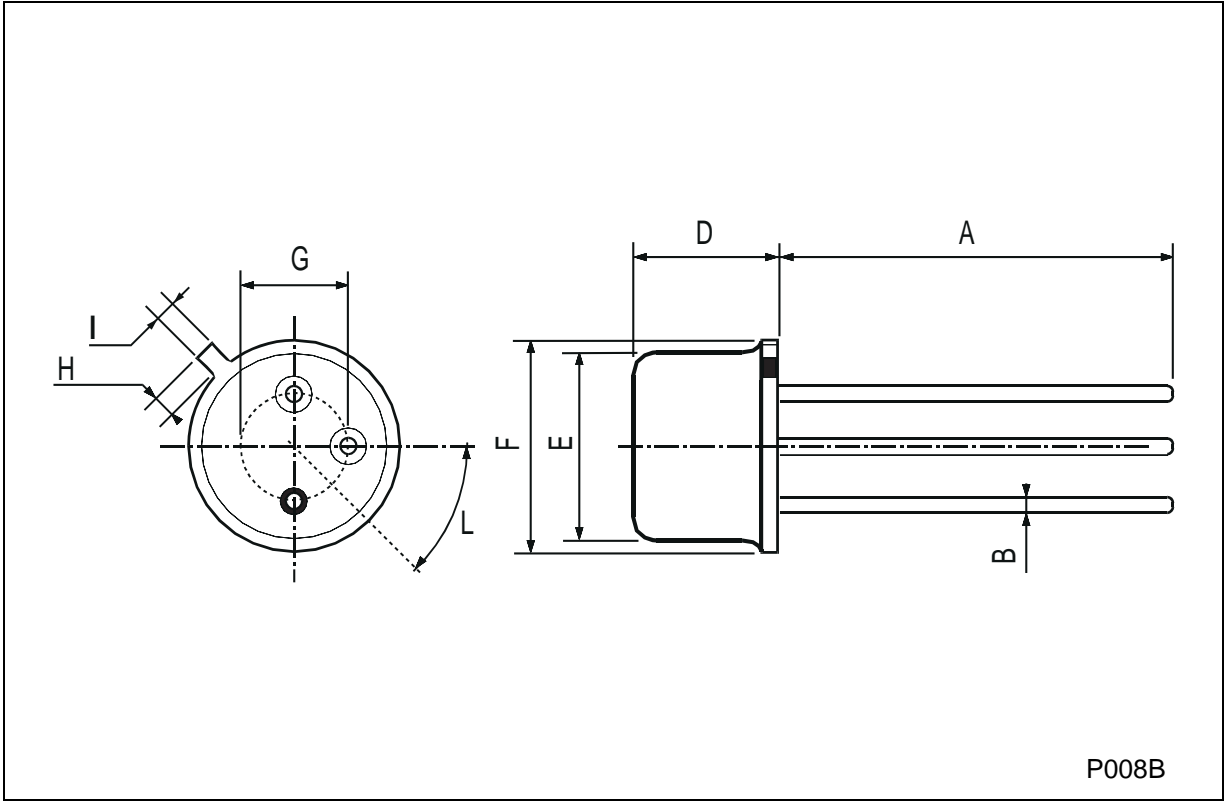
**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5V$ )	for <b>2N5681</b> $V_{CE} = 100 V$ for <b>2N5682</b> $V_{CE} = 120 V$ $T_c = 150^{\circ}C$ for <b>2N5681</b> $V_{CE} = 100 V$ for <b>2N5682</b> $V_{CE} = 120 V$			1 1 1 1	$\mu A$ $\mu A$ $\mu A$ $\mu A$
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	for <b>2N5681</b> $V_{CB} = 100 V$ for <b>2N5682</b> $V_{CB} = 120 V$			1 1	$\mu A$ $\mu A$
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	for <b>2N5681</b> $V_{CB} = 70 V$ for <b>2N5682</b> $V_{CB} = 80 V$			10 10	$\mu A$ $\mu A$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 4 V$			1	$\mu A$
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 10 mA$ for <b>2N5681</b> for <b>2N5682</b>	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  $\mu s$ , 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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