SGS-THOMSON MICROELECTRONICS

2N5681
2N5682

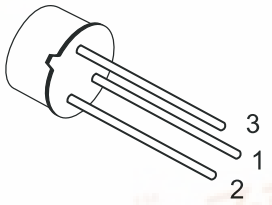
SILICON NPN TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR

APPLICATIONS
- GENERAL PURPOSE SWITCHING
- GENERAL PURPOSE AMPLIFIERS

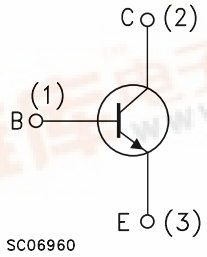
DESCRIPTION
The 2N5681, 2N5682 are high voltage silicon epitaxial planar NPN transistors in Jedec TO-39 metal case intended for use as drivers for high power transistors in general purpose, amplifier and switching applications.

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



TO-39

INTERNAL SCHEMATIC DIAGRAM



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 $T_c \leq 25\ ^oC$	10		W
P_{tot}	Total Dissipation at $T_{amb} \leq 50\ ^oC$	1		W
T_{stg}	Storage Temperature	-65 to 200		^oC
T_j	Max. Operating Junction Temperature	200		^oC

THERMAL DATA

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

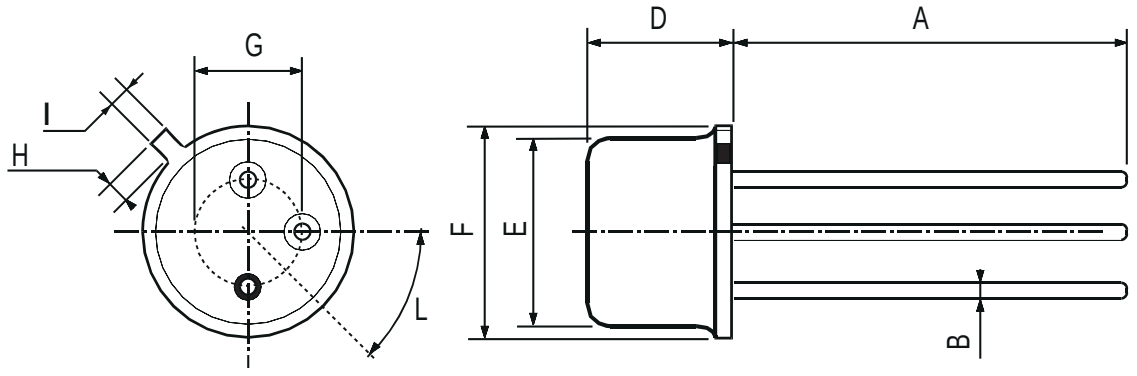
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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 **2N568**2 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^{o} (typ.)					



P008B