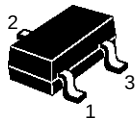
SGS-THOMSON MICROELECTRONICS

SO5401

SMALL SIGNAL PNP TRANSISTORS

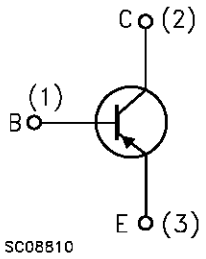
Type	Marking
SO5401	P33

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- GENERAL PURPOSE AND HIGH VOLTAGE AMPLIFIER



SOT-23

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	-160	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	-150	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	-5	V
I_{CM}	Collector Peak Current	-0.6	A
P_{tot}	Total Dissipation at T_c = 25 °C	200	mW
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}amb}$ •	Thermal Resistance Junction-Ambient Max	620	°C/W
$R_{thj\text{-}SR}$ •	Thermal Resistance Junction-Substrate Max	400	°C/W

• Mounted on a ceramic substrate area = 7 x 5 x 0.5 mm

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_{CB} = -120 V			-50	nA
I_{EBO}	Collector Cut-off Current (I_C = 0)	V_{EB} = -3 V			-50	nA
$V_{(BR)CBO}$*	Collector-Emitter Breakdown Voltage (I_E = 0)	I_C = -100 µA	-160			V
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage (I_B = 0)	I_C = -1 mA	-150			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_C = -10 nA	-5			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = -10 mA I_B = -1 mA I_C = -50 mA I_B = -5 mA			-0.2 -0.5	V V
$V_{BE(sat)}$*	Collector-Base Saturation Voltage	I_C = -10 mA I_B = -1 mA I_C = -50 mA I_B = -5 mA			-1 -1	V V
h_{FE}*	DC Current Gain	I_C = -1 mA V_{CE} = -5 V I_C = -10 mA V_{CE} = -5 V I_C = -50 mA V_{CE} = -5 V	50 60 50	240		
f_T	Transition Frequency	I_C = -10 mA V_{CE} = -10V f = 1 MHz	100		400	MHz
C_{CB}	Collector Base Capacitance	I_E = 0 V_{CE} = -10 V f = 1 MHz			6	pF
NF	Noise Figure	V_{CE} = -5 V I_C = -0.25 mA f = 1KHz Δf = 200 Hz R_G = 1 KΩ		5		dB
h_{fe}*	Small Signal Current Gain	V_{CE} = -5 V I_C = -1 mA f = 1KHz	40		200	

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

SOT-23 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7