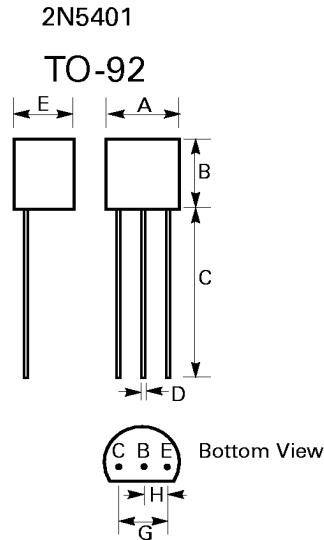


Features

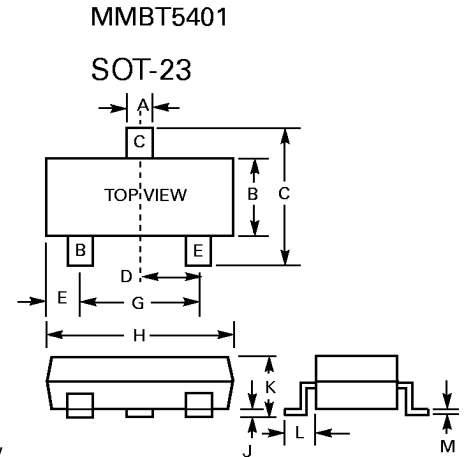
- High Collector-Emitter Breakdown Voltage
- Epitaxial Planar Die Construction
- Available in both Thru-Hole and Surface Mount Packages

Mechanical Data

- Case: TO-92 / SOT-23 Plastic
- Leads / Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: TO-92 - Type Number
SOT-23 - 2L



	Min	Max
A	4.45	4.70
B	4.46	4.70
C	12.7	—
D	0.41	0.63
E	3.43	3.68
G	2.42	2.67
H	1.14	1.40
All dimensions in mm		



	Min	Max
A	0.37	0.50
B	1.19	1.40
C	2.10	2.50
D	0.89	1.05
E	0.45	0.61
G	1.78	2.05
H	2.79	3.05
J	0.013	0.150
K	0.89	1.10
L	0.45	0.61
M	0.076	0.130
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

(Note 1)

Characteristic	Symbol	Value	Unit
Collector to Emitter Voltage	V _{CEO}	-150	V
Collector to Base Voltage	V _{CBO}	-160	V
Emitter to Base Voltage	V _{EBO}	-5.0	V
Collector Current	I _c	600	mA
Total Device Dissipation (Notes 2 & 3)	TO-92 (2N5401) SOT-23 (MMBT5401)	625 350	mW mW
Junction Storage and Operating Temperature	T _J , T _{STG}	-55 to +150	°C

- Notes: 1. Valid provided that leads at a distance of 2 mm from body are kept at specified ambient (TO-92).
 2. Device mounted on ceramic substrate 0.7 mm x 2.5 cm² area (SOT-23).
 3. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2%.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Collector to Emitter Breakdown Voltage (Note 4)	V _{(BR)CEO}	-150		V	I _C = -1.0 mA, I _B = 0
Collector to Base Breakdown Voltage	V _{(BR)CBO}	-160		V	I _C = -100μA, I _E = 0
Emitter to Base Breakdown Voltage	V _{(BR)EBO}	-5.0		V	I _E = -10μA, I _C = 0
Emitter Cutoff Current	I _{EBO}		-50	nA	V _{EB} = -3.0 V, I _C = 0
Collector Cutoff Current	I _{CBO}		-50 -50	nA μA	V _{CB} = -120 V, I _E = 0 V _{CB} = -120 V, I _E = 0, T _A = 100°C
DC Pulse Current Gain (Note 4)	h _{FE}	50 60 50	240		I _C = -1.0 mA, V _{CE} = -5.0 V I _C = -10 mA, V _{CE} = -5.0 V I _C = -50 mA, V _{CE} = -5.0 V
Collector-Emitter Saturation Voltage (Note 4)	V _{CE(SAT)}		-0.20 -0.50	V V	I _C = -10 mA, I _B = -1.0 mA I _C = -50 mA, I _B = -5.0 mA
Base-Emitter Saturation Voltage (Note 4)	V _{BE(SAT)}		-1.0 -1.0	V V	I _C = -10 mA, I _B = -1.0 mA I _C = -50 mA, I _B = -5.0 mA
Output Capacitance	C _{ob}		6.0	pF	V _{CB} = -10 V, I _E = 0, f = 1.0 MHz
Small Signal Current Gain	h _{fe}	40	200		I _C = -1.0 mA, V _{CE} = -10 V, f = 1.0 kHz
Current Gain Bandwidth Product	f _T	100	300	MHz	I _C = -10 mA, V _{CE} = -10V, f = 100 MHz
Noise Figure	NF		8.0	dB	I _C = -250 μA, V _{CE} = -5.0 V, f = 10 Hz to 15.7 kHz, R _S = 1.0 kΩ

- Notes:
1. These ratings are limiting values above which the serviceability or any semiconductor device may be impaired.
 2. Valid provided that leads at a distance of 2 mm from body are kept at specified ambient (TO-92).
 3. Device mounted on ceramic substrate 0.7 mm x 2.5 cm² area (SOT-23).
 4. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2%.