

2N5400, 2N5401

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ (I _C = 1.0 mA, I _B = 0)	2N5400 2N5401	V _{(BR)CEO}	120 150	– –	Vdc
Collector–Base Breakdown Voltage (I _C = 100 µA, I _E = 0)	2N5400 2N5401	V _{(BR)CBO}	130 160	– –	Vdc
Emitter–Base Breakdown Voltage (I _E = 10 µA, I _C = 0)		V _{(BR)EBO}	5.0	–	Vdc
Collector Cutoff Current (V _{CB} = 100 Vdc, I _E = 0) (V _{CB} = 120 Vdc, I _E = 0) (V _{CB} = 100 Vdc, I _E = 0, T _A = 100°C) (V _{CB} = 120 Vdc, I _E = 0, T _A = 100°C)	2N5400 2N5401 2N5400 2N5401	I _{CBO}	– – – –	100 50 100 50	nAdc µAdc
Emitter Cutoff Current (V _{EB} = 3.0 Vdc, I _C = 0)		I _{EBO}	–	50	nAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain (I _C = 1.0 mA, V _{CE} = 5.0 Vdc) (I _C = 10 mA, V _{CE} = 5.0 Vdc) (I _C = 50 mA, V _{CE} = 5.0 Vdc)	2N5400 2N5401 2N5400 2N5401 2N5400 2N5401	h _{FE}	30 50 40 60 40 50	– – 180 240 – –	–
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)		V _{CE(sat)}	– –	0.2 0.5	Vdc
Base–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)		V _{BE(sat)}	– –	1.0 1.0	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (I _C = 10 mA, V _{CE} = 10 Vdc, f = 100 MHz)	2N5400 2N5401	f _T	100 100	400 300	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1.0 MHz)		C _{obo}	–	6.0	pF
Small–Signal Current Gain (I _C = 1.0 mA, V _{CE} = 10 Vdc, f = 1.0 kHz)	2N5400 2N5401	h _{fe}	30 40	200 200	–
Noise Figure (I _C = 250 µA, V _{CE} = 5.0 Vdc, R _S = 1.0 kΩ, f = 1.0 kHz)		NF	–	8.0	dB

1. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%.

2N5400, 2N5401

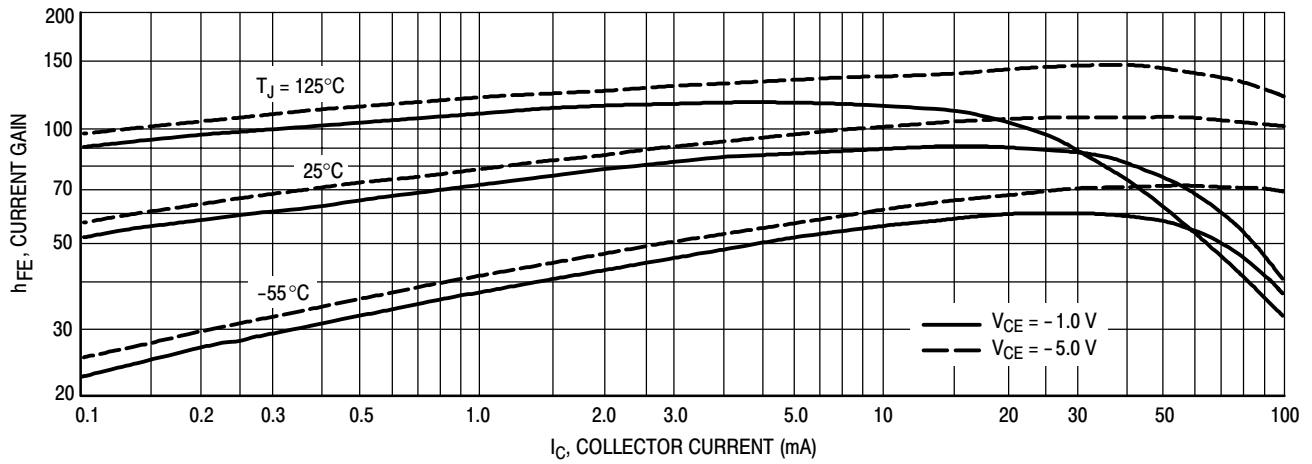


Figure 1. DC Current Gain

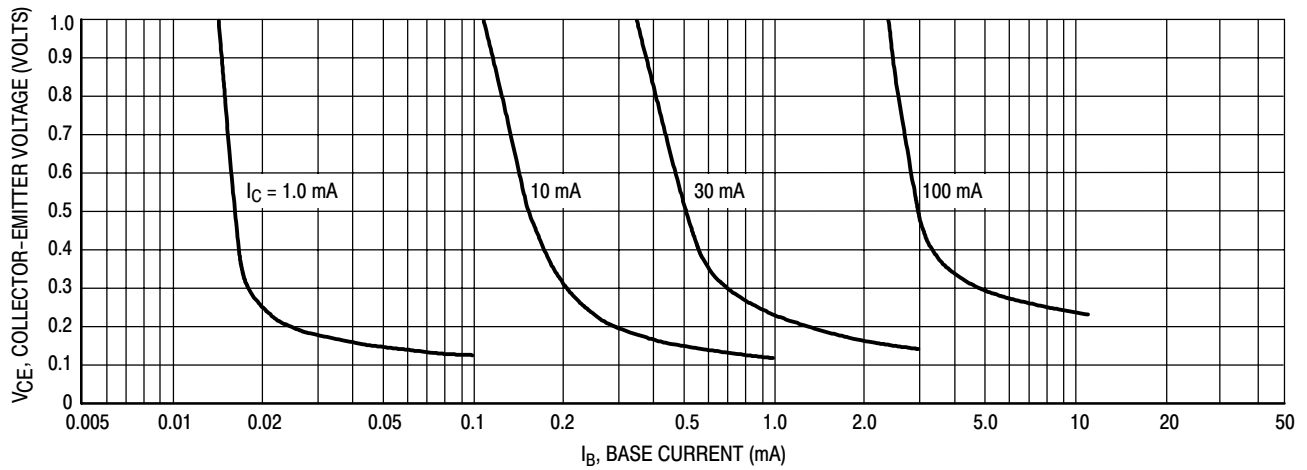


Figure 2. Collector Saturation Region

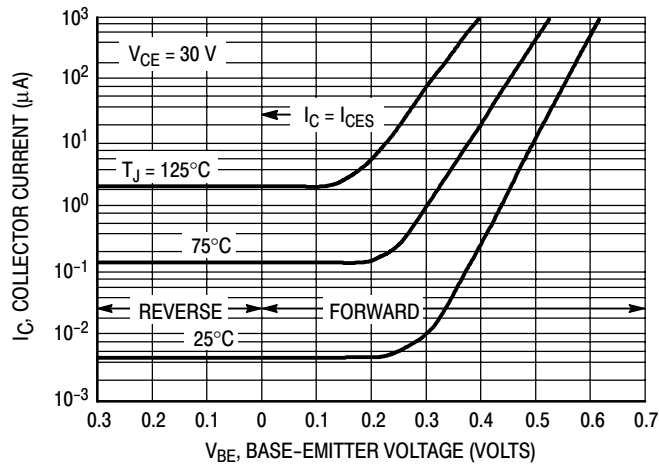


Figure 3. Collector Cut-Off Region

2N5400, 2N5401

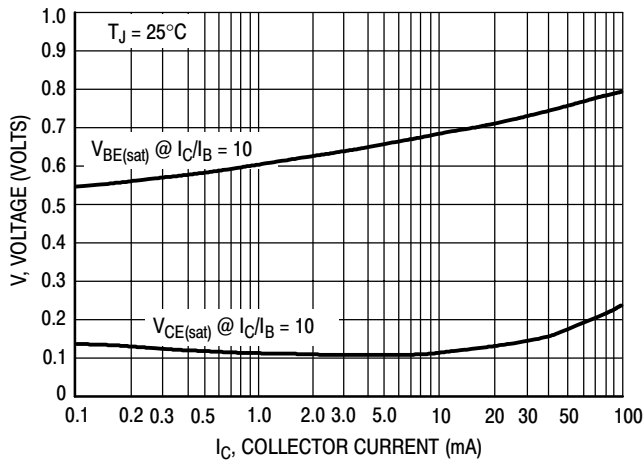


Figure 4. "On" Voltages

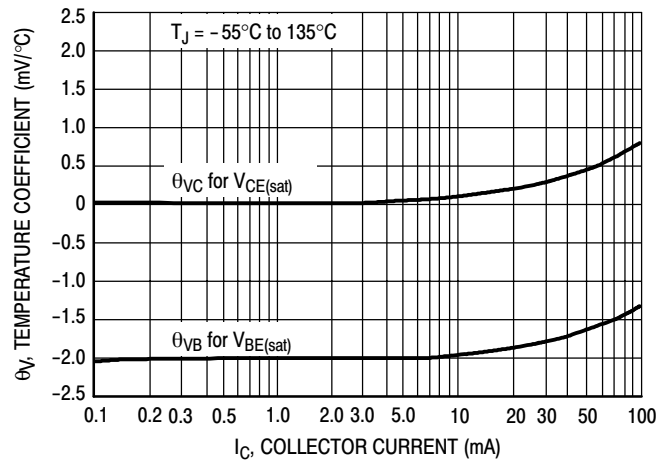


Figure 5. Temperature Coefficients

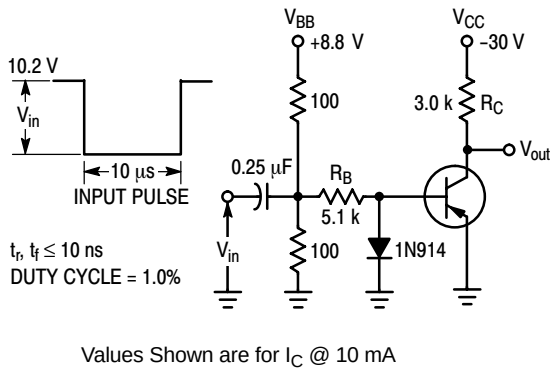


Figure 6. Switching Time Test Circuit

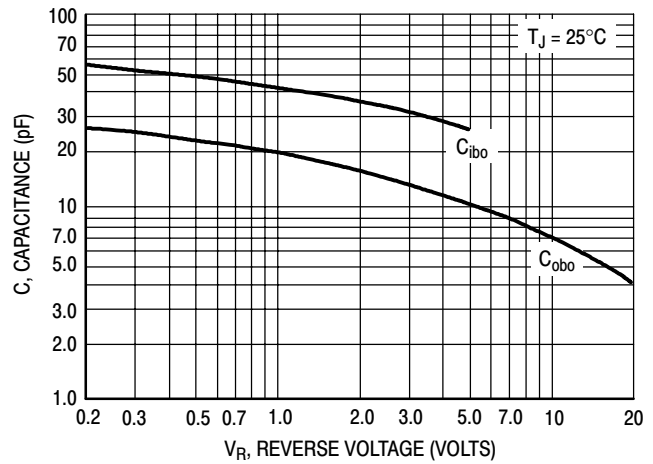


Figure 7. Capacitances

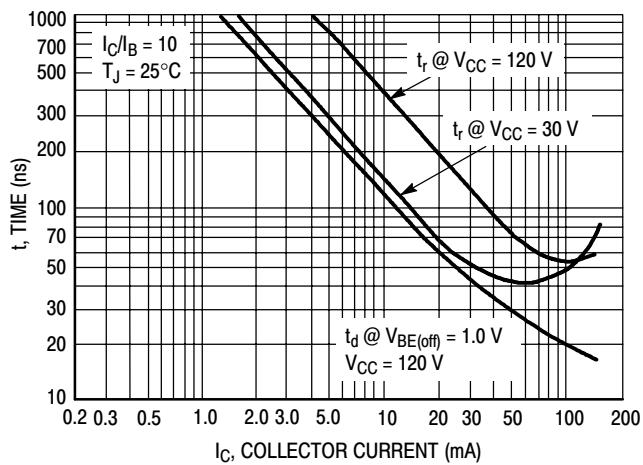


Figure 8. Turn-On Time

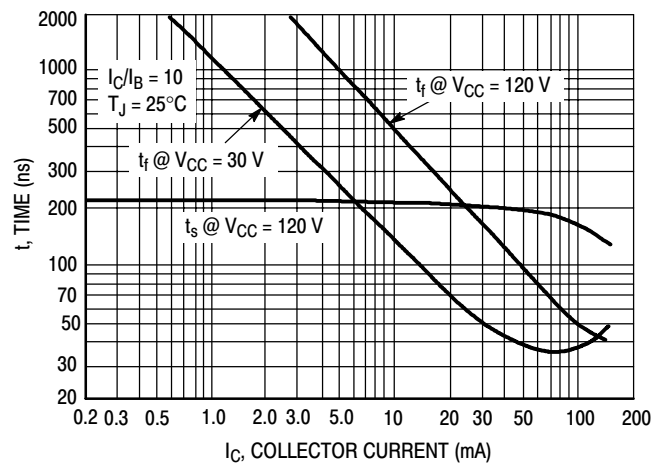


Figure 9. Turn-Off Time

2N5400, 2N5401

ORDERING INFORMATION

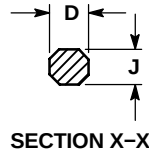
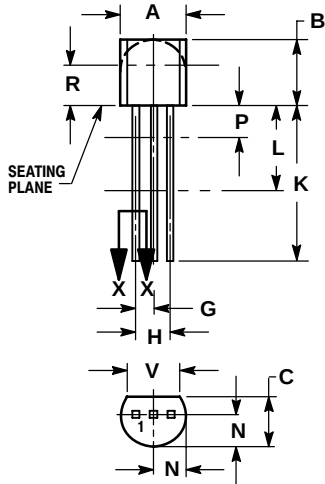
Device	Package	Shipping†
2N5400	TO-92	5000 Unit / Bulk
2N5400G	TO-92 (Pb-Free)	5000 Unit / Bulk
2N5400RLRP	TO-92	2000 Tape & Reel
2N5400RLRPG	TO-92 (Pb-Free)	2000 Tape & Reel
2N5401	TO-92	5000 Unit / Bulk
2N5401G	TO-92 (Pb-Free)	5000 Unit / Bulk
2N5401RL1	TO-92	2000 Tape & Reel
2N5401RL1G	TO-92 (Pb-Free)	2000 Tape & Reel
2N5401RLRA	TO-92	2000 Tape & Reel
2N5401RLRAG	TO-92 (Pb-Free)	2000 Tape & Reel
2N5401RLRM	TO-92	2000 Tape & Ammo Box
2N5401RLRMG	TO-92 (Pb-Free)	2000 Tape & Ammo Box
2N5401ZL1	TO-92	2000 Tape & Ammo Box
2N5401ZL1G	TO-92 (Pb-Free)	2000 Tape & Ammo Box

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

2N5400, 2N5401

PACKAGE DIMENSIONS

TO-92
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 1:

- PIN 1. EMITTER
- BASE
- COLLECTOR

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2N5400/D