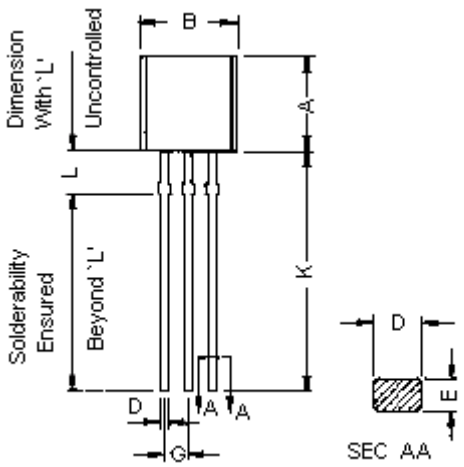
T2N4401

Low Power Bipolar Transistors

Features:

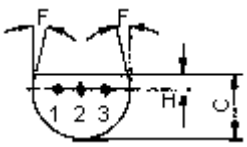
- NPN Silicon Planar Epitaxial Transistors.
- General purpose Switching Applications.

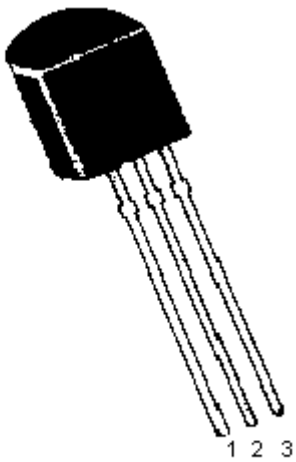
TO-92 Plastic Package



Dimensions	Minimum	Maximum
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5°	
G	1.14	1.40
H		1.53
K	12.70	-
L	1.982	2.082

Dimensions : Millimetres





Pin Configuration
1 = Emitter
2 = Base
3 = Collector

Absolute Maximum Ratings

Rating	Symbol	T2N4401	Unit
Collector-Emitter Voltage	V_{CEO}	40	V
Collector-Base Voltage	V_{CBO}	60	
Emitter-Base Voltage	V_{EBO}	6	
Collector Current Continuous	I_C	600	mA
Power Dissipation at T_a = 25°C Derate above 25°C	P_D	625 5.0	mW mW/°C
Power Dissipation at T_C = 25°C Derate above 25°C		1.5 12	W W/°C
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	°C
Thermal Resistance			
Junction to Case	$Rth_{(j-c)}$	83.3	°C/W
Junction to Ambient	$Rth_{(j-a)}$	200	

Electrical Characteristics (T_a = 25°C unless otherwise specified)

Characteristic	Symbol	T2N4401	Unit
Collector Emitter Voltage I_C = 1mA, I_B = 0	BV_{CEO}*	>40	V
Collector Base Voltage I_C = 100µA, I_E = 0	BV_{CBO}	>60	
Emitter Base Voltage I_E = 100µA, I_C = 0	BV_{EBO}	>6	
Base Cut off Current V_{CE} = 35V, V_{EB} = 0.4V	I_{BEV}	<0.1	µA
Collector Cut off Current V_{CE} = 35V, V_{EB} = 0.4V	I_{CEX}		
Collector Emitter Saturation Voltage I_C = 150mA, I_B = 15mA I_C = 500mA, I_B = 50mA	$V_{CE\ (Sat)}$*	<0.4 <0.75	V
Base Emitter Saturation Voltage I_C = 150mA, I_B = 15mA I_C = 500mA, I_B = 50mA	$V_{BE\ (Sat)}$*	0.75 - 0.95 <1.2	

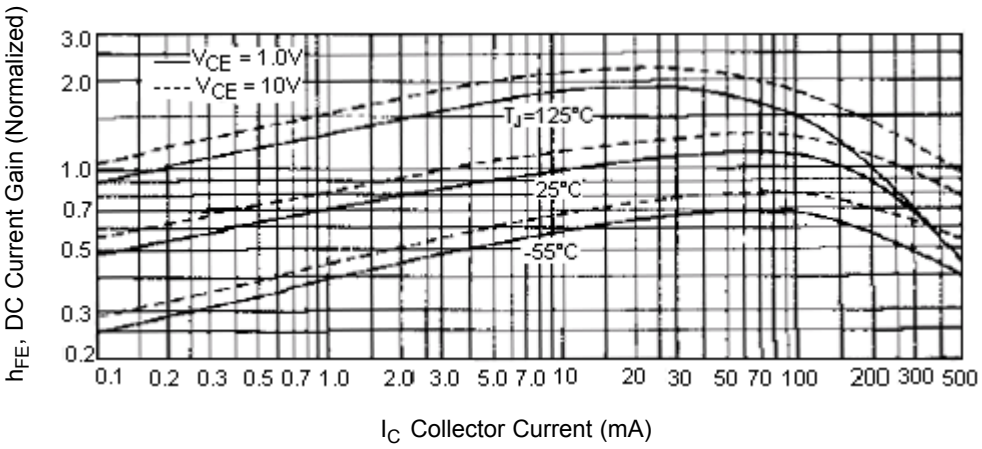
*Pulse Test : Pulse Width: ≤300µs, Duty ≤2.0%

Electrical Characteristics (T_a = 25°C unless otherwise specified)

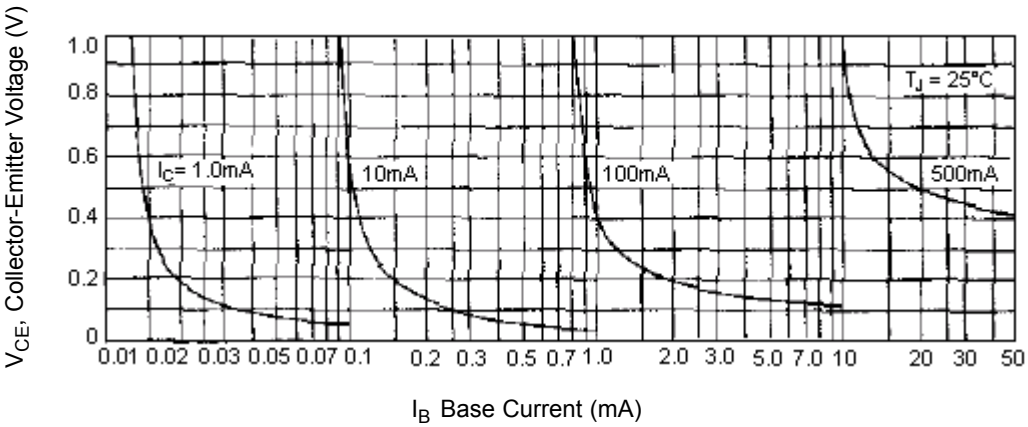
Characteristic	Symbol	T2N4401	Unit
DC Current Gain I_C = 0.1mA, V_{CE} = 1V I_C = 1mA, V_{CE} = 1V I_C = 10mA, V_{CE} = 1V I_C = 150mA, V_{CE} = 1V* I_C = 500mA, V_{CE} = 2V*	h_{FE}	>20 >40 >80 100 - 300 >40	-
Dynamic Characteristics			
Small Signal Current Gain I_C = 1mA, V_{CE} = 10V, f = 1KHz	h_{fe}	40 - 500	-
Input Impedance I_C = 1mA, V_{CE} = 10V, f = 1KHz	h_{ie}	1.0 - 15	kΩ
Characteristic	**Symbol**	**2N4401**	**Unit**
Voltage Feedback Ratio I_C = 1mA, V_{CE} = 10V, f = 1KHz	h_{re}	0.1 - 8.0	$x10^{-4}$
Output Impedance I_C = 1mA, V_{CE} = 10V, f = 1KHz	h_{oe}	1.0 - 30	µΩ
Collector-Base Capacitance V_{CB} = 5V, I_E = 0, f = 100KHz V_{CB} = 10V, I_E = 0, f = 140KHz	C_{cb}	<6.5 -	pF
Emitter-Base Capacitance V_{EB} = 0.5V, I_C = 0, f = 100kHz	C_{eb}	<30	
Transition Frequency I_C = 20mA, V_{CE} = 10V, f = 100MHz	f_T	>250	MHz
Switching Characteristics			
V_{CC} = 30V, V_{EB} = 2V I_C = 150mA, I_{B1} = 15mA			
Delay Time	t_d	<15	ns
Rise Time	t_r	<20	
V_{CC} = 30V, I_C = 150mA I_{B1} = I_{B2} = 15mA			
Storage time	t_s	<225	ns
Fall Time	t_f	<30	

*Pulse Test : Pulse Width: ≤300µs, Duty ≤2.0%

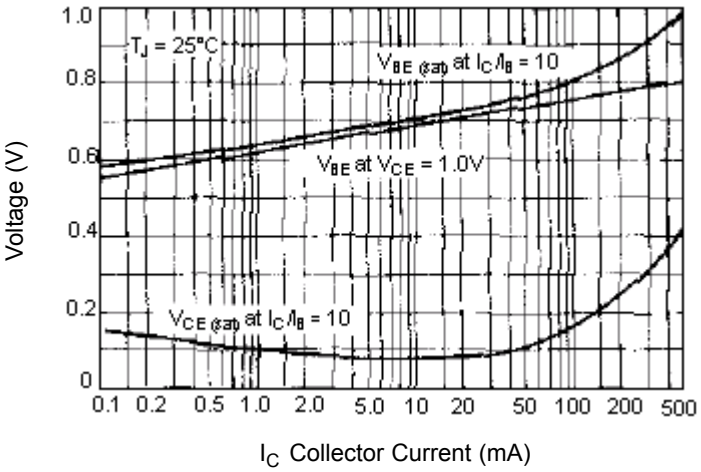
DC Current Gain



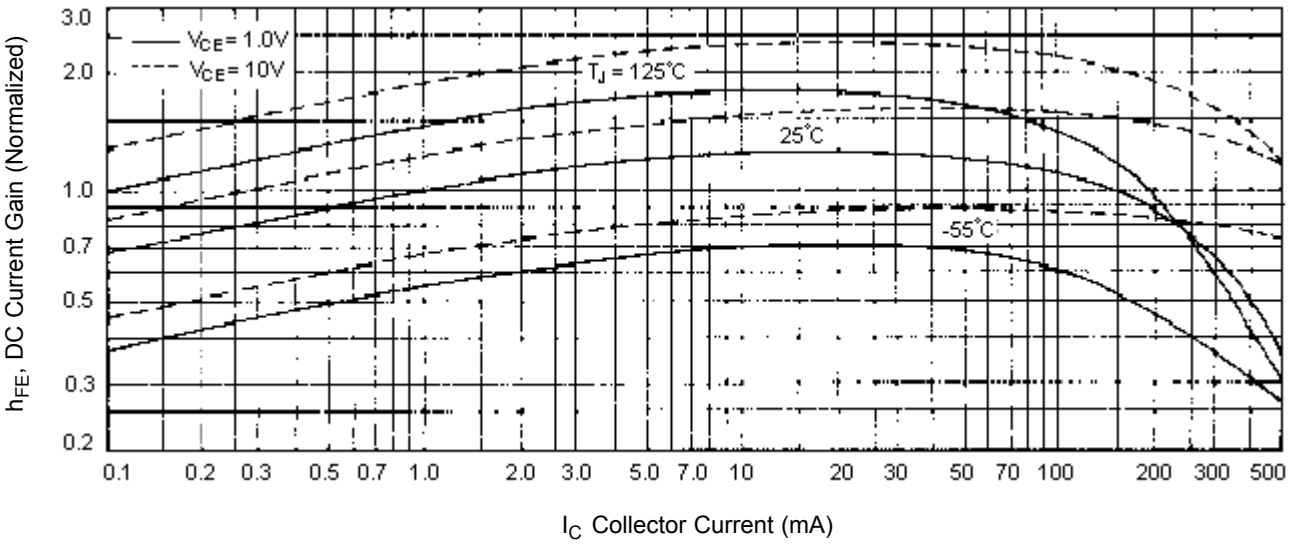
DC Current Gain



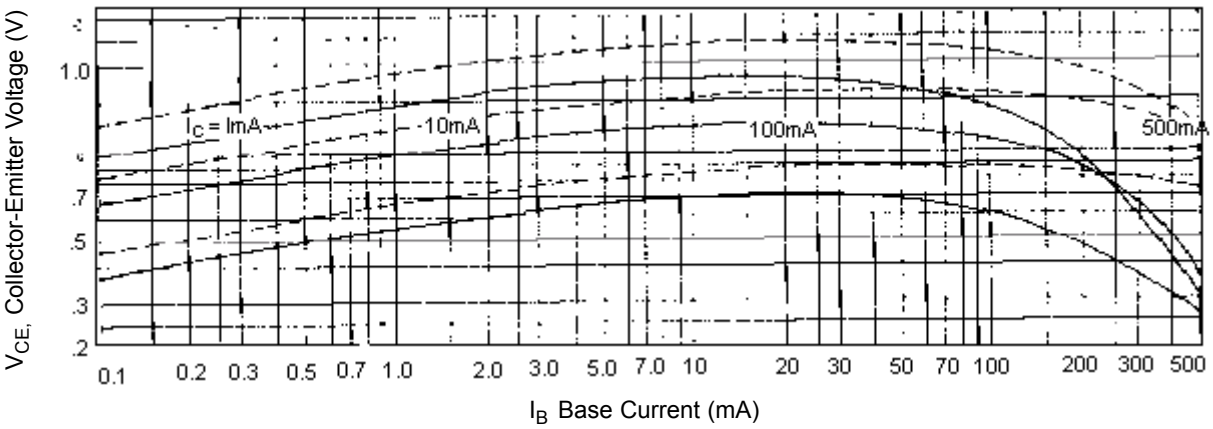
On Voltages



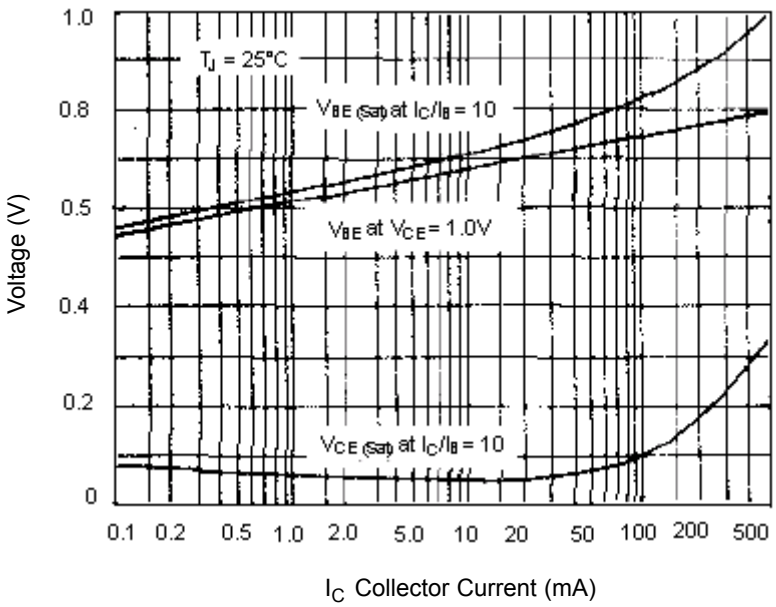
DC Current Gain



Collector Saturation Region



On Voltages



Part Number Table

Package	Part Number
TO-92	2N4401

Notes:

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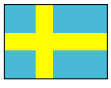

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