

**REPLACEMENT TYPE : 2N5401**
**FEATURES**

- General Purpose Switching Application



TO-92

1:EMITTER 2:BASE 3:COLLECTOR

**MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-160	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-150	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current-Continuous	I <sub>C</sub>	-0.6	A
Collector Power Dissipation	P <sub>C</sub>	625	mW
Junction Temperature	T <sub>J</sub>	150	°C
Thermal Resistance From Junction To Ambient	R <sub>θJA</sub>	200	°C/W
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)**

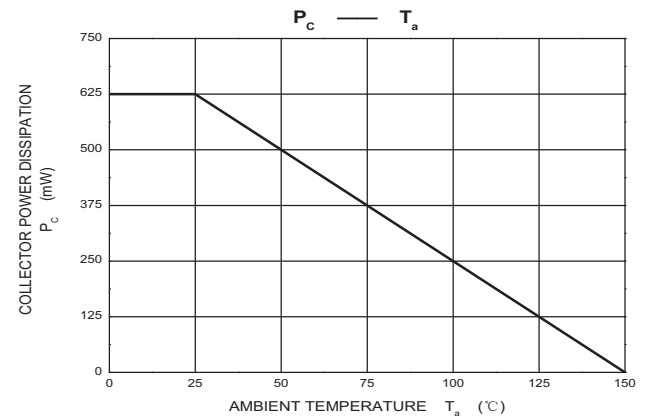
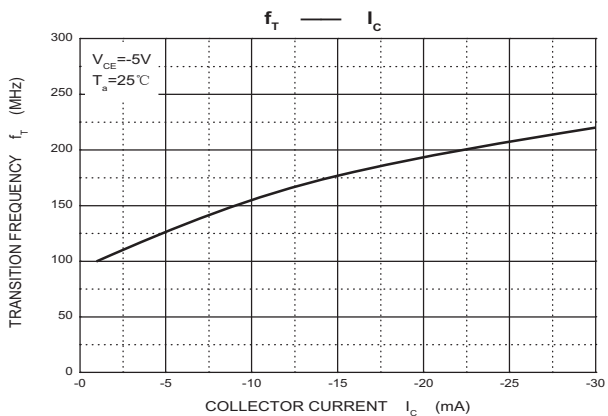
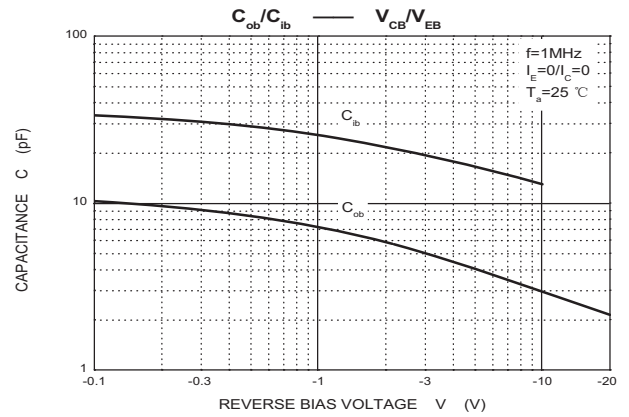
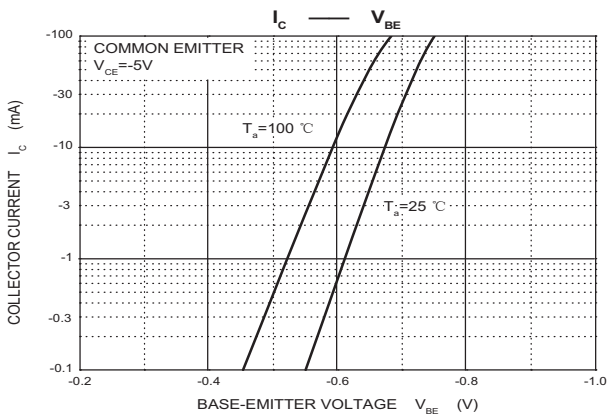
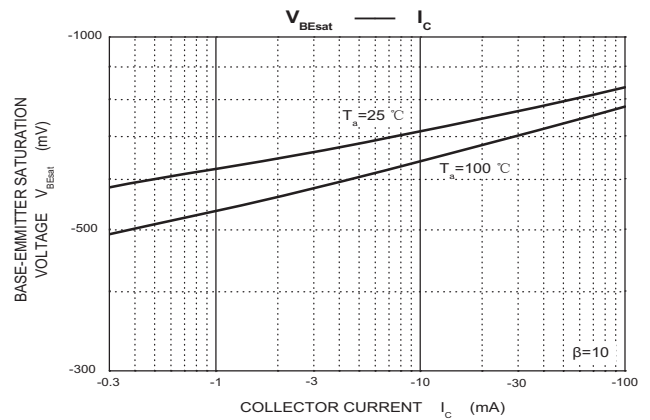
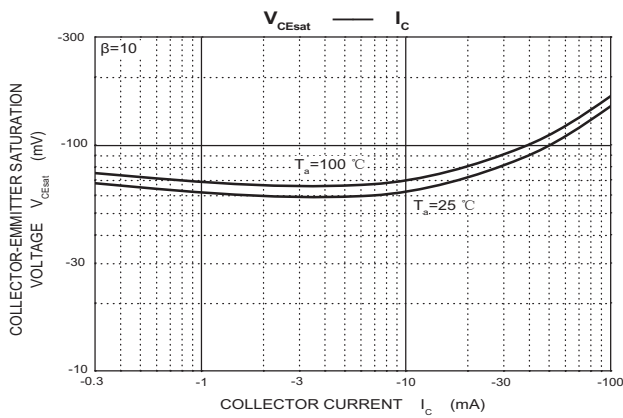
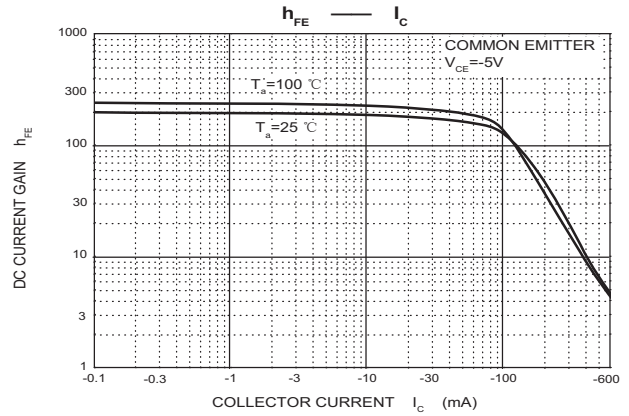
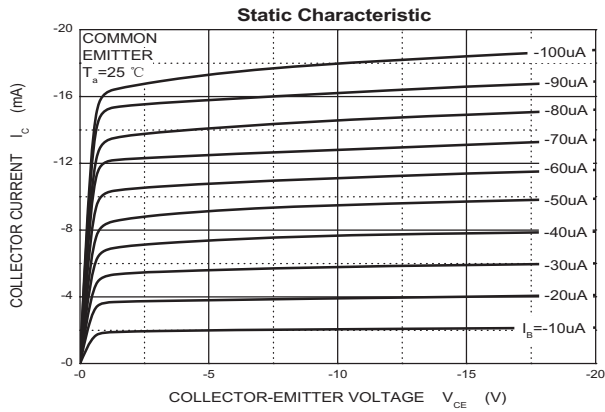
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	V <sub>CB0</sub>	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	-160			V
Collector-Emitter Breakdown Voltage	V <sub>CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-150			V
Emitter-Base Breakdown Voltage	V <sub>EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Collector Cut-off Current	I <sub>CB0</sub>	V <sub>CB</sub> =-120V, I <sub>E</sub> =0			-50	nA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> =-3V, I <sub>C</sub> =0			-50	nA
DC Current Gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1mA	80			
	h <sub>FE(2)</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA	80		300	
	h <sub>FE(3)</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-50mA	50			
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-0.2	V
	V <sub>CE(sat)</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5A			-0.5	V
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-1	V
	V <sub>BE(sat)</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5A			-1	V
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA, f=30MHz	100		300	MHz
Collector Output Capacitance	C <sub>OB</sub>	V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz			6	pF
Emitter Input Capacitance	C <sub>IB</sub>	V <sub>BE</sub> =-0.5V, I <sub>C</sub> =0, f=1MHz			20	pF

\*Pulse test: pulse width ≤300μs, duty cycle ≤ 2.0%.

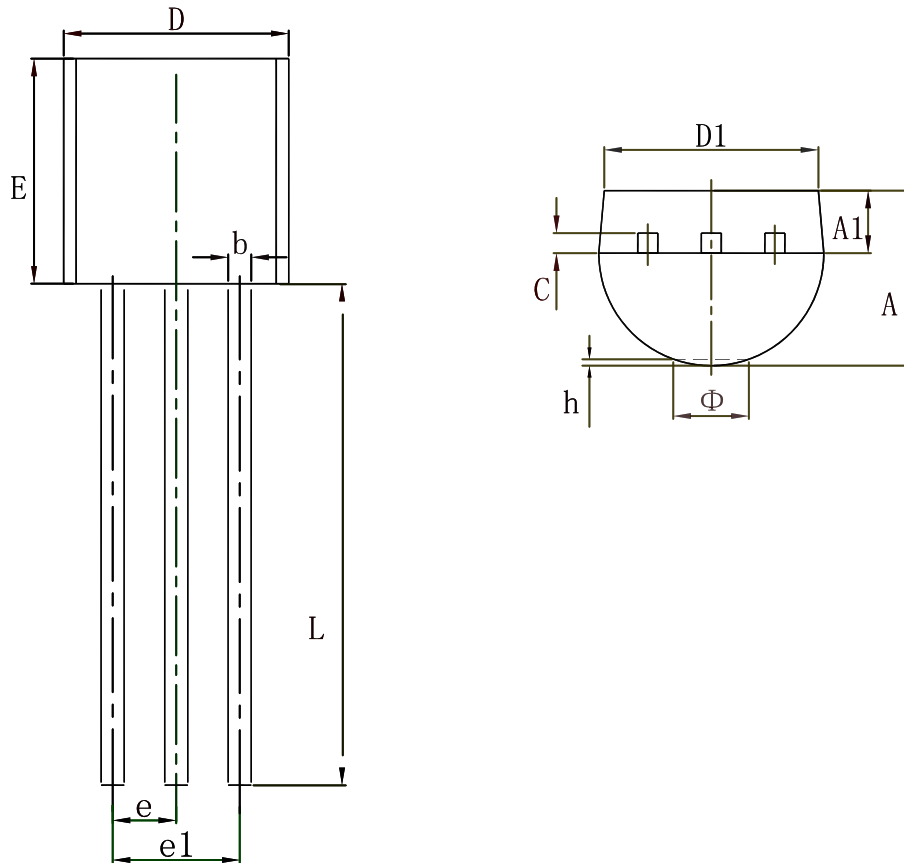
**CLASSIFICATION OF h<sub>FE</sub>**

Rank		A	B	C
Range	80-100	100-150	150-200	200-300

**Typical Characteristics**

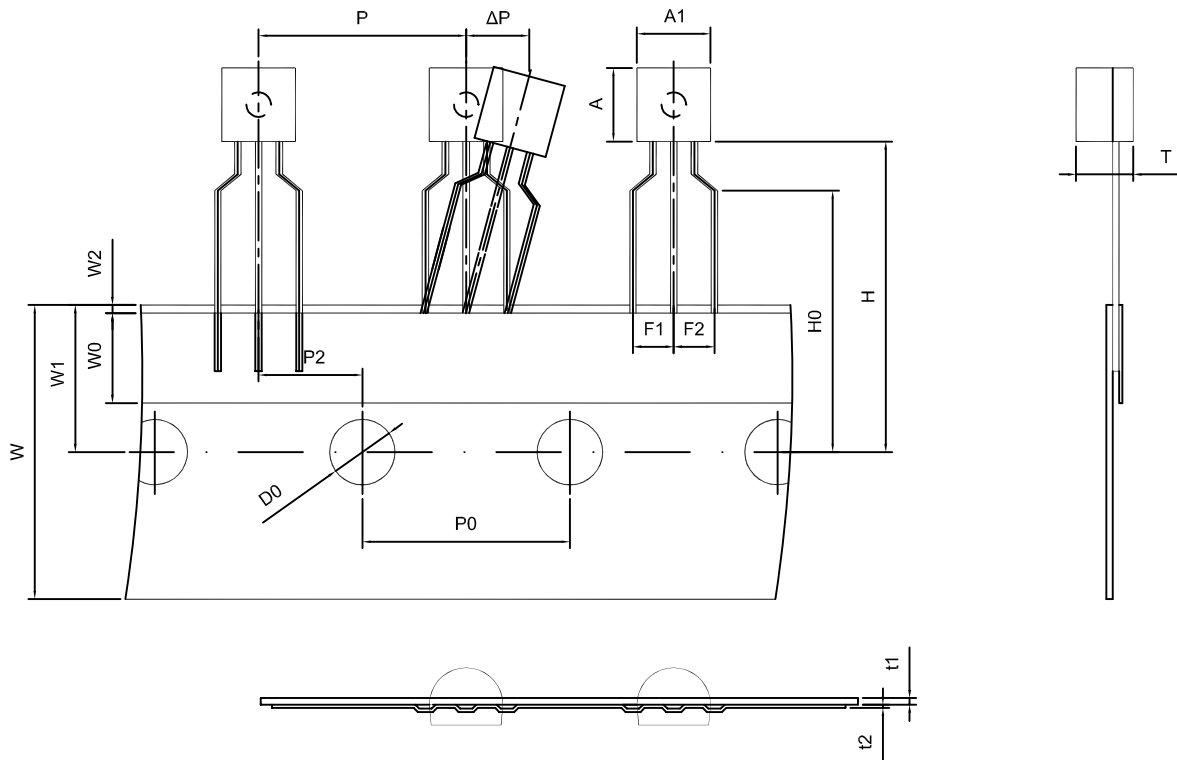


TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

**TO-92 Package Taping Dimension**



Dimensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5±0.2	4.5±0.2	3.5±0.2	12.7±0.3	12.7±0.2	6.35±0.3	2.5±0.3	2.5±0.3	18.0+1.0/-0.5
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0±0.5	9.0±0.5	1.0 MAX.	19.0±1.0	16.0±0.5	4.0±0.5	0.4±0.05	0.2±0.05	0 ± 1.0

