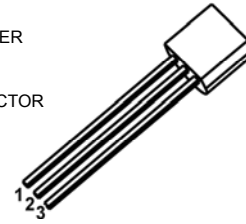


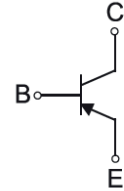
Features

- Switching and amplification in high voltage applications such as telephony
- Low current
- High voltage

1. EMILTTER
2. BASE
3. COLLECTOR



TO-92



Schematic Diagram

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_C	-0.6	A
Collector Power Dissipation	P_C	625	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^{\circ}\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-0.1\text{mA}, I_E=0$	-160	-	-	V
Collector-Emitter Breakdown Voltage ¹	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-150	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-0.01\text{mA}, I_C=0$	-5	-	-	V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=-120\text{V}, I_E=0$	-	-	-50	nA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=-3\text{V}, I_C=0$	-	-	-50	nA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-5\text{V}, I_C=-1\text{mA}$	80	-	-	-
	$h_{FE(2)}$	$V_{CE}=-5\text{V}, I_C=-10\text{mA}$	100	-	300	
	$h_{FE(3)}$	$V_{CE}=-5\text{V}, I_C=-50\text{mA}$	50	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$	-	-	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$	-	-	-1	V
Transition Frequency	f_T	$V_{CE}=-5\text{V}, I_C=-10\text{mA}, F=30\text{MHz}$	100	-	300	MHz

Notes:

1. Pulse test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Classification of $h_{FE(2)}$

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

Typical Characteristic Curves

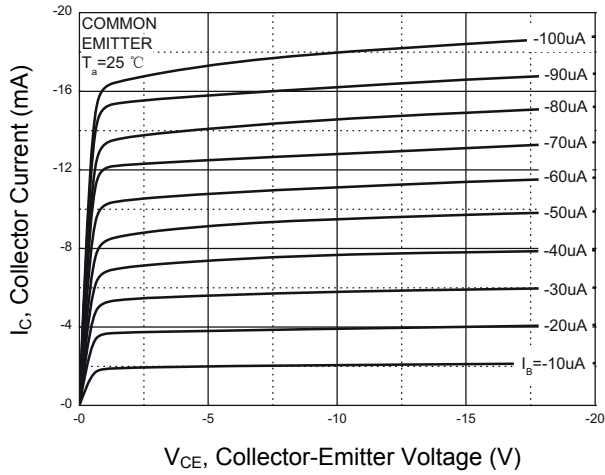


Figure 1. Static Characteristic

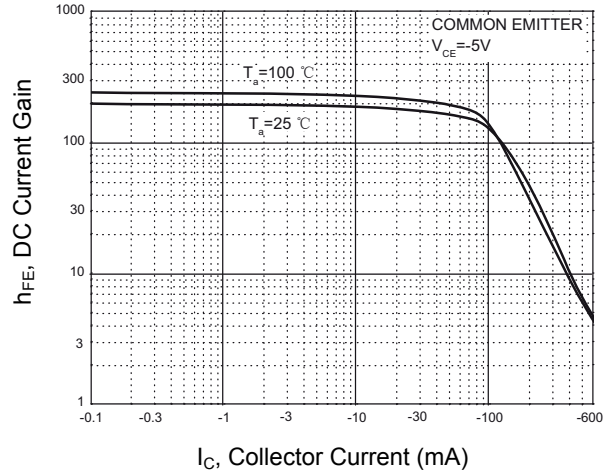


Figure 2. $h_{FE} - I_C$

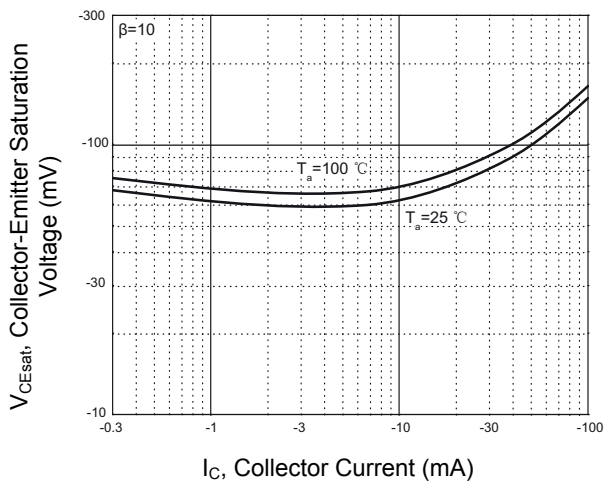


Figure 3. $V_{CEsat} - I_C$

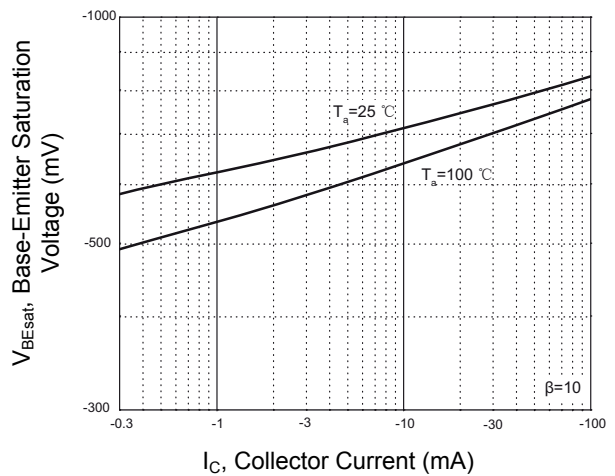


Figure 4. $V_{BEsat} - I_C$

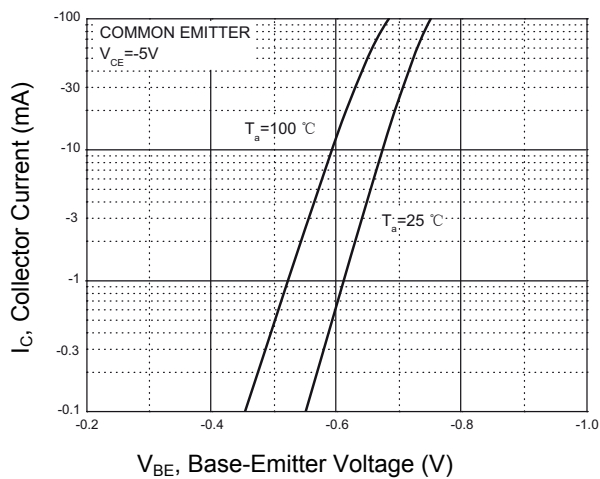


Figure 5. $I_C - V_{BE}$

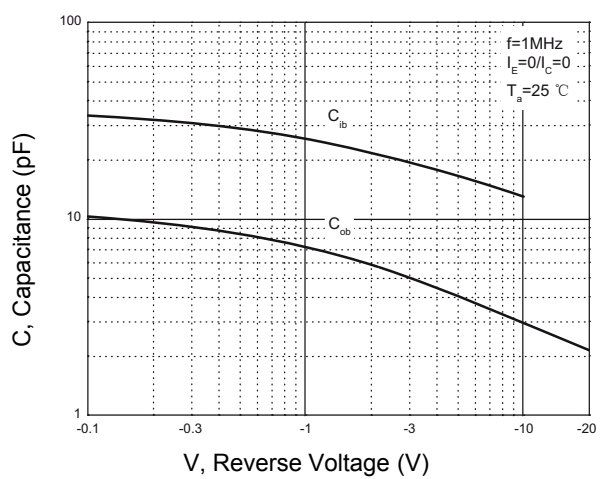


Figure 6. $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

Typical Characteristic Curves

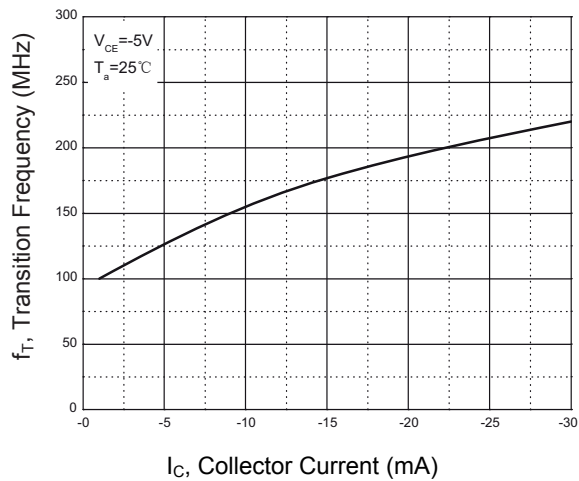


Figure 7. f_T — I_C

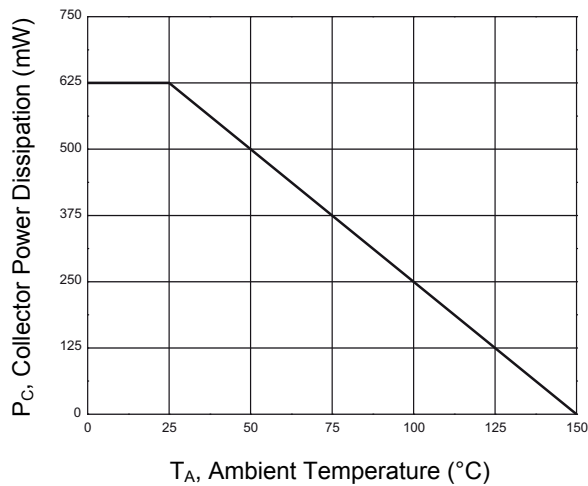
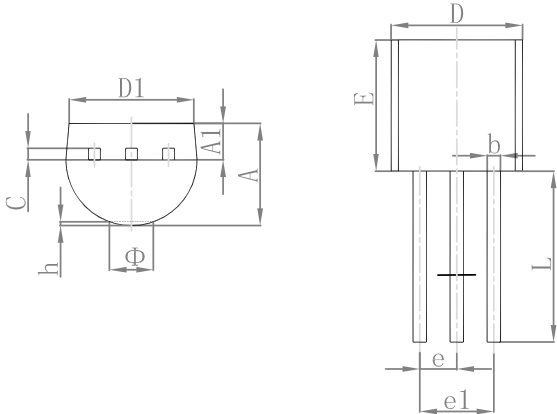


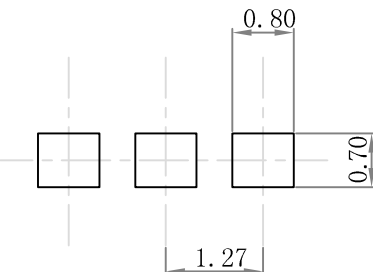
Figure 8. P_C — T_a

Package Outline Dimensions (TO-92)



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

Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only

Order Information

Device	Package	Marking	Quantity	HSF Status
2N5401	TO-92	2N5401	2,000pcs / Box	RoHS Compliant