KODENSHI AUK

2N4401

NPN Silicon Transistor

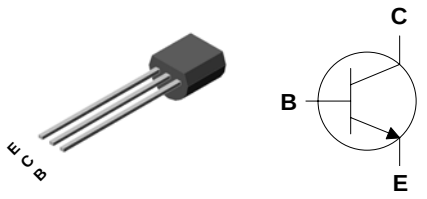
Descriptions

- General purpose application
- Switching application

Features

- Low Leakage current
- Low collector saturation voltage enabling low voltage operation
- Complementary pair with 2N4403

PIN Connection



TO-92

Ordering Information

Type NO.	Marking	Package Code
2N4401	2N4401	TO-92

Absolute maximum ratings

Ta=25°C

Characteristic	Symbol	Ratings	Unit
Collector-Base voltage	V_{CBO}	60	V
Collector-Emitter voltage	V_{CEO}	40	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	0.6	A(DC)
	I_{CP}*	1.2	A(Pulse)
Collector dissipation	P_C	500	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C

* : Single pulse, tp= 300 μs

Electrical Characteristics

Ta=25°C

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	BV_{CBO}	I_C= 100μA, I_E= 0	60	-	-	V
Collector-Emitter breakdown voltage	BV_{CEO}	I_C= 1mA, I_B= 0	40	-	-	V
Emitter-Base breakdown voltage	BV_{EBO}	I_E= 100μA, I_C= 0	6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB}= 60V, I_E= 0	-	-	0.1	uA
Collector cut-off current	I_{CEX}	V_{CB}= 35V, V_{EB}= 0.4V	-	-	0.1	uA
Emitter cut-off current	I_{EBO}	V_{EB}= -6V, I_E= 0	-	-	0.1	uA
DC current gain	h_{FE}	V_{CE}= 1V, I_C= 0.1mA	20	-	-	-
		V_{CE}= 1V, I_C= 1.0mA	40	-	-	-
		V_{CE}= 1V, I_C= 10mA	80	-	-	-
		V_{CE}= 1V, I_C= 150mA	100	-	300	-
		V_{CE}= 2V, I_C= 500mA	40	-	-	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	I_C= 150mA, I_B= 15mA	-	-	0.4	V
		I_C= 500mA, I_B= 50mA	-	-	0.75	V
Base-Emitter saturation voltage	$V_{BE(sat)}$	I_C= 150mA, I_B= 15mA	-	0.75	0.95	V
		I_C= 500mA, I_B= 50mA	-	-	1.2	V
Transition frequency	f_T	V_{CE}= 10V, I_C= 20mA, f= 100MHz	250	-	-	MHz
Collector-Base capacitance	C_{cb}	V_{CB}= 5V, I_E= 0, f= 1MHz	-	-	6.5	pF
Emitter-Base capacitance	C_{eb}	V_{EB}= 0.5V, I_C= 0, f= 1MHz	-	-	30	pF
Delay time	t_d	V_{CC}= 30V_{dc}, V_{EB}= 2V_{dc}, I_C= 150mA_{dc}, I_{B1}= 15mA_{dc}	-	-	20	ns
Rise time	t_r		-	-	25	ns
Storage time	t_s	V_{CC}= 30V_{dc}, I_C= 150mA_{dc}, I_{B1}= I_{B2}= 15mA_{dc}	-	-	160	ns
Fall Time	t_f		-	-	35	ns

Fig. 1 P_C - T_a

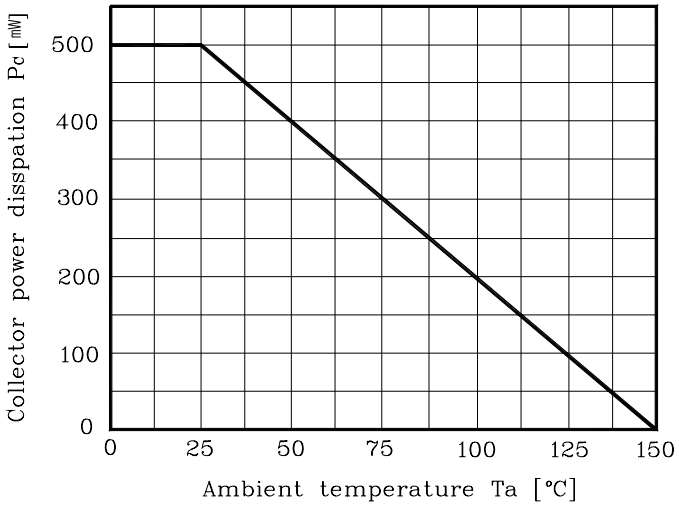


Fig. 2 h_{FE} - I_C

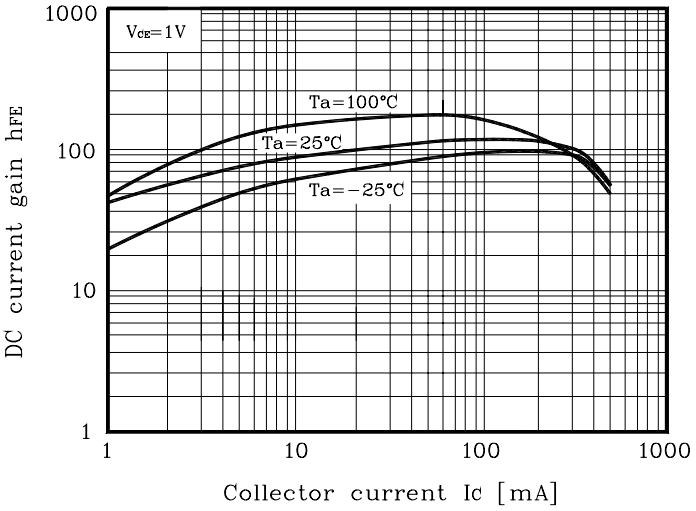


Fig. 3 I_C - $V_{CE(SAT)}$

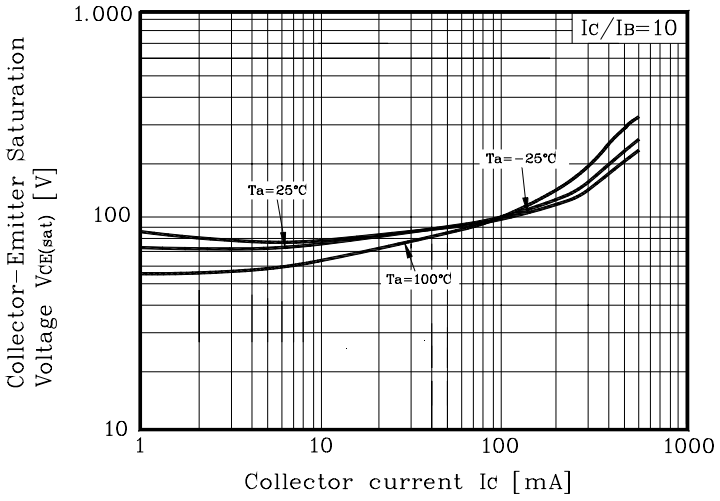


Fig. 4 I_C – $V_{BE(SAT)}$

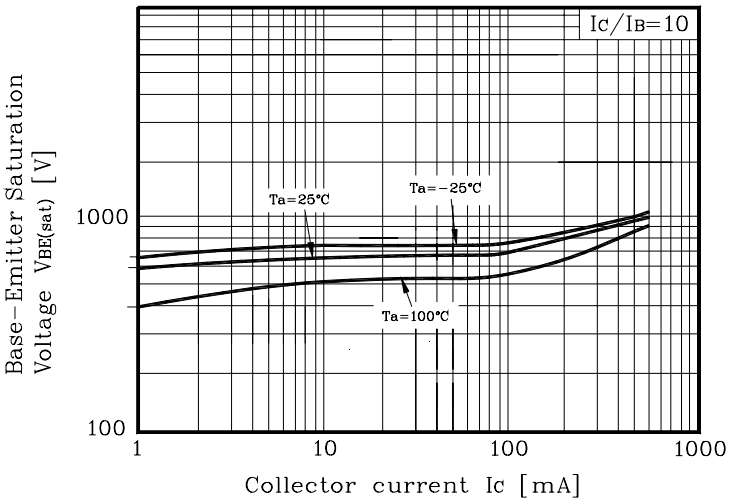


Fig. 5 C_{ob}-V_{CB}

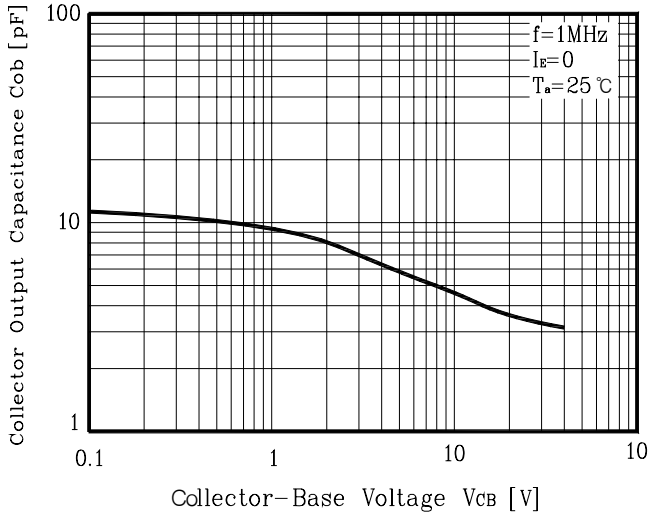
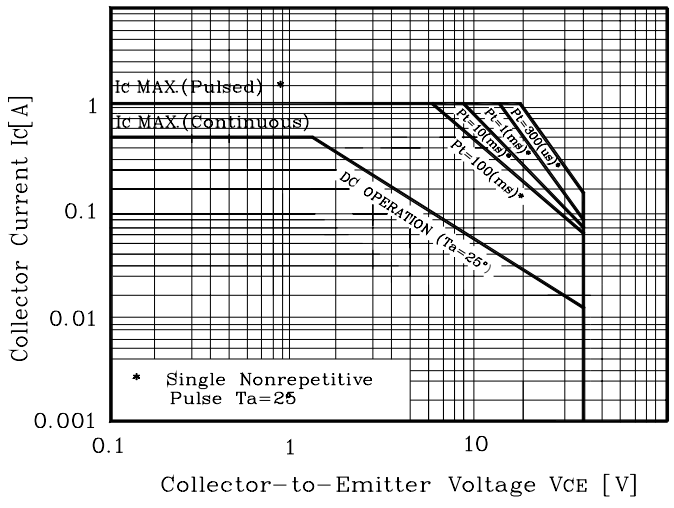
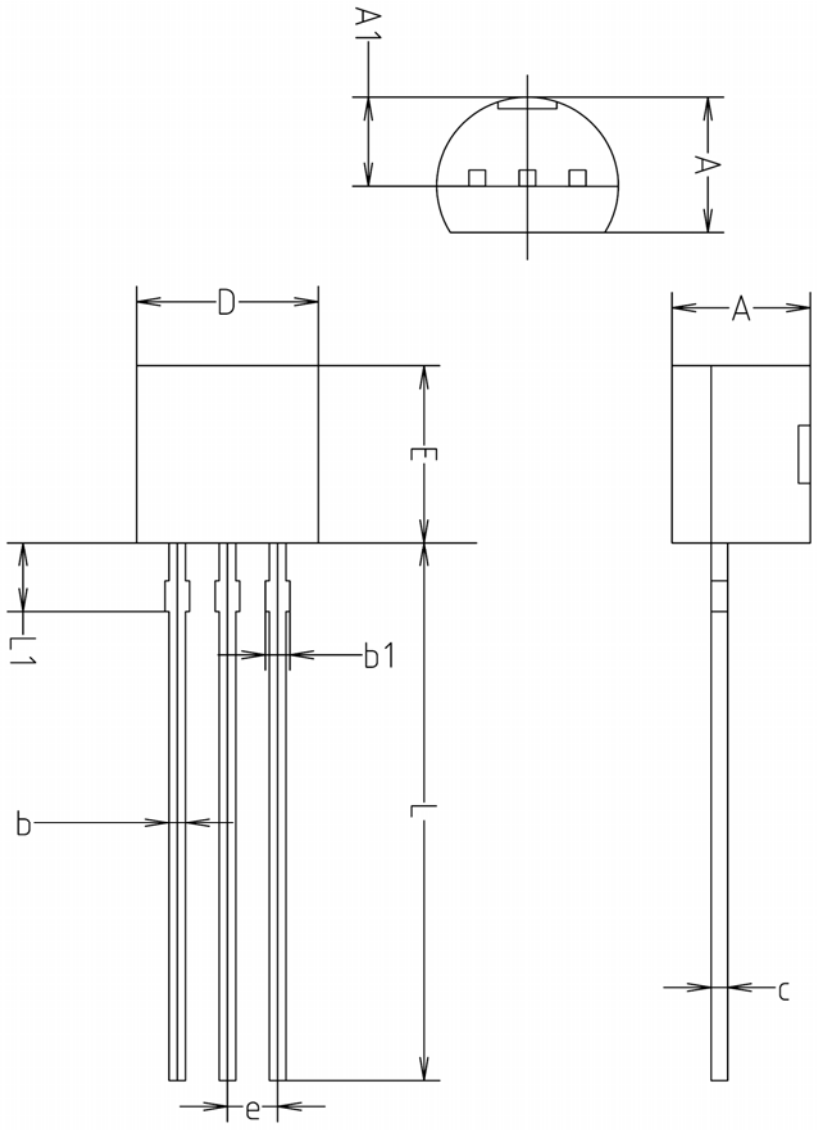


Fig. 6 Safe operating Area



Outline Dimension



SYMBOL	MILLMETERS(mm)		
	MINIMUM	NOMINAL	MAXIMUM
A	3.40	3.50	3.66
A1	2.46	2.51	2.59
b	0.39	0.44	0.53
b1	0.39	–	0.63
c	0.35	0.42	0.47
D	4.48	4.60	4.70
E	4.48	4.60	4.70
e	1.17	1.27	1.37
L	13.70	14.00	14.77
L1	1.55	1.70	2.15

The AUK Corp. products are intended for the use as components in general electronic equipment (Office and communication equipment, measuring equipment, home appliance, etc.).

Please make sure that you consult with us before you use these AUK Corp. products in equipments which require high quality and / or reliability, and in equipments which could have major impact to the welfare of human life(atomic energy control, airplane, spaceship, transportation, combustion control, all types of safety device, etc.). AUK Corp. cannot accept liability to any damage which may occur in case these AUK Corp. products were used in the mentioned equipments without prior consultation with AUK Corp..

Specifications mentioned in this publication are subject to change without notice.