



TO-220 Plastic-Encapsulate Transistors

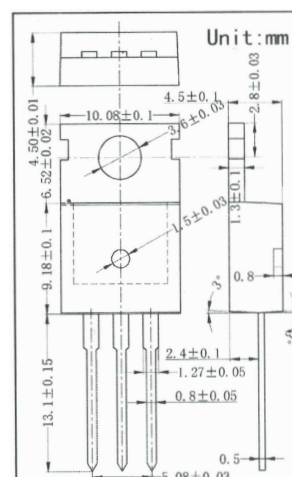
13005

NPN Transistors

Features

- Power switching applications
- Low saturation voltage
- High speed switching

Marking: ALJ13005-25



1. Base
2. Collector
3. Emitter

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

Symbol	Parameter	Value	Unit
V_{CB0}	Collector Base Voltage	700	V
V_{CEO}	Collector Emitter Voltage	400	V
V_{EBO}	Emitter Base Voltage	9	V
I_C	Collector Current	4	A
P_C	Collector Power Dissipation	2	W
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55 ~ +150	$^\circ\text{C}$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{(BR)CB0}$	Collector-base breakdown voltage	$I_C = 100\mu\text{A}, I_E = 0$	700			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C = 1\text{mA}, I_B = 0$	400			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = 100\mu\text{A}, I_C = 0$	9			V
I_{CB0}	Collector cut-off current	$V_{CB} = 700\text{V}, I_E = 0$			10	μA
I_{CEO}	Collector cut-off current	$V_{CE} = 400\text{V}, I_B = 0$			10	μA
I_{EBO}	Emitter cut-off current	$V_{EB} = 9\text{V}, I_C = 0$			5	μA
$h_{FE(1)}$	DC current gain	$V_{CE} = 5\text{V}, I_C = 500\text{mA}$	15		35	
$h_{FE(2)}$		$V_{CE} = 5\text{V}, I_C = 1\text{A}$	15			
$h_{FE(3)}$		$V_{CE} = 5\text{V}, I_C = 100\text{mA}$	5			
$V_{CE(sat)}^*$	Collector-emitter saturation voltage	$I_C = 2\text{A}, I_B = 500\text{mA}$			0.25	V
$V_{BE(sat)}^*$	Base-emitter saturation voltage	$I_C = 2\text{A}, I_B = 500\text{mA}$			1.10	V
f_T	Transition frequency	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$	5			MHz
t_r	Rise time				1	μs
t_s	Storage time	UI9600A, $I_C = 500\text{mA}$	2		6	μs
t_f	Fall time				0.6	μs

*Pulse test: $t_p \leq 300\mu\text{s}, \delta \leq 2\%$

Typical Characteristics



Static Characteristic

