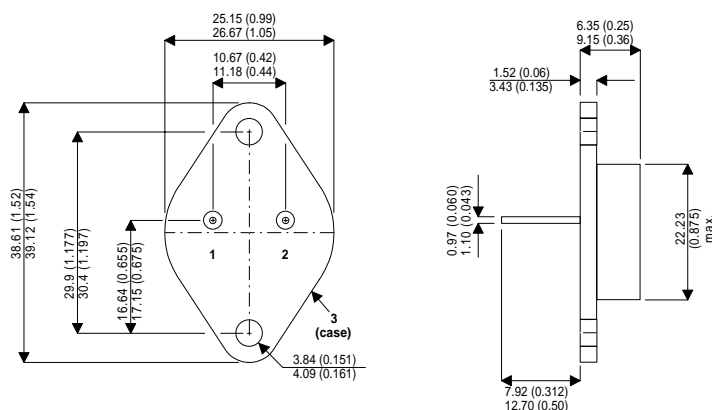


## MECHANICAL DATA

Dimensions in mm(inches)



### TO-3(TO204AA)

PIN 1 — Base PIN 2 — Emitter Case is Collector

## NPN MULTI - EPITAXIAL POWER TRANSISTOR

### FEATURES

- HIGH VOLTAGE
- LOW SATURATION VOLTAGES
- HIGH RELIABILITY

### APPLICATIONS

- POWER SWITCHING CIRCUITS
- LINEAR APPLICATIONS

## ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

$V_{CBO}$	Collector – Base Voltage ( $I_E = 0$ )	60V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	60V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	5V
$I_C$	Collector Current	25A
$I_{CM}$	Peak Collector Current	50A
$I_B$	Base Current	7.5A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^{\circ}C$	200W
$T_{stg}$	Storage Temperature	-65 to 200°C
$T_j$	Junction Temperature	200°C

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

**ELECTRICAL CHARACTERISTICS** ( $T_{\text{case}} = 25^{\circ}\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{\text{CEO(BR)}}^*$ Collector - Emitter Breakdown Voltage	$I_{\text{C}} = 200\text{mA}$	60			V
$V_{\text{BE}}^*$ Base – Emitter Voltage	$I_{\text{C}} = 10\text{A}$ $V_{\text{CE}} = 4\text{V}$			1.5	V
$I_{\text{CEV}}$ Collector Cut-off Current	$V_{\text{CE}} = 60\text{V}$ $V_{\text{BE}} = -1.5\text{V}$			1.0	mA
	$T_{\text{CASE}} = 150^{\circ}\text{C}$			10	
$I_{\text{EBO}}$ Emitter Cut-off Current	$V_{\text{EB}} = 5\text{V}$ $I_{\text{C}} = 0$			1.0	mA
$I_{\text{CEO}}$ Collector Cut-off Current	$V_{\text{CE}} = 30\text{V}$ $I_{\text{B}} = 0$			2	mA
$I_{\text{CBO}}$ Collector Cut-off Current	$V_{\text{CE}} = 60\text{V}$ $I_{\text{E}} = 0$			1.0	mA
$V_{\text{CE(sat)}}^*$ Collector – Emitter Saturation Voltage	$I_{\text{C}} = 15\text{A}$ $I_{\text{B}} = 1.5\text{A}$			1.0	V
	$I_{\text{C}} = 25\text{A}$ $I_{\text{B}} = 6.25\text{A}$			4	
$V_{\text{BE(sat)}}^*$ Base – Emitter Saturation Voltage	$I_{\text{C}} = 25\text{A}$ $I_{\text{B}} = 6.25\text{A}$			2.5	V
$h_{\text{FE}}^*$ DC Current Gain	$I_{\text{C}} = 3\text{A}$ $V_{\text{CE}} = 4\text{V}$	35			—
	$I_{\text{C}} = 10\text{A}$ $V_{\text{CE}} = 4\text{V}$	20		100	
	$I_{\text{C}} = 25\text{A}$ $V_{\text{CE}} = 4\text{V}$	4			
$h_{\text{fe}}$ Small Signal Current Gain	$I_{\text{C}} = 3\text{A}$ $V_{\text{CE}} = 4\text{V}$ $f = 1\text{ KHz}$	20			—
$C_{\text{cbo}}$ Collector Base Capacitance	$I_{\text{E}} = 0$ $V_{\text{CB}} = 10\text{V}$ $f = 1\text{ MHz}$			500	pF
$f_{\text{T}}$ Transition Frequency	$I_{\text{C}} = 1.0\text{A}$ $V_{\text{CB}} = 10\text{V}$ $f = 1\text{ MHz}$	4			MHz
$t_{\text{r}}$ Rise Time	$V_{\text{CC}} = 30\text{V}$ $I_{\text{C}} = 10\text{A}$ $I_{\text{B1}} = -I_{\text{B2}} = 1.0\text{A}$			0.7	$\mu\text{s}$
$t_{\text{s}}$ Storage Time				1.0	
$t_{\text{f}}$ Fall Time				0.8	

**THERMAL CHARACTERISTICS**

$R_{\theta\text{JC}}$ Thermal Resistance Junction to Case	Max	0.875	$^{\circ}\text{C/W}$
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\* Pulse test  $t_{\text{p}} = 300\mu\text{s}$ ,  $\delta = 1.5\%$