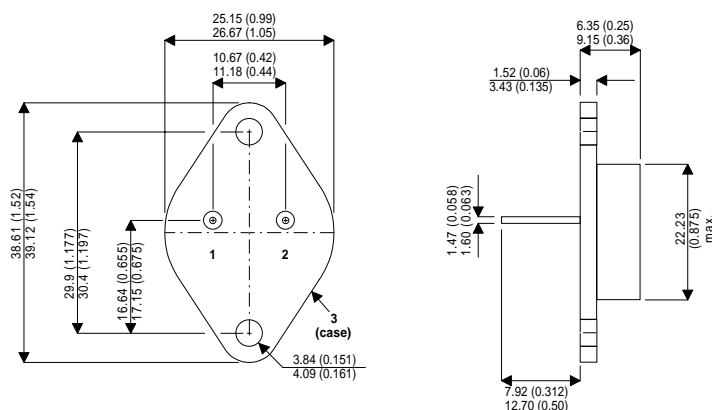


## MECHANICAL DATA

Dimensions in mm(inches)



## NPN SILICON POWER TRANSISTOR

### FEATURES

- HIGH CURRENT
- FAST SWITCHING
- HIGH RELIABILITY

### APPLICATIONS

- POWER SWITCHING CIRCUITS
- MOTOR CONTROL

### TO-204AE (TO-3)

PIN 1 — Base    PIN 2 — Emitter    Case is Collector.

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

$V_{CBO}$	Collector – Base Voltage ( $I_E = 0$ )	500V
$V_{CEX}$	Collector – Emitter Voltage ( $V_{BE} = -1.5V$ )	500V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	500V
$V_{CER}$	Collector – Emitter Voltage ( $R_{BE} = 100\Omega$ )	500V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	7V
$I_C$	Collector Current	15A
$I_{CM}$	Peak Collector Current ( $t_p = 10$ ms)	20A
$I_B$	Base Current	3A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^{\circ}C$	350W
$T_{stg}$	Storage Temperature	$-65$ to $200^{\circ}C$
$T_j$	Junction Temperature	$200^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	$0.5^{\circ}C/W$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{CEO(BR)*}$ Collector - Emitter Breakdown Voltage	$I_C = 200mA$	500			V
$V_{EBO}$ Emitter – Base Voltage	$I_E = 50mA$ $I_C = 0$	7			V
$I_{CEO}$ Collector Cut-off Current	$V_{CE} = 400V$ $I_B = 0$			3	mA
$I_{CEX}$ Collector Cut-off Current	$V_{CE} = 500V$ $V_{BE} = -1.5V$ $T_C = 125^{\circ}C$			3 12	mA
$I_{EBO}$ Emitter Cut-off Current	$I_C = 0$ $V_{EB} = 5V$			1.0	mA
$V_{CE(sat)*}$ Collector – Emitter Saturation Voltage	$I_C = 4A$ $I_B = 0.8A$		0.2	0.6	V
	$I_C = 8A$ $I_B = 1.6A$		0.6	1.0	
$V_{BE(sat)*}$ Base – Emitter Saturation Voltage	$I_C = 8A$ $I_B = 1.6A$		1.2	1.5	V
$h_{FE*}$ DC Current Gain	$V_{CE} = 4V$ $I_C = 4A$	15		60	—
	$V_{CE} = 4V$ $I_C = 8A$	8			
$I_{S/b}$ Second Breakdown Collector Current	$V_{CE} = 140V$ $t = 1s$	0.15			A
	$V_{CE} = 25V$ $t = 1s$	14			
$f_T$ Transition Frequency	$I_C = 2A$ $f = 10MHz$ $V_{CE} = 15V$	8			MHz
$t_{on}$ Turn-On Time	$I_C = 8A$ $I_{B1} = 1.6A$		0.9	1.8	$\mu s$
$t_s$ Storage Time	$I_C = 8A$ $I_{B1} = 1.6A$ $I_{B2} = -1.6A$		3.5	5	
$t_f$ Fall Time	$I_C = 8A$ $I_{B1} = 1.6A$ $I_{B2} = -1.6A$		0.9	1.6	

(\*) Pulse test:  $t_p \leq 300\mu s$ ,  $\delta \leq 2\%$

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