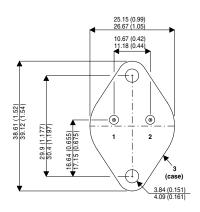
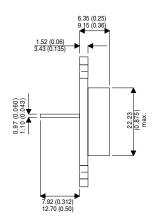




#### **MECHANICAL DATA**

Dimensions in mm(inches)





### TO-3(TO204AA)

PIN 1 — Base PIN 2 — Emitter Case is Collector

# **NPN MULTI - EPITAXIAL POWER TRANSISTOR**

### **FEATURES**

- HIGH CURRENT
- FAST SWITCHING
- HIGH RELIABILITY

#### **APPLICATIONS**

- POWER SWITCHING CIRCUITS
- MOTOR CONTROL

## ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C unless otherwise stated)

$\overline{V_{CBO}}$	Collector – Base Voltage (I <sub>E</sub> = 0)	400V
$V_{CEX}$	Collector – Emitter Voltage	400V
$V_{CEO}$	Collector – Emitter Voltage (I <sub>B</sub> = 0)	325V
$V_{CER}$	Collector – Emitter Voltage	390V
$V_{EBO}$	Emitter – Base Voltage $(I_C = 0)$	7V
$I_{\mathbb{C}}$	Collector Current	30A
I <sub>CM</sub>	Peak Collector Current (t <sub>p</sub> = 10 ms)	40A
$I_{B}$	Base Current	6A
$P_{tot}$	Total Power Dissipation at T <sub>case</sub> ≤ 25°C	350W
T <sub>stg</sub> ,	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.

E-mail: sales@semelab.co.uk

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

**Document Number 6344** Issue 1

Website: http://www.semelab.co.uk





## **ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Тур.	Max.	Unit	
V <sub>CEO(BR)*</sub>	Collector - Emitter Breakdown Voltage	I <sub>C</sub> = 0.2mA		325			V	
V <sub>EBO</sub>	Emitter – BaseVoltage	I <sub>E</sub> = 50mA	I <sub>C</sub> = 0	7			V	
I <sub>CEO</sub>	Collector Cut-off Current	V <sub>CE</sub> = 260V	I <sub>B</sub> = 0			3	mA	
		V <sub>CE</sub> = 400V	$V_{BE} = -1.5V$			3		
I <sub>CEX</sub>	Collector Cut-off Current	V <sub>CE</sub> = 400V	$V_{BE} = -1.5V$			12	mA	
			$T_C = 125^{\circ}C$					
I <sub>EBO</sub>	Emitter Cut-offCurrent	I <sub>C</sub> = 0	$V_{EB} = 5V$			1.0	mA	
V <sub>CE(sat)*</sub>	Collector – EmitterSaturation	I <sub>C</sub> = 8A	I <sub>B</sub> = 1.6A		0.2	0.8	V	
	Voltage	I <sub>C</sub> = 16A	I <sub>B</sub> = 3.2A		0.35	1.0		
V <sub>BE(sat)*</sub>	Base – Emitter	I <sub>C</sub> = 16A	1 - 2 2 4		1.15	1.5	V	
	Saturation Voltage	IC - IOA	$I_B = 3.2A$		1.15	1.5		
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 8A	V <sub>CE</sub> = 4V	15		60	_	
		I <sub>C</sub> = 16A	V <sub>CE</sub> = 4V	8				
l <sub>a</sub> ,	Second Breakdown	V <sub>CE</sub> = 140V	t = 1s	0.15			Α	
I <sub>S/b</sub>	Collector Current	V <sub>CE</sub> = 16V	t = 1s	22				
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 2A	V <sub>CE</sub> = 15V	8			MHz	
		f = 10MHz		"				
t <sub>on</sub>	Turn-On Time	I <sub>C</sub> = 16A	I <sub>B1</sub> =3.2A		0.55	1.3	μs	
on					0.00			
t <sub>s</sub>	Storage Time	I <sub>C</sub> = 16A	$I_{B1} = 3.2A$		1.7	2.5	μδ	
t <sub>f</sub>	Fall Time	$I_{B2} = -3.2A$			0.26	1.2		

#### THERMAL CHARACTERISTICS

F	R <sub>0JC</sub> Thermal Resis			0.5		°C/W	

<sup>\*</sup> Pulse test  $t_p$  = 300 $\mu s$  ,  $\delta$  = 1.5 %

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