

**MECHANICAL DATA**

Dimensions in mm

**NPN MULTI-EPITAXIAL  
VERY FAST SWITCHING  
HIGH POWER TRANSISTOR**

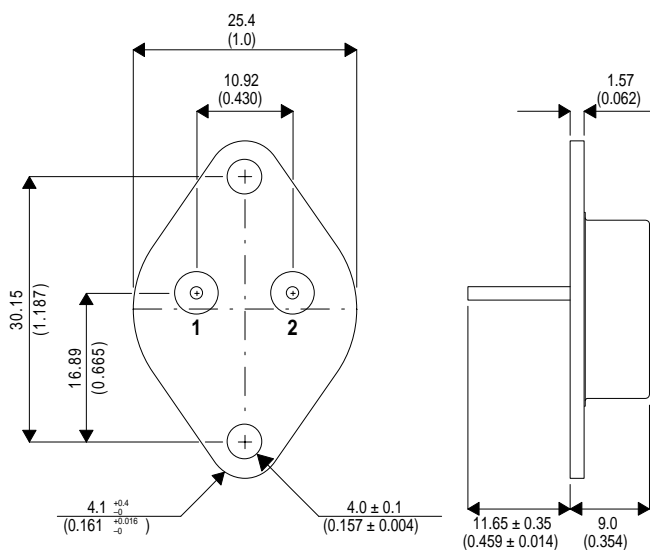
**FEATURES**

- DIFFUSED BY SEMEFAB
- VERY LOW  $V_{CE(sat)}$
- VERY FAST SWITCHING
- HIGH SWITCHING CURRENTS
- HIGH RELIABILITY
- MILITARY OPTIONS AVAILABLE

**APPLICATIONS**

- SWITCHING REGULATORS
- MOTOR CONTROLS
- HIGH POWER CONVERTORS

The BUP50A is a very fast switching, very low saturation, high power transistor using wafer diffused by Semefab. It is particularly suited to applications requiring robust, fast switching devices.



Tolerance  $\pm$  0.127 (0.005) unless otherwise stated

**TO3B**

Pin 1 – Base

Pin 2 – Emitter

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

$V_{CEX}$	Collector – Emitter Voltage ( $V_{BE} = -1.5V$ )	200V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	120V
$V_{EBO}$	Emitter – Base Voltage	10V
$I_C$	Collector Current	100A
$I_{C(PK)}$	Peak Collector Current	150A
$P_{tot}$	Total Dissipation at $T_{case} = 25^{\circ}C$	300W
$T_{stg}$	Storage Temperature	-55 to 175°C
$T_J$	Maximum Operating Junction Temperature	200°C
$R_{th}$	Thermal Resistance (junction-case)	0.58°C/W

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEX}$ Collector Cut-Off Current	$V_{BE} = -1.5V$ $V_{CEX} = 154$ $T_C = 150^{\circ}C$			0.1 5	mA
$I_{EBO}$ Emitter Cut-Off Current	$V_{EB} = 8V$			0.1	mA
$V_{CE(sat)^*}$ Collector – Emitter Saturation Voltage	$I_C = 25A$ $I_B = 2A$		0.4	0.35	V
	$I_C = 40A$ $I_B = 3A$		0.5	0.5	
	$I_C = 100A$ $I_B = 10A$		0.7	1	
$V_{BE(sat)}$ Base – Emitter Saturation Voltage	$I_C = 25A$ $I_B = 2A$		0.9	1	V
	$I_C = 40A$ $I_B = 3A$		1.0	1.2	
	$I_C = 100A$ $I_B = 10A$		1.3	1.5	
$h_{FE}$ DC Current Gain	$I_C = 25A$ $V_{CE} = 4V$	25	55		—
	$I_C = 40A$ $V_{CE} = 4V$	20	30		
	$I_C = 100A$ $V_{CE} = 4V$	10	157		

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

$t_{on}$ On Time	$I_C = 80A$ $V_{CC} = 80V$ $I_{B1} = -I_{B2} = 8A$		0.4	0.8	$\mu S$
$t_s$ Storage Time			0.3	0.5	
$t_f$ Fall Time			0.1	0.2	

\* Pulse test  $t_p = 300\mu S$   $\delta \leq 2\%$