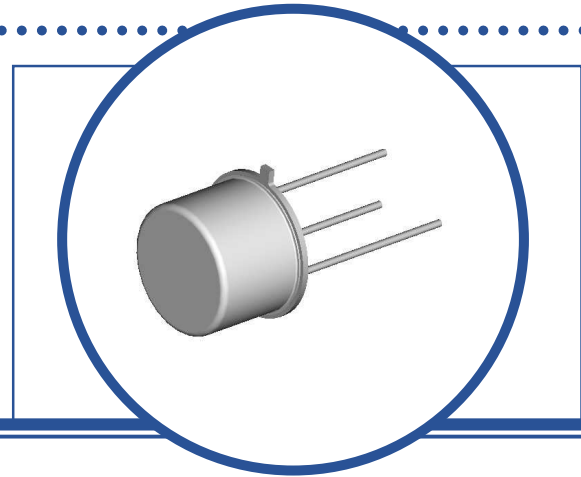


# HIGH VOLTAGE, HIGH CURRENT NPN TRANSISTOR

## BUY48X

- Hermetic TO39 (TO-205AD) Metal Package.
- High Voltage
- High Current
- Screening Options Available



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

$V_{CBO}$	Collector – Base Voltage	200V
$V_{CEO}$	Collector – Emitter Voltage	170V
$V_{EBO}$	Emitter – Base Voltage	6V
$I_C$	Collector Current	7A
$I_{CM}$	Peak Collector Current (repetitive)	10A
$P_D$	Total Power Dissipation at $T_A = 25^\circ\text{C}$	1.0W
	Derate Above $25^\circ\text{C}$	5.71mW/ $^\circ\text{C}$
$P_D$	Total Power Dissipation at $T_C = 25^\circ\text{C}$	10W
	Derate Above $25^\circ\text{C}$	57.1mW/ $^\circ\text{C}$
$T_J$	Junction Temperature Range	-65 to +200 $^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-65 to +200 $^\circ\text{C}$

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	175	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction To Case	17.5	$^\circ\text{C/W}$

Semelab Limited 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.

# HIGH VOLTAGE, HIGH CURRENT NPN TRANSISTOR BUY48X



## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions		Min.	Typ.	Max.	Units
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 100\text{V}$	$I_E = 0$			10	$\mu\text{A}$
			$T_C = 125^\circ\text{C}$			1.0	$\text{mA}$
$V_{(BR)CBO}^{(1)}$	Collector-Base Breakdown Voltage	$I_C = 1.0\text{mA}$	$I_E = 0$	200			V
$V_{CEO}^{(1)}$	Collector-Emitter Breakdown	$I_C = 20\text{mA}$	$I_B = 0$	170			
$V_{(BR)EBO}^{(1)}$	Emitter-Base Breakdown Voltage	$I_E = 1.0\text{mA}$	$I_C = 0$	6			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 0.5\text{A}$	$I_B = 50\text{mA}$		0.05		
		$I_C = 2\text{A}$	$I_B = 0.2\text{A}$			0.45	
		$I_C = 5\text{A}$	$I_B = 0.5\text{A}$			1.0	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 0.5\text{A}$	$I_B = 50\text{mA}$		0.8		
		$I_C = 2\text{A}$	$I_B = 0.2\text{A}$			1.1	
		$I_C = 5\text{A}$	$I_B = 0.5\text{A}$			1.5	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 50\text{mA}$	$V_{CE} = 5\text{V}$		130		
		$I_C = 0.5\text{A}$	$V_{CE} = 5\text{V}$	40	150		
		$I_C = 2\text{A}$	$V_{CE} = 5\text{V}$	40	130		
		$I_C = 5\text{A}$	$V_{CE} = 5\text{V}$	15	45		

## DYNAMIC CHARACTERISTICS

$f_T$	Transition Frequency	$I_C = 100\text{mA}$ $f = 10\text{MHz}$	$V_{CE} = 10\text{V}$		25		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 25\text{V}$ $f = 1.0\text{MHz}$	$I_E = 0$		60	80	pF
$t_{on}$	Turn – on Time	$I_C = 5\text{A}$	$V_{CC} = 40\text{V}$			1.0	$\mu\text{s}$
$t_{off}$	Turn – off time	$I_{B1} = I_{B1} - I_{B2} = 0.5\text{A}$				2	

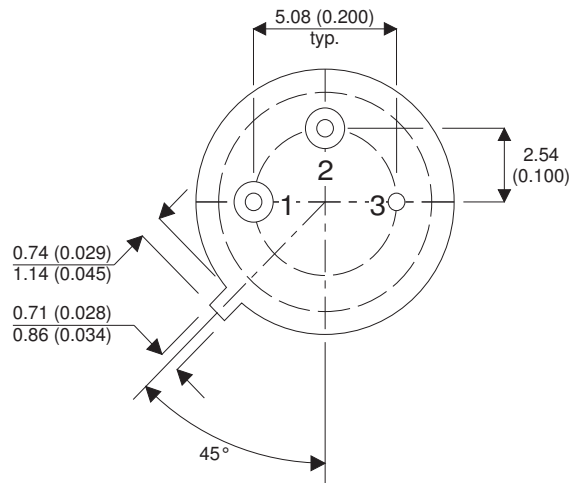
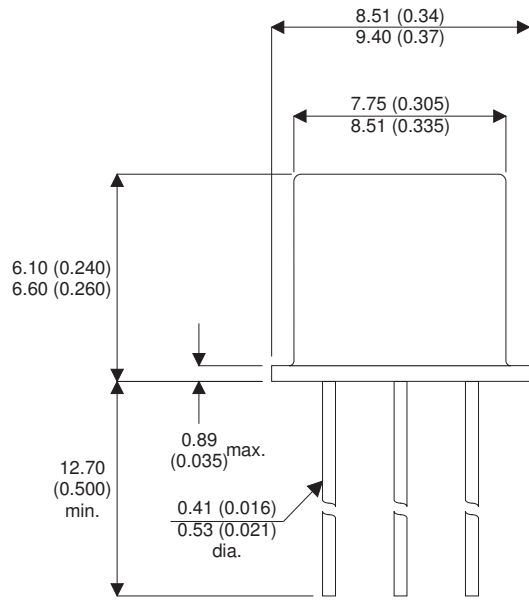
### Notes

(1) Pulse Width  $\leq 380\mu\text{s}$ ,  $\delta \leq 2\%$

# HIGH VOLTAGE, HIGH CURRENT NPN TRANSISTOR BUY48X

## MECHANICAL DATA

Dimensions in mm (inches)



### T039 (TO-205AD) Underside View

**Pin 1**  
Emitter

**Pin 2**  
Base

**Pin 3**  
Collector