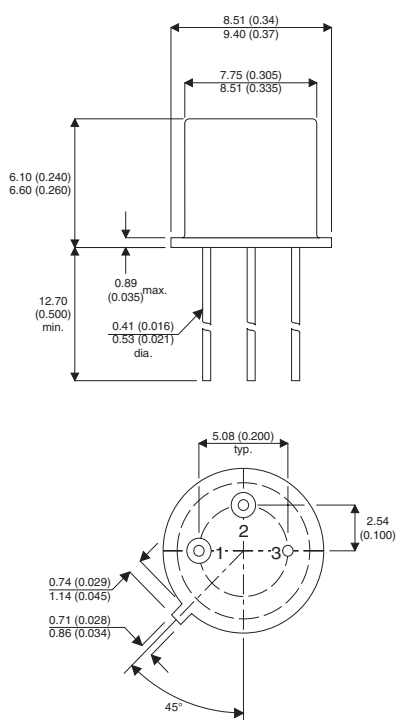


MECHANICAL DATA

Dimensions in mm (inches)



TO-39 PACKAGE (TO-205AD)

Underside View

Pin 1 – Emitter Pin 2 – Base Pin 3 – Collector

HIGH VOLTAGE, HIGH CURRENT SILICON EXPITAXIAL PLANAR NPN TRANSISTOR

APPLICATIONS

Intended for High Voltage, High Current,
Switching Applications up to 7A.

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

			BUY47	BUY48
V_{CBO}	Collector – Base Voltage	($I_E = 0$)	150V	200V
V_{CEO}	Collector – Emitter Voltage	($I_B = 0$)	120V	170V
V_{EBO}	Emitter – Base Voltage	($I_C = 0$)		6V
I_C	Collector Current			7A
I_{CM}	Peak Collector Current (repetitive)			10A
P_{tot}	Total Power Dissipation	@ $T_{amb} = 25^{\circ}C$		1W
		@ $T_{case} = 25^{\circ}C$		10W
T_{STG}	Storage Temperature Range			-65 to +200°C
T_J	Maximum Operating Junction Temperature			200°C
$R_{\theta JA}$	Thermal Resistance Junction - Air			175 °C/W
$R_{\theta JC}$	Thermal Resistance Junction - Case			15°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

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

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO} Collector Cut-off Current	$V_{\text{CB}} = 80\text{V}$ $I_{\text{E}} = 0$	BUY47			10	μA
		$T_{\text{C}} = 125^{\circ}\text{C}$			1	mA
	$V_{\text{CB}} = 100\text{V}$ $I_{\text{E}} = 0$	BUY48			10	μA
		$T_{\text{C}} = 125^{\circ}\text{C}$			1	mA
$V_{(\text{BR})\text{CBO}}^*$ Collector – Base Breakdown Voltage	$I_{\text{C}} = 1\text{mA}$ $I_{\text{E}} = 0$	BUY47	150			V
		BUY48	200			
$V_{\text{CEO(sus)}}^*$ Collector – Emitter Sustaining Voltage	$I_{\text{C}} = 20\text{mA}$ $I_{\text{B}} = 0$	BUY47	120			V
		BUY48	170			
V_{EBO}^* Emitter – Base Voltage	$I_{\text{E}} = 1\text{mA}$	$I_{\text{C}} = 0$	6			V
$V_{\text{CE(sat)}}^*$ Collector – Emitter Saturation Voltage	$I_{\text{C}} = 0.5\text{A}$	$I_{\text{B}} = 50\text{mA}$		0.05		V
	$I_{\text{C}} = 2\text{A}$	$I_{\text{B}} = 0.2\text{A}$			0.45	
	$I_{\text{C}} = 5\text{A}$	$I_{\text{B}} = 0.5\text{A}$			1	
$V_{\text{BE(sat)}}^*$ Base – Emitter Saturation Voltage	$I_{\text{C}} = 0.5\text{A}$	$I_{\text{B}} = 50\text{mA}$		0.8		V
	$I_{\text{C}} = 2\text{A}$	$I_{\text{B}} = 0.2\text{A}$			1.1	
	$I_{\text{C}} = 5\text{A}$	$I_{\text{B}} = 0.5\text{A}$			1.5	
h_{FE}^* DC Current Gain	$I_{\text{C}} = 50\text{mA}$	$V_{\text{CE}} = 5\text{V}$		130		—
	$I_{\text{C}} = 0.5\text{A}$	$V_{\text{CE}} = 5\text{V}$	40	150		
	$I_{\text{C}} = 2\text{A}$	$V_{\text{CE}} = 5\text{V}$	40	130		
	$I_{\text{C}} = 5\text{A}$	$V_{\text{CE}} = 5\text{V}$	15	45		
f_{T} Transition Frequency	$I_{\text{C}} = 100\text{mA}$	$V_{\text{CE}} = 10\text{V}$		90		MHz
C_{CBO} Collector – Base Capacitance	$I_{\text{E}} = 0$ $f = 1\text{MHz}$	$V_{\text{CB}} = 50\text{V}$		45	80	pF
t_{on} Turn-On Time	$I_{\text{C}} = 5\text{A}$	$V_{\text{CC}} = 40\text{V}$			1	μs
t_{off} Fall Time	$I_{\text{B1}} = -I_{\text{B2}} = 0.5\text{A}$				2	

NOTES

* Pulse Test: $t_{\text{p}} = 300\mu\text{s}$, $\delta = 1.5\%$