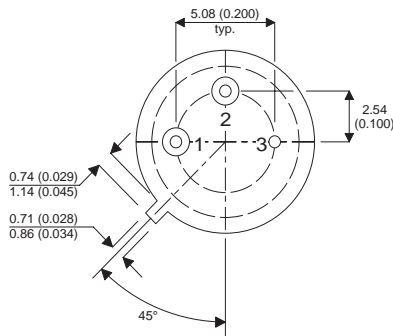
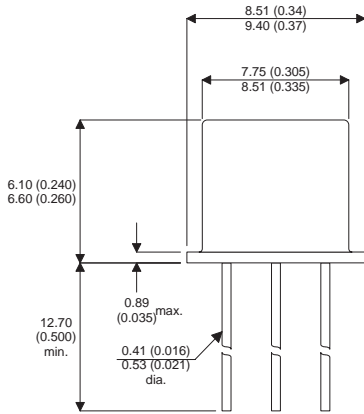


**MECHANICAL DATA**  
Dimensions in mm (inches)

**HIGH VOLTAGE, HIGH CURRENT, HIGH SPEED, NPN SWITCHING TRANSISTOR IN A HERMETICALLY SEALED TO-39 METAL PACKAGE FOR HIGH RELIABILITY APPLICATIONS**



**TO-39 METAL (TO205AD)**

**PIN OUTS**

PIN 1 – Emitter      PIN 2 – Base      PIN 3 – Collector

**FEATURES**

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HERMETIC METAL PACKAGE
- CECC SCREENING OPTIONS
- SPACE QUALITY LEVELS OPTIONS
- JAN LEVEL SCREENING OPTIONS
- HIGH SPEED SATURATED SWITCHING

**APPLICATIONS:**

Hermetically sealed 2N3725 for high reliability applications. Suitable for memory application.

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

$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	80V
$V_{CES}$	Collector-emitter Voltage ( $V_{BE} = 0$ )	80V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	50V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	6V
$I_C$	Collector Current	1A
$P_{tot}$	Total Power Dissipation at $T_{amb} \leq 25^{\circ}C$ at $T_{case} \leq 25^{\circ}C$	0.8W 3.5W
$T_j$	Junction Temperature	- 65 to 200 °C
$T_{stg}$	Storage Temperature	- 65 to 200 °C

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$ Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = 60\text{ V}$			1.7	$\mu\text{A}$
	$V_{CB} = 60\text{ V}$ $T_{amb} = 100^{\circ}\text{C}$			120	
$V_{(BR)CBO}$ Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = 10\ \mu\text{A}$	80			V
$V_{(BR)CES}$ Collector-Emitter Breakdown Voltage ( $V_{BE} = 0$ )	$I_C = 10\ \mu\text{A}$	80			V
$V_{(BR)CEO}^*$ Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = 10\ \text{mA}$	50			V
$V_{(BR)EBO}$ Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_E = 10\ \mu\text{A}$	6			V
$V_{CE(sat)}^*$ Collector-Emitter Saturation Voltage	$I_C = 10\ \text{mA}$ $I_B = 1\ \text{mA}$		0.19	0.25	V
	$I_C = 100\ \text{mA}$ $I_B = 10\ \text{mA}$		0.21	0.26	
	$I_C = 300\ \text{mA}$ $I_B = 30\ \text{mA}$		0.31	0.4	
	$I_C = 500\ \text{mA}$ $I_B = 50\ \text{mA}$		0.4	0.52	
	$I_C = 800\ \text{mA}$ $I_B = 80\ \text{mA}$		0.5	0.8	
	$I_C = 1000\ \text{mA}$ $I_B = 100\ \text{mA}$		0.6	0.95	
$V_{BE(sat)}^*$ Base-Emitter Saturation Voltage	$I_C = 10\ \text{mA}$ $I_B = 1\ \text{mA}$		0.64	0.76	V
	$I_C = 100\ \text{mA}$ $I_B = 10\ \text{mA}$		0.75	0.86	
	$I_C = 300\ \text{mA}$ $I_B = 30\ \text{mA}$		0.89	1.1	
	$I_C = 500\ \text{mA}$ $I_B = 50\ \text{mA}$	0.9		1.2	
	$I_C = 800\ \text{mA}$ $I_B = 80\ \text{mA}$		1.0	1.5	
	$I_C = 1000\ \text{mA}$ $I_B = 100\ \text{mA}$		1.1	1.7	
$h_{FE}^*$ DC Current Gain	$I_C = 10\ \text{mA}$ $V_{CE} = 1\ \text{V}$	30	60		
	$I_C = 100\ \text{mA}$ $V_{CE} = 1\ \text{V}$	60	90	150	
	$I_C = 300\ \text{mA}$ $V_{CE} = 1\ \text{V}$	40	60		
	$I_C = 1000\ \text{mA}$ $V_{CE} = 5\ \text{V}$	25	65		
	$I_C = 800\ \text{mA}$ $V_{CE} = 2\ \text{V}$	20	40		
	$I_C = 500\ \text{mA}$ $V_{CE} = 1\ \text{V}$	35			
$h_{fe}$ High Frequency Current Gain ( $f = 100\text{MHz}$ )	$I_C = 50\ \text{mA}$ $V_{CE} = 10\ \text{V}$	3			
$C_{CBO}$ Collector-Base Capacitance ( $f = 1\text{MHz}$ )	$I_E = 0$ $V_{CB} = 10\ \text{V}$			10	pF
$C_{EBO}$ Emitter-Base Capacitance ( $f = 1\text{MHz}$ )	$I_C = 0$ $V_{CB} = 0.5\ \text{V}$			55	pF
$t_{on}$ Turn-on Time	$I_C = 500\ \text{mA}$ $V_{CC} = 30\ \text{V}$ $I_B = 50\ \text{mA}$			35	ns
$t_{off}$ Turn off Time	$I_C = 500\ \text{mA}$ $V_{CC} = 30\ \text{V}$ $I_{B1} = -I_{B2} = 50\ \text{mA}$			60	ns

\* Pulsed : pulse duration = 300 $\mu\text{s}$ , duty cycle = 1%

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$R_{th\ j-case}$ Thermal Resistance Junction-Case				50	$^{\circ}\text{C/W}$
$R_{th\ j-amb}$ Thermal Resistance Junction-Ambient				220	$^{\circ}\text{C/W}$

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