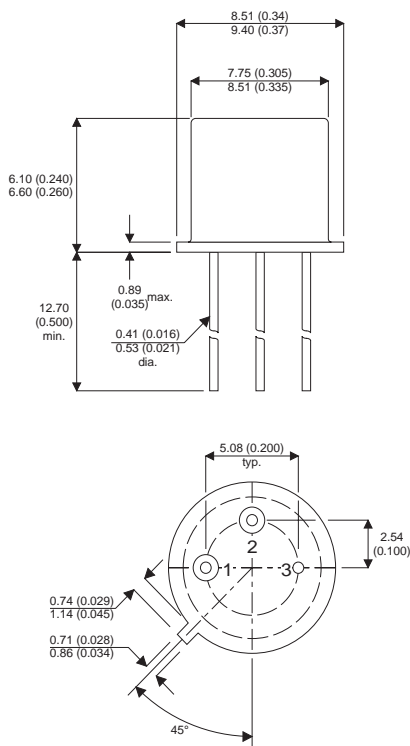


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-39 (TO-205AD)**

**Underside View**

1 = Emitter                      2 = Base                      3 = Collector

**NPN BIPOLAR  
POWER SWITCHING  
TRANSISTORS**

**FEATURES**

- FAST SWITCHING
- CECC SCREENING OPTIONS
- SPACE QUALITY LEVELS OPTIONS
- JAN LEVEL SCREENING OPTIONS

**APPLICATIONS**

- HIGH SPEED SWITCHING CIRCUITS
- POWER AMPLIFIERS

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

	2N5666	2N5667
$V_{CBO}$ Collector – Base Voltage	250V	400V
$V_{CEO}$ Collector – Emitter Voltage ( $I_B = 0$ )	200V	300V
$V_{EBO}$ Emitter – Base Voltage ( $I_B = 0$ )	6V	
$I_B$ Base Current	1.0A	
$I_C$ Collector Current	5.0A	
$P_D$ Power Dissipation @ $T_C = 25^\circ\text{C}$	26W	
$P_D$ Power Dissipation @ $T_A = 25^\circ\text{C}$	1.2W	
$R_{\theta JC}$ Thermal Resistance Junction to Case	6.73°C/W	
$R_{\theta JA}$ Thermal Resistance Junction to Ambient	145.8°C/W	
$T_J, T_{STG}$ Operating and Storage Junction Temperature Range	-65 to +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.

**ELECTRICAL CHARACTERISTICS - 2N5666** ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage $I_C = 1\text{mA}$	200			V
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage $I_E = 10\mu\text{A}$	6.0			
$I_{CER}$	Collector – Emitter Cut-off Current $V_{CE} = 250\text{V}$ $R_B = 100\Omega$			100	$\mu\text{A}$
$I_{CES}$	Collector – Emitter Cut-off Current $V_{CE} = 200\text{V}$ $I_B = 0$			0.2	
$I_{CBO}$	Collector – Base Cut-off Current $V_{CB} = 200\text{V}$			0.1	mA
	$V_{CB} = 250\text{V}$			1.0	
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage* $I_C = 3.0\text{A}$ $I_B = 0.6\text{A}$			0.4	V
	$I_C = 5.0\text{A}$ $I_B = 1.0\text{A}$			1.0	
$V_{BE(sat)}$	Base – Emitter On Voltage* $I_C = 3.0\text{A}$ $I_B = 0.6\text{A}$			1.2	
	$I_C = 5.0\text{A}$ $I_B = 1.0\text{A}$			1.5	
$h_{FE}$	DC Current Gain* $I_C = 0.5\text{A}$ $V_{CE} = 2\text{V}$	40			—
	$I_C = 1.0\text{A}$ $V_{CE} = 5\text{V}$	40		120	
	$I_C = 3.0\text{A}$ $V_{CE} = 5\text{V}$	15			
	$I_C = 5.0\text{A}$ $V_{CE} = 5\text{V}$	5			
$C_{obo}$	Output Capacitance $V_{CB} = 10\text{V}$ $I_E = 0\text{A}$ $100\text{kHz} < f < 1\text{MHz}$			120	pF
$[h_{fe}]$	Small Signal Current Gain $f = 10\text{MHz}$ $I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$	2.0		7.0	—
$t_{on}$	Turn on time $I_{B1} = 30\text{mA}$ $I_C = 1.0\text{A}$ $V_{CC} = 100\text{V}$			0.25	$\mu\text{s}$
$t_{off}$	Turn off time $I_{B1} = -I_{B2} = 50\text{mA}$ $I_C = 1.0\text{A}$ $V_{CC} = 30\text{V}$			1.5	

**NOTES**

\* Pulse Test:  $t_p = 300\mu\text{s}$ ,  $\delta \leq 2\%$

**ELECTRICAL CHARACTERISTICS - 2N5667** ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage $I_C = 1\text{mA}$	300			V
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage $I_E = 10\mu\text{A}$	6.0			
$I_{CER}$	Collector – Emitter Cut-off Current $V_{CE} = 400\text{V}$ $R_B = 100\Omega$			100	$\mu\text{A}$
$I_{CES}$	Collector – Emitter Cut-off Current $V_{CE} = 300\text{V}$ $I_B = 0$			0.2	
$I_{CBO}$	Collector – Base Cut-off Current $V_{CB} = 300\text{V}$			0.1	mA
		$V_{CB} = 400\text{V}$			
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage* $I_C = 3.0\text{A}$ $I_B = 0.6\text{A}$			0.4	V
		$I_C = 5.0\text{A}$ $I_B = 1.0\text{A}$			
$V_{BE(sat)}$	Base – Emitter On Voltage* $I_C = 3.0\text{A}$ $I_B = 0.6\text{A}$			1.2	
		$I_C = 5.0\text{A}$ $I_B = 1.0\text{A}$			1.5
$h_{FE}$	DC Current Gain* $I_C = 0.5\text{A}$ $V_{CE} = 2\text{V}$		25		—
		$I_C = 1.0\text{A}$ $V_{CE} = 5\text{V}$	25	75	
		$I_C = 3.0\text{A}$ $V_{CE} = 5\text{V}$	10		
		$I_C = 5.0\text{A}$ $V_{CE} = 5\text{V}$	5		
$C_{obo}$	Output Capacitance $V_{CB} = 10\text{V}$ $I_E = 0\text{A}$ $100\text{kHz} < f < 1\text{MHz}$			120	pF
$[h_{fe}]$	Small Signal Current Gain $f = 10\text{MHz}$ $I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$	2.0		7.0	—
$t_{on}$	Turn on time $I_{B1} = 30\text{mA}$ $I_C = 1.0\text{A}$ $V_{CC} = 100\text{V}$			0.25	$\mu\text{s}$
$t_{off}$	Turn off time $I_{B1} = -I_{B2} = 50\text{mA}$ $I_C = 1.0\text{A}$ $V_{CC} = 30\text{V}$			2.0	

**NOTES**

\* Pulse Test:  $t_p = 300\mu\text{s}$ ,  $\delta \leq 2\%$