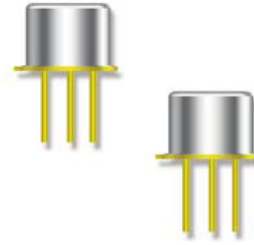


### Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/350
- TO-5 Package: 2N3867, 2N3868
- TO-39 (TO-205AD) Package: 2N3867S, 2N3868S



### Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Off Characteristics</b>					
Collector - Base Breakdown Voltage	$V_{CB} = -40V$ 2N3867, 2N3867S $V_{CB} = -60V$ 2N3868, 2N3868S	$I_{CBO}$	Vdc	-60	-100 $\mu$ A
Collector - Emitter Breakdown Voltage	$I_C = -20$ mAdc, 2N3867, 2N3867S $I_C = -20$ mAdc, 2N3868, 2N3868S	$V_{(BR)CEO}$	Vdc	-40 -60	—
Collector - Emitter Cutoff Current	$V_{EB} = +2$ Vdc, $V_{CE} = -40$ Vdc, 2N3867, 2N3867S $V_{EB} = +2$ Vdc, $V_{CE} = -60$ Vdc, 2N3868, 2N3868S	$I_{CEX}$	$\mu$ Adc	—	-1.0 -1.0
Emitter - Base Cutoff Current	$V_{EB} = 4.0$ Vdc	$I_{EBO}$	$\mu$ Adc	—	100
<b>On Characteristics<sup>1</sup></b>					
Forward Current Transfer Ratio	$I_C = -500$ mAdc, $V_{CE} = -1$ Vdc, 2N3867, 2N3867S 2N3868, 2N3868S $I_C = -1.5$ Adc, $V_{CE} = -2$ Vdc, 2N3867, 2N3867S 2N3868, 2N3868S $I_C = -2.5$ Adc, $V_{CE} = -3$ Vdc, 2N3867, 2N3867S 2N3868, 2N3868S $I_C = -3.0$ mAdc, $V_{CE} = -5$ Vdc, All Types	$H_{FE}$	-	50 35 40 30 25 20 20	— — 200 150 — — —
Collector - Emitter Saturation Voltage	$I_C = -500$ mAdc, $I_B = -50$ mAdc $I_C = -1.5$ Adc, $I_B = -150$ mAdc $I_C = -2.5$ Adc, $I_B = -250$ mAdc	$V_{CE(SAT)}$	Vdc	—	-0.50 -0.75 -1.50
Base - Emitter Saturation Voltage	$I_C = -500$ mAdc, $I_B = -50$ mAdc $I_C = -1.5$ Adc, $I_B = -150$ mAdc 2N3867, S $I_C = -1.5$ Adc, $I_B = -150$ mAdc 2N3868, S $I_C = -2.5$ A, $I_B = -250$ mAdc	$V_{BE(SAT)}$	Vdc	-0.9 -0.85	-1.0 -1.4 -1.4 -2.0

1. Pulse Test: Pulse Width = 300  $\mu$ s, Duty Cycle  $\leq$ 2.0%.

(Continued next page)

### Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Dynamic Characteristics</b>					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = -100 \text{ mA dc}$ , $V_{CE} = -5.0 \text{ V dc}$ , $f = 20 \text{ MHz}$	$ h_{FE} $	-	3	12
Output Capacitance	$V_{CB} = -10 \text{ V dc}$ , $I_E = 0$ , $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{OBO}$	pF	—	120
Input Capacitance	$V_{CB} = -3 \text{ V dc}$ , $I_E = 0$ , $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{IBO}$	pF	—	800
<b>Switching Characteristics</b>					
Delay Time	$V_{CC} = -30 \text{ V dc}$ , $V_{EB} = 0$	$T_D$	ns	—	35
Rise Time	$I_C = -1.5 \text{ A dc}$ , $I_{B1} = -150 \text{ mA dc}$	$T_R$	ns	—	65
Storage Time	$V_{CC} = -30 \text{ V dc}$ , $V_{EB} = 0$	$T_S$	ns	—	500
Fall Time	$I_C = 1.5 \text{ A dc}$ , $I_{B1} = 150 \text{ mA dc}$	$T_F$	ns	—	100
<b>Safe Operating Area</b>					
DC Tests:	$T_C = +25^\circ\text{C}$ , 1 Cycle, $t = 1.0 \text{ s}$				
Test 1:	$V_{CE} = -3.3 \text{ V dc}$ , $I_C = -3 \text{ A dc}$				
Test 2:	$V_{CE} = -40 \text{ V dc}$ , $I_C = -160 \text{ mA dc}$ , 2N3867, 2N3867S				
Test 3:	$V_{CE} = -60 \text{ V dc}$ , $I_C = -80 \text{ mA dc}$ , 2N3868, 2N3868S				

### Absolute Maximum Ratings

Ratings	Symbol	Value
Collector - Emitter Voltage 2N3867, 2N3867S 2N3868, 2N3868S	$V_{CEO}$	-40 Vdc -60 Vdc
Collector - Base Voltage 2N3867, 2N3867S 2N3868, 2N3868S	$V_{CBO}$	-40 Vdc -60 Vdc
Emitter - Base Voltage	$V_{EBO}$	-4 Vdc
Collector Current	$I_C$	-3 A dc
Total Power Dissipation @ $T_A = 25^\circ\text{C}^2$ @ $T_C = 25^\circ\text{C}^3$	$P_T$	1 W 10 W
Operating & Storage Temperature Range	$T_{OP}$ , $T_{STG}$	-55°C to +200°C

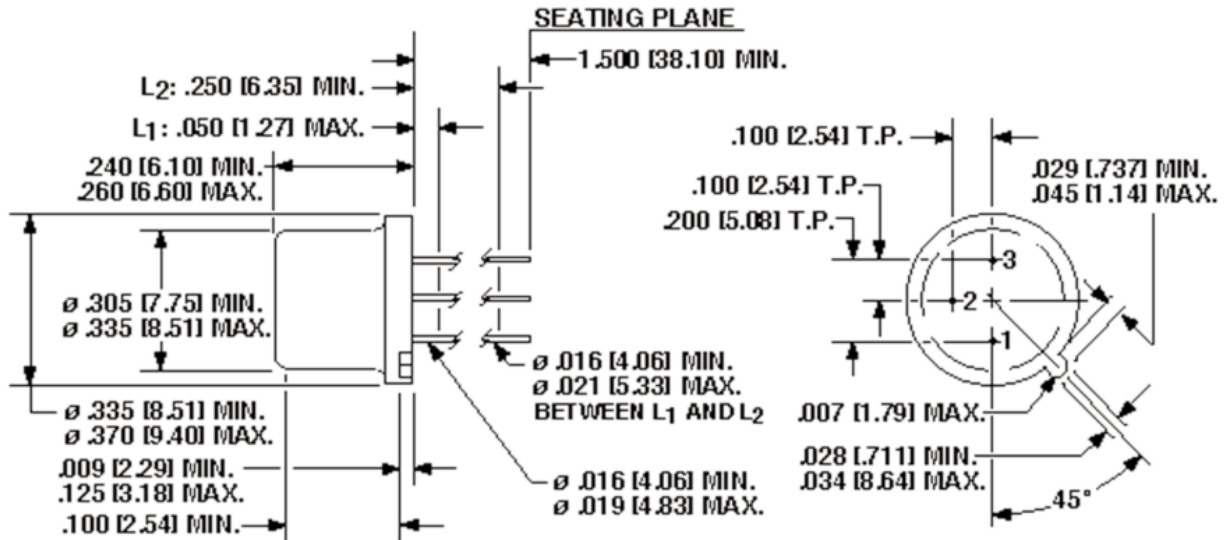
- Derate linearly 5.71 mW / °C for  $T_A > +25^\circ\text{C}$ .
- Derate linearly 57.1 mW / °C for  $T_C > +25^\circ\text{C}$ .

### Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	17.5°C/W

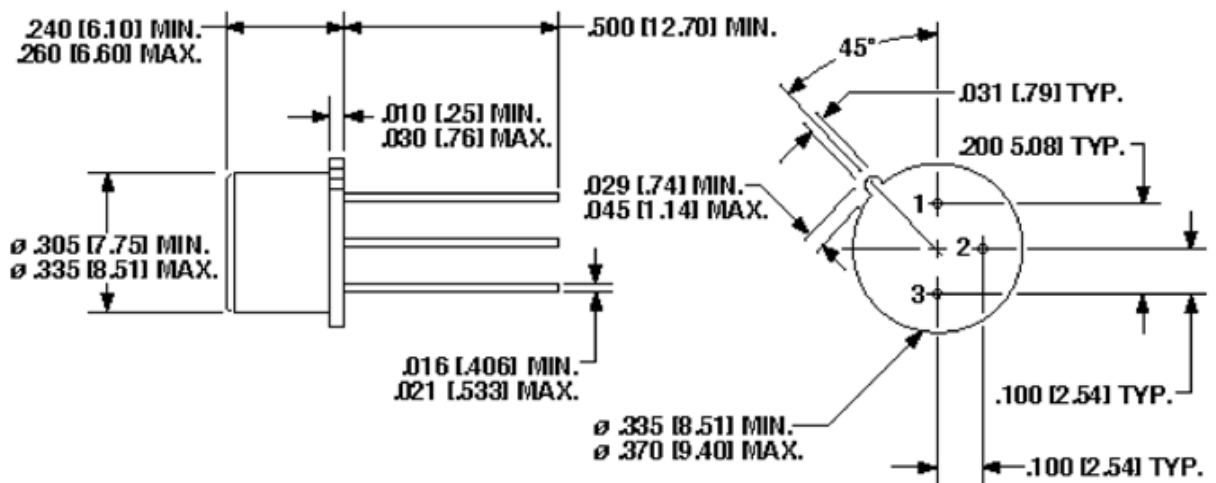
## Outline Drawings

### TO-5 Package (2N3867S, 2N3868S)



Dimensions are in inches.

### TO-39 (TO-205AD) Package (2N3867, 2N3868)



Dimensions are in inches.

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