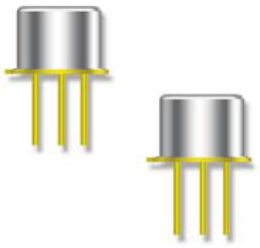
2N3867, 2N3867S & 2N3868, 2N3868S

PNP Power Silicon Transistor

Rev. V1

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/545
- TO-5 Package: 2N3867, 2N3868
- TO-39 (TO-205AD) Package: 2N3867S, 2N3868S



Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Base Breakdown Voltage	I_C = 100 µAdc, 2N3867, 2N3867S I_C = 100 µAdc, 2N3868, 2N3868S	$V_{(BR)CEO}$	Vdc	40 60	—
Collector - Emitter Breakdown Voltage	I_C = 20 mAdc, 2N3867, 2N3867S I_C = 20 mAdc, 2N3868, 2N3868S	$V_{(BR)CEO}$	Vdc	40 60	—
Emitter - Base Breakdown Voltage	I_C = 100 mAdc	$V_{(BR)EBO}$	Vdc	40	—
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}	µAdc	—	1.0 1.0
Collector - Base Cutoff Current	V_{CB} = 60 Vdc, 2N3867, 2N3867S V_{CB} = 80 Vdc, 2N3868, 2N3868S	I_{CEO}	µAdc	—	100
Emitter - Base Cutoff Current	V_{EB} = 4.0 Vdc	I_{EBO}	µAdc	—	100
On Characteristics[1]					
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 I_C = 2.5 Adc, I_B = 250 mAdc	$V_{BE(SAT)}$	Vdc	—	1.0 1.4 2.0

1. Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤2.0%.

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Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = 100 mAdc, V_{CE} = 5.0 Vdc, f = 20 MHz	$\lvert h_{FE} \rvert$	-	3	12
Output Capacitance	V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{OBO}	pF	—	120
Input Capacitance	V_{CB} = 3 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{IBO}	pF	—	800
Switching Characteristics					
Delay Time	V_{CC} = -30 Vdc, V_{EB} = 0	T_D	ns	—	35
Rise Time	I_C = 1.5 Adc, I_{B1} = 150 mAdc	T_R	ns	—	65
Storage Time	V_{CC} = -30 Vdc, V_{EB} = 0	T_S	ns	—	500
Fall Time	I_C = 1.5 Adc, I_{B1} = 150 mAdc	T_F	ns	—	100
Turn-On Time	V_{CC} = 30, I_C = 1.5 Adc, I_B = 150 mAdc	T_{ON}	ns	—	100
Turn-Off Time	V_{CC} = 30, I_C = 1.5 Adc, I_B = 150 mAdc	T_{OFF}	ns	—	100
Safe Operating Area					
DC Tests:	T_C = +25°C, I Cycle, t = 1.0 s				
Test 1:	V_{CE} = 3.3 Vdc, I_C = 3 Adc				
Test 2:	V_{CE} = 40 Vdc, I_C = 160 mAdc, 2N3867, 2N3867S				
Test 3:	V_{CE} = 60 Vdc, I_C = 80 mAdc, 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 Adc
Total Power Dissipation @ T_A = 25°C[2] @ T_C = 25°C[3]	P_T	1 W 10 W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-55°C to +200°C

2. Derate linearly 5.71 mW / °C for T_A >+25°C.
3. Derate linearly 57.1 mW / °C for T_C >+25°C.

Thermal Characteristics

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

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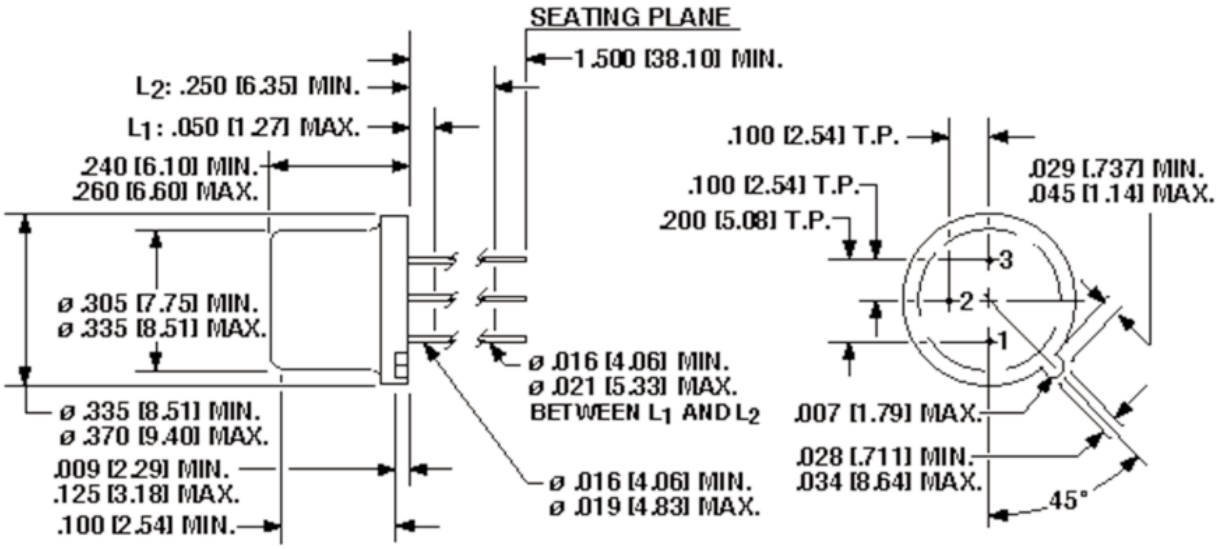
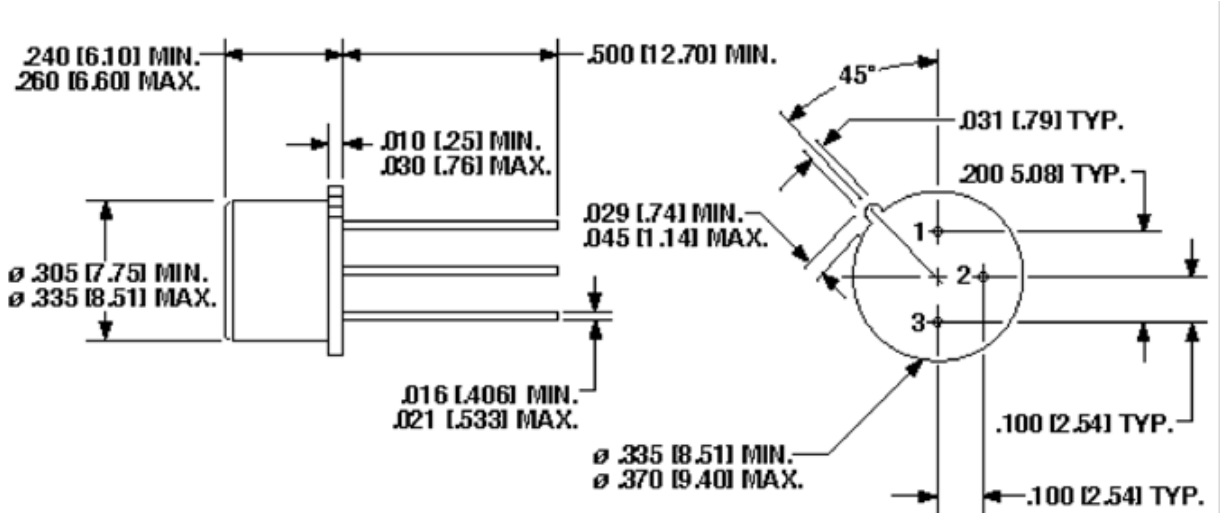
Outline Drawings

TO-5 Package (2N3867S, 2N3868S)



Dimensions are in inches.

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



Dimensions are in inches.