

# NPN Power Silicon Transistor

## 2N3766 & 2N3767



### Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/518
- TO-66 (TO-213AA) Package



### Maximum Ratings

Ratings	Symbol	2N3766	2N3767	Units
Collector - Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector - Base Voltage	$V_{CBO}$	80	100	Vdc
Emitter - Base Voltage	$V_{EBO}$	6.0		Vdc
Base Current	$I_B$	2.0		Adc
Collector Current	$I_C$	4.0		Adc
Total Power Dissipation @ $T_C = +25^\circ\text{C}$ (1)	$P_T$	25		W
Operating & Storage Temperature Range	$T_{op}, T_{stg}$	-65 to +200		$^\circ\text{C}$

### Thermal Characteristics

Characteristics	Symbol	Maximum	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.66	$^\circ\text{C}/\text{W}$

1) Derate linearly 143 mW/ $^\circ\text{C}$  between  $T_C = +25^\circ\text{C}$  and  $T_C = +200^\circ\text{C}$

### Electrical Characteristics ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

OFF Characteristics	Symbol	Minimum	Maximum	Units
Collector - Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	$V_{(BR)CEO}$	2N3766 60	---	Vdc
2N3767 80				
Collector - Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}$	$I_{CEO}$	2N3766 ---	500 500	$\mu\text{Adc}$
2N3767				
Collector - Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	$I_{CEX}$	2N3766 ---	10	$\mu\text{Adc}$
2N3767				
Collector - Base Cutoff Current $V_{CB} = 80 \text{ Vdc}$ $V_{CB} = 100 \text{ Vdc}$	$I_{CBO}$	2N3766 ---	10 10	$\mu\text{Adc}$
2N3767				
Emitter - Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$	$I_{EBO}$	---	500	$\mu\text{Adc}$

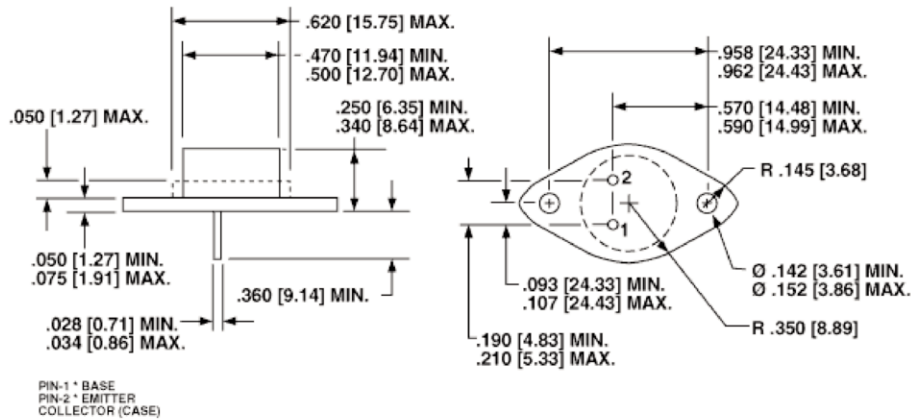


**Electrical Characteristics -con't**

<b>ON Characteristics (2)</b>				
	Symbol	Minimum	Maximum	Unit
Forward Current Transfer Ratio $I_C = 50 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 500 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}, V_{CE} = 10.0 \text{ Vdc}$	$H_{FE}$	30 40 20	160	
Collector - Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$ $I_C = 0.5 \text{ Adc}, I_B = 0.5 \text{ Adc}$	$V_{CE(sat)}$	--- ---	2.5 1.0	Vdc
Base-Emitter Voltage $I_C = 1.0 \text{ Adc}, V_{CE} = 10.0 \text{ Vdc}$	$V_{BE(on)}$	---	1.5	Vdc
<b>DYNAMIC Characteristics</b>				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 500 \text{ mAdc}, V_{CE} = 10.0 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	1.0	8.0	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 0.1 \text{ MHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$	---	50	pF
<b>Switching Characteristics</b>				
Turn-on Time $V_{CC} = 30 \text{ Vdc}, I_C = 0.5 \text{ Adc}, I_{B1} = 0.05 \text{ Adc}$	$t_{on}$	---	0.25	$\mu\text{s}$
Turn-Off Time $V_{CC} = 30 \text{ Vdc}, I_C = 0.5 \text{ Adc}, I_{B1} = -I_{B2} = 0.05 \text{ Adc}$	$t_{off}$	---	2.5	$\mu\text{s}$
<b>SAFE OPERATING AREA</b>				
<b>DC Tests:</b>	$T_C = +25 \text{ }^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$			
<b>Test 1:</b>	$V_{CE} = 6.22 \text{ Vdc}, I_C = 4.0 \text{ Adc}$			
<b>Test 2:</b>	$V_{CE} = 20 \text{ Vdc}, I_C = 1.25 \text{ Adc}$			
<b>Test 3:</b>	$V_{CE} = 50 \text{ Vdc}, I_C = 150 \text{ mAdc}$	2N3766		
	$V_{CE} = 65 \text{ Vdc}, I_C = 150 \text{ mAdc}$	2N3767		

(2) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

Outline Drawing



NOTE: Dimensions in Inches [mm]

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