

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/518

### Devices

2N3766

2N3767

### Qualified Level

JAN  
JANTX  
JANTXV

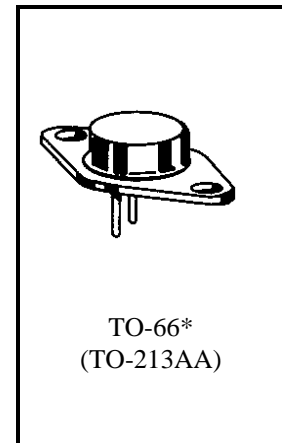
### MAXIMUM RATINGS

Ratings	Symbol	2N3766	2N3767	Units
Collector-Emitter Voltage	$V_{CE0}$	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	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7.0	$^{\circ}\text{C}/\text{W}$

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



\*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	2N3766 2N3767	$V_{(BR)CE0}$	60 80	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}$	2N3766 2N3767	$I_{CE0}$	500 500	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N3766 2N3767	$I_{CEX}$	10 10	$\mu\text{Adc}$
Collector-Base Cutoff Current $V_{CB} = 80 \text{ Vdc}$ $V_{CB} = 100 \text{ Vdc}$	2N3766 2N3767	$I_{CBO}$	10 10	$\mu\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$		$I_{EBO}$	500	$\mu\text{Adc}$

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS <sup>(2)</sup></b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 50 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> I <sub>C</sub> = 1.0 A <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub>	h <sub>FE</sub>	30 40 20	160	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 1.0 A <sub>dc</sub> , I <sub>B</sub> = 0.1 A <sub>dc</sub> I <sub>C</sub> = 0.5 A <sub>dc</sub> , I <sub>B</sub> = 0.05 A <sub>dc</sub>	V <sub>CE(sat)</sub>		2.5 1.0	V <sub>dc</sub>
Base-Emitter Voltage I <sub>C</sub> = 1.0 A <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub>	V <sub>BE(on)</sub>		1.5	V <sub>dc</sub>

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> , f = 10 MHz	h <sub>fe</sub>	1.0	8.0	
Output Capacitance V <sub>CB</sub> = 10 V <sub>dc</sub> , I <sub>E</sub> = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		50	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 V <sub>dc</sub> ; I <sub>C</sub> = 0.5 A <sub>dc</sub> ; I <sub>B</sub> = 0.05 A <sub>dc</sub>	t <sub>on</sub>		0.25	μs
Turn-Off Time V <sub>CC</sub> = 30 V <sub>dc</sub> ; I <sub>C</sub> = 0.5 A <sub>dc</sub> ; I <sub>B</sub> = I <sub>B</sub> = 0.05 A <sub>dc</sub>	t <sub>off</sub>		2.5	μs

**SAFE OPERATING AREA**

<b>DC Tests</b> T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s	
<b>Test 1</b> V <sub>CE</sub> = 6.25 V <sub>dc</sub> , I <sub>C</sub> = 4.0 A <sub>dc</sub>	
<b>Test 2</b> V <sub>CE</sub> = 20 V <sub>dc</sub> , I <sub>C</sub> = 1.25 A <sub>dc</sub>	
<b>Test 3</b> V <sub>CE</sub> = 50 V <sub>dc</sub> , I <sub>C</sub> = 150 mA <sub>dc</sub> 2N3766 V <sub>CE</sub> = 65 V <sub>dc</sub> , I <sub>C</sub> = 150 mA <sub>dc</sub> 2N3767	

(2) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.

