

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/518

Devices

2N3766

2N3767

Qualified Level

JAN
JANTX
JANTXV

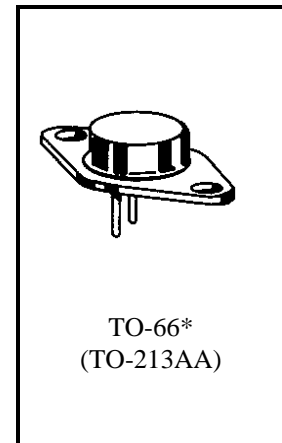
MAXIMUM RATINGS

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	μAdc
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	μAdc
Collector-Base Cutoff Current $V_{CB} = 80 \text{ Vdc}$ $V_{CB} = 100 \text{ Vdc}$	2N3766 2N3767	I_{CBO}	10 10	μAdc
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$		I_{EBO}	500	μAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽²⁾				
Forward-Current Transfer Ratio I _C = 50 mA _{dc} , V _{CE} = 5.0 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 5.0 V _{dc} I _C = 1.0 A _{dc} , V _{CE} = 10 V _{dc}	h _{FE}	30 40 20	160	
Collector-Emitter Saturation Voltage I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc} I _C = 0.5 A _{dc} , I _B = 0.05 A _{dc}	V _{CE(sat)}		2.5 1.0	V _{dc}
Base-Emitter Voltage I _C = 1.0 A _{dc} , V _{CE} = 10 V _{dc}	V _{BE(on)}		1.5	V _{dc}

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 500 mA _{dc} , V _{CE} = 10 V _{dc} , f = 10 MHz	h _{fe}	1.0	8.0	
Output Capacitance V _{CB} = 10 V _{dc} , I _E = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C _{obo}		50	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 30 V _{dc} ; I _C = 0.5 A _{dc} ; I _B = 0.05 A _{dc}	t _{on}		0.25	μs
Turn-Off Time V _{CC} = 30 V _{dc} ; I _C = 0.5 A _{dc} ; I _B = I _B = 0.05 A _{dc}	t _{off}		2.5	μs

SAFE OPERATING AREA

DC Tests T _C = +25°C, 1 Cycle, t = 1.0 s	
Test 1 V _{CE} = 6.25 V _{dc} , I _C = 4.0 A _{dc}	
Test 2 V _{CE} = 20 V _{dc} , I _C = 1.25 A _{dc}	
Test 3 V _{CE} = 50 V _{dc} , I _C = 150 mA _{dc} 2N3766 V _{CE} = 65 V _{dc} , I _C = 150 mA _{dc} 2N3767	

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

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