

NPN HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/518

Devices

2N3771

2N3772

Qualified Level

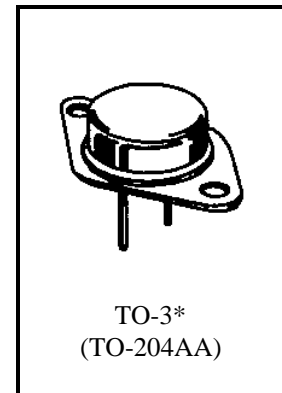
JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	2N3771	2N3772	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	Vdc
Collector-Base Voltage	V_{CBO}	50	100	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	7.0	Vdc
Base Current	I_B	7.5	5.0	Adc
Collector Current	I_C	30	20	Adc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾	6.0	W
		@ $T_C = +25^{\circ}\text{C}$ ⁽²⁾	150	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^{\circ}\text{C}$

1) Derate linearly 34.2 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly 857 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Base Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N3771 2N3772	$V_{(BR)CEO}$	40 60	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}, R_{BE} = 100 \Omega$	2N3771 2N3772	$V_{(BR)CER}$	45 70	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}, V_{BE} = -1.5 \text{ Vdc}$	2N3771 2N3772	$V_{(BR)CEX}$	50 90	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 30 \text{ Vdc}$ $V_{CE} = 50 \text{ Vdc}$	2N3771 2N3772	I_{CEO}	5.0 5.0	mAdc
Emitter-Base Cutoff Current $V_{BE} = 7.0 \text{ Vdc}$	2N3771 2N3772	I_{EBO}	2.0	mAdc
Collector-Emitter Cutoff Current $V_{BE} = 1.5 \text{ Vdc}, V_{CE} = 50 \text{ Vdc}$ $V_{BE} = 1.5 \text{ Vdc}, V_{CE} = 100 \text{ Vdc}$	2N3771 2N3772	I_{CEX}	500 500	μAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾					
Forward-Current Transfer Ratio I _C = 15 Adc, V _{CE} = 4.0 Vdc I _C = 10 Adc, V _{CE} = 4.0 Vdc I _C = 1.0 Adc, V _{CE} = 4.0 Vdc	2N3771 2N3772 Both	h _{FE}	15 15 40	60 60 -	
Collector-Emitter Saturation Voltage I _C = 15 Adc, I _B = 1.5 Adc I _C = 30 Adc, I _B = 6.0 Adc I _C = 10 Adc, I _B = 1.0 Adc I _C = 20 Adc, I _B = 4.0 Adc	2N3771 2N3771 2N3772 2N3772	V _{CE(sat)}		1.5 4.0 1.2 4.0	Vdc
Base-Emitter Voltage (non-saturated) I _C = 15 Adc, V _{CE} = 4.0 Vdc I _C = 10 Adc, V _{CE} = 4.0 Vdc	2N3771 2N3772	V _{BE}		2.3 2.0	Vdc

DYNAMIC CHARACTERISTICS

Small-Signal Cutoff Frequency I _C = 1.0 Adc, V _{CE} = 10 Vdc, f = 1.0 kHz		h _{fe}	40		
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer I _C = 1.0 Adc, V _{CE} = 4.0 Vdc, f = 100 kHz		h _{fe}	6.0	30	
Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C _{obo}		1200	p ^f

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 30 Vdc; I _C = 15 Adc; I _{B1} = 1.5 Adc V _{CC} = 30 Vdc; I _C = 10 Adc; I _{B1} = 1.0 Adc	2N3771 2N3772	t _{on}		10 8.0	μs
Turn-Off Time V _{CC} = 30 Vdc; I _C = 15 Adc; I _{B1} = 1.5 Adc; I _{B2} = -1.5 Adc V _{CC} = 30 Vdc; I _C = 10 Adc; I _{B1} = 1.0 Adc; I _{B2} = -1.0 Adc	2N3771 2N3772	t _{off}		12 10	μs

SAFE OPERATING AREA**DC Tests**T_C = +25°C, 1 Cycle, t = 1.0 s**Test 1 (2N3771 only)**V_{CE} = 5.0 Vdc, I_C = 30 Adc**Test 2 (2N3771 only)**V_{CE} = 40 Vdc, I_C = 3.75 Adc**Test 3 (2N3772 only)**V_{CE} = 7.5 Vdc, I_C = 20 Adc**Test 4 (2N3772 only)**V_{CE} = 60 Vdc, I_C = 2.5 Adc**Clamped Inductive**T_A = +25°C; duty cycle ≤ 10%; R_S = 0.1 Ω**Test 1 (2N3771 only)**R_{BB1} = 2.0 Ω; V_{BB1} ≤ 14 Vdc; R_{BB2} = 100 Ω; V_{CC} = 20±5.0 Vdc; V_{BB2} = 1.5 Vdc; I_C = 30 Adc; R_L ≤ 0.67 Ω; L = 5.0 mH**Test 2 (2N3772 only)**R_{BB1} = 2.0 Ω; V_{BB1} ≤ 10 Vdc; R_{BB2} = 100 Ω; V_{CC} = 40±5.0 Vdc; V_{BB2} = 1.5 Vdc; I_C = 20 Adc; R_L ≤ 2.0 Ω; L = 5.0 mH

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

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