Microsemi LAWRENCE

TECHNICAL DATA

NPN HIGH POWER SILICON TRANSISTOR

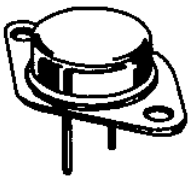
Qualified per MIL-PRF-19500/518

Devices		*Qualified Level*
2N3771	**2N3772**	**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 @ $T_A = +25^0C$ (1) @ $T_C = +25^0C$ (2)	P_T	6.0 150		W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

1) Derate linearly 34.2 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly 857 mW/^{0}C for $T_C > +25^0C$



TO-3*
(TO-204AA)

*See Appendix A for Package Outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

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

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
ON CHARACTERISTICS [3]					
Forward-Current Transfer Ratio		h_{FE}			
I_C = 15 Adc, V_{CE} = 4.0 Vdc	2N3771		15	60	
I_C = 10 Adc, V_{CE} = 4.0 Vdc	2N3772		15	60	
I_C = 1.0 Adc, V_{CE} = 4.0 Vdc	Both		40	-	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			
I_C = 15 Adc, I_B = 1.5 Adc	2N3771			1.5	Vdc
I_C = 30 Adc, I_B = 6.0 Adc	2N3771			4.0	
I_C = 10 Adc, I_B = 1.0 Adc	2N3772			1.2	
I_C = 20 Adc, I_B = 4.0 Adc	2N3772			4.0	
Base-Emitter Voltage (non-saturated)		V_{BE}			
I_C = 15 Adc, V_{CE} = 4.0 Vdc	2N3771			2.3	Vdc
I_C = 10 Adc, V_{CE} = 4.0 Vdc	2N3772			2.0	
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		$\lvert h_{fe} \rvert$	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	2N3771	t_{on}		10	µs
V_{CC} = 30 Vdc; I_C = 10 Adc; I_{B1}= 1.0 Adc	2N3772			8.0	
Turn-Off Time					
V_{CC} = 30 Vdc; I_C = 15 Adc; I_{B1} =1.5 Adc; I_{B2} = -1.5 Adc	2N3771	t_{off}		12	µs
V_{CC} = 30 Vdc; I_C = 10 Adc; I_{B1} = 1.0 Adc; I_{B2} = -1.0 Adc	2N3772			10	

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}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^{0}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%.