

Product Overview

Qualified per MIL-PRF-19500/518.

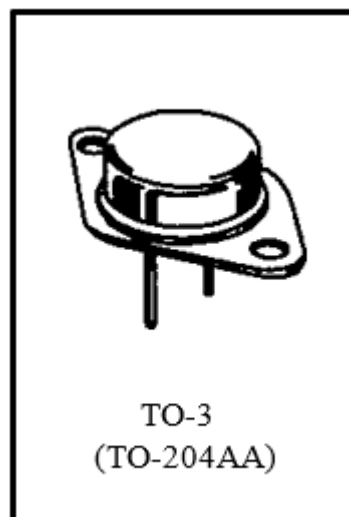
Devices

- 2N3771
- 2N3772

Qualified Level

- JANTX
- JANTXV

Figure 1. TO-3 (TO-204AA)



Maximum Ratings

Table 1. Maximum Ratings at 25 °C Unless Otherwise Noted

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	at $T_A = +25\text{ °C}$ ¹		6.0	W
		at $T_C = +25\text{ °C}$ ²		150	W
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200		°C	

Notes:

1. Derate linearly 34.2 mW/°C for $T_A > +25\text{ °C}$.
2. Derate linearly 857 mW/°C for $T_C > +25\text{ °C}$.

1. Electrical Characteristics

Table 1-1. Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Characteristics	Symbol	Min.	Max.	Unit	
Off Characteristics					
Collector-Base Breakdown Voltage $I_C = 200\text{ mA}_{dc}$	2N3771 2N3772	$V_{(BR)CEO}$	40 60	— —	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200\text{ mA}_{dc}$, $R_{BE} = 100\Omega$	2N3771 2N3772	$V_{(BR)CER}$	45 70	— —	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200\text{ mA}_{dc}$, $V_{BE} = -1.5\text{ Vdc}$	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}	— —	20 20	μAdc

1.1 2N3771, 2N3772 JAN SERIES

Table 1-2. Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Characteristics	Symbol	Min.	Max.	Unit
On Characteristics ¹				
Forward-Current Transfer Ratio $I_C = 15\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ 2N3771 $I_C = 10\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ 2N3772 $I_C = 1.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ Both	h_{FE}	15 15 40	60 60 —	—
Collector-Emitter Saturation Voltage $I_C = 15\text{ Adc}$, $I_B = 1.5\text{ Adc}$ 2N3771 $I_C = 30\text{ Adc}$, $I_B = 6.0\text{ Adc}$ 2N3771 $I_C = 10\text{ Adc}$, $I_B = 1.0\text{ Adc}$ 2N3772 $I_C = 20\text{ Adc}$, $I_B = 4.0\text{ Adc}$ 2N3772	$V_{CE(sat)}$	—	1.5 4.0 1.2 4.0	Vdc
Base-Emitter Voltage (non-saturated) $I_C = 15\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ 2N3771 $I_C = 10\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ 2N3772	V_{BE}	—	2.3 2.0	Vdc
Dynamic Characteristics				
Small-Signal Cutoff Frequency $I_C = 1.0\text{ Adc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$	h_{fe}	40	—	—
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer $I_C = 1.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$, $f = 100\text{ kHz}$	$ h_{fe} $	6.0	30	—
Output Capacitance $V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $100\text{ kHz} \leq f \leq 1.0\text{ MHz}$	C_{obo}	—	1200	$\text{p}f$

Table 1-2. Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted) (continued)

Characteristics	Symbol	Min.	Max.	Unit
Switching Characteristics				
Turn-On Time				
$V_{CC} = 30\text{ Vdc}; I_C = 15\text{ Adc}; I_{B1} = 1.5\text{ Adc}$	2N3771		10	μs
$V_{CC} = 30\text{ Vdc}; I_C = 10\text{ Adc}; I_{B1} = 1.0\text{ Adc}$	2N3772	—	8.0	
Turn-Off Time				
$V_{CC} = 30\text{ Vdc}; I_C = 15\text{ Adc}; I_{B1} = 1.5\text{ Adc}; I_{B2} = -1.5\text{ Adc}$	2N3771		12	μs
$V_{CC} = 30\text{ Vdc}; I_C = 10\text{ Adc}; I_{B1} = 1.0\text{ Adc}; I_{B2} = -1.0\text{ Adc}$	2N3772	—	10	
Safe Operating Area				
DC Tests				
$T_C = +25\text{ }^\circ\text{C}$, 1 Cycle, $t = 1.0\text{ s}$				
Test 1 (2N3771 only)				
$V_{CE} = 5.0\text{ Vdc}, I_C = 30\text{ Adc}$				
Test 2 (2N3771 only)				
$V_{CE} = 40\text{ Vdc}, I_C = 3.75\text{ Adc}$				
Test 3 (2N3772 only)				
$V_{CE} = 7.5\text{ Vdc}, I_C = 20\text{ Adc}$				
Test 4 (2N3772 only)				
$V_{CE} = 60\text{ Vdc}, I_C = 2.5\text{ Adc}$				
Clamped Inductive				
$T_A = +25^\circ\text{C}$; duty cycle $\leq 10\%$; $R_S = 0.1\Omega$				
Test 1 (2N3771 only)				
$R_{BB1} = 2.0\Omega; V_{BB1} \leq 14\text{ Vdc}; R_{BB2} = 100\Omega; V_{CC} = 20 \pm 5.0\text{ Vdc}; V_{BB2} = 1.5\text{ Vdc}; I_C = 30\text{ Adc}; R_L \leq 0.67\Omega; L = 5.0\text{ mH}$				
Test 2 (2N3772 only)				
$R_{BB1} = 2.0\Omega; V_{BB1} \leq 10\text{ Vdc}; R_{BB2} = 100\Omega; V_{CC} = 40 \pm 5.0\text{ Vdc}; V_{BB2} = 1.5\text{ Vdc}; I_C = 20\text{ Adc}; R_L \leq 2.0\Omega; L = 5.0\text{ mH}$				

Note:

1. Pulse Test: pulse width = $300\text{ }\mu\text{s}$, duty cycle $\leq 2.0\%$.

2. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	02/2025	Initial revision.

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