MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

2N3771*
2N3772*

*Motorola preferred device

HIGH POWER NPN SILICON POWER TRANSISTORS

. . . designed for linear amplifiers, series pass regulators, and inductive switching applications.

- Forward Biased Second Breakdown Current Capability

  $I_{S/b}$ = 3.75 Adc @ V_{CE} = 40 Vdc – 2N3771
  = 2.5 Adc @ V_{CE} = 60 Vdc – 2N3772

20 and 30 AMPERE

POWER TRANSISTORS
NPN SILICON

40 and 60 VOLTS
150 WATTS

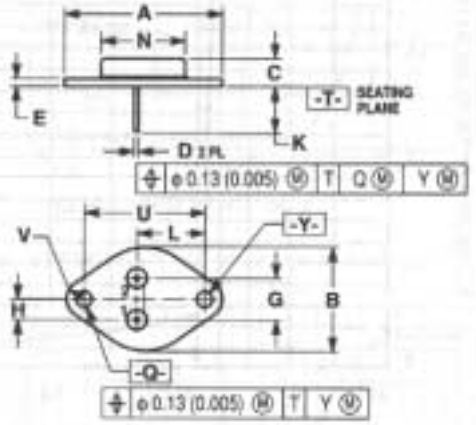
***MAXIMUM RATINGS**

Rating	Symbol	2N3771	2N3772	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	Vdc
Collector-Emitter Voltage	V_{CEX}	50	80	Vdc
Collector-Base Voltage	V_{CB}	50	100	Vdc
Emitter-Base Voltage	V_{EB}	5.0	7.0	Vdc
Collector Current — Continuous Peak	I_C	30 30	20 30	Adc
Base Current — Continuous Peak	I_B	7.5 15	5.0 15	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	150 0.855		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	2N3771, 2N3772	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.17	°C/W

* Indicates JEDEC Registered Data



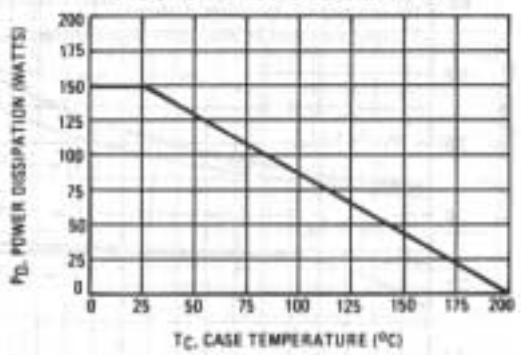
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.
4. 801-05 AND -06 OBSOLETE, NEW STANDARD 801-07.

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	39.37 REF		1.550 REF	
B	—	26.67	—	1.050
C	6.35	8.51	0.250	0.335
D	0.97	1.09	0.038	0.043
E	1.45	1.77	0.055	0.070
G	10.92 BSC		0.430 BSC	
H	5.46 BSC		0.215 BSC	
K	11.18	12.19	0.440	0.480
L	16.89 BSC		0.665 BSC	
N	—	21.08	—	0.830
Q	3.84	4.19	0.151	0.165
U	30.15 BSC		1.187 BSC	
V	3.33	4.77	0.131	0.188

STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

CASE 1-07
TO-204AA
(TO-3)

FIGURE 1 – POWER DERATING



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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
*Collector-Emitter Sustaining Voltage (1) (I_C = 0.2 Adc, I_B = 0)	2N3771	$V_{CEO(sus)}$	40	–	Vdc
	2N3772		60	–	
Collector-Emitter Sustaining Voltage (I_C = 0.2 Adc, $V_{EB(off)}$ = 1.5 Vdc, R_{BE} = 100 Ohms)	2N3771	$V_{CEX(sus)}$	50	–	Vdc
	2N3772		80	–	
Collector-Emitter Sustaining Voltage (I_C = 0.2 Adc, R_{BE} = 100 Ohms)	2N3771	$V_{CER(sus)}$	45	–	Vdc
	2N3772		70	–	
*Collector Cutoff Current		I_{CEO}			mAdc
(V_{CE} = 30 Vdc, I_B = 0)	2N3771		–	10	
(V_{CE} = 50 Vdc, I_B = 0)	2N3772		–	10	
(V_{CE} = 25 Vdc, I_B = 0)					
*Collector Cutoff Current		I_{CEV}			mAdc
(V_{CE} = 50 Vdc, $V_{EB(off)}$ = 1.5 Vdc)	2N3771		–	2.0	
(V_{CE} = 100 Vdc, $V_{EB(off)}$ = 1.5 Vdc)	2N3772		–	5.0	
(V_{CE} = 45 Vdc, $V_{EB(off)}$ = 1.5 Vdc)	2N6257		–	4.0	
(V_{CE} = 30 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)	2N3771		–	10	
	2N3772		–	10	
(V_{CE} = 45 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)					
*Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = 50 Vdc, I_E = 0)	2N3771		–	2.0	
(V_{CB} = 100 Vdc, I_E = 0)	2N3772		–	5.0	
*Emitter Cutoff Current		I_{EBO}			mAdc
(V_{BE} = 5.0 Vdc, I_C = 0)	2N3771		–	5.0	
(V_{BE} = 7.0 Vdc, I_C = 0)	2N3772		–	5.0	
***ON CHARACTERISTICS**					
DC Current Gain (1)		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 = 8.0 Adc, V_{CE} = 4.0 Vdc)					
(I_C = 30 Adc, V_{CE} = 4.0 Vdc)	2N3771		5.0	–	
(I_C = 20 Adc, V_{CE} = 4.0 Vdc)	2N3772		5.0	–	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 15 Adc, I_B = 1.5 Adc)	2N3771		–	2.0	
(I_C = 10 Adc, I_B = 1.0 Adc)	2N3772		–	1.4	
(I_C = 30 Adc, I_B = 6.0 Adc)	2N3771		–	4.0	
(I_C = 20 Adc, I_B = 4.0 Adc)	2N3772		–	4.0	
Base-Emitter On Voltage		$V_{BE(on)}$			Vdc
(I_C = 15 Adc, V_{CE} = 4.0 Vdc)	2N3771		–	2.7	
(I_C = 10 Adc, V_{CE} = 4.0 Vdc)	2N3772		–	2.2	
(I_C = 8.0 Adc, V_{CE} = 4.0 Vdc)					
***DYNAMIC CHARACTERISTICS**					
Current-Gain—Bandwidth Product (I_C = 1.0 Adc, V_{CE} = 4.0 Vdc, f_{test} = 50 kHz)		f_T	0.2	–	MHz
Small-Signal Current Gain (I_C = 1.0 Adc, V_{CE} = 4.0 Vdc, f = 1.0 kHz)		h_{fe}	40	–	–
SECOND BREAKDOWN					
Second Breakdown Energy with Base Forward Biased, t = 1.0 s (non-repetitive)		$I_{s/b}$			Adc
(V_{CE} = 40 Vdc)	2N3771		3.75	–	
(V_{CE} = 60 Vdc)	2N3772		2.5	–	

*Indicates JEDEC Registered Data

(1) Pulse Test: 300 μs, Rep. Rate 60 cps.