

2N3771 (SILICON)

2N3772

MJ3771

MJ3772

HIGH-POWER NPN SILICON TRANSISTORS

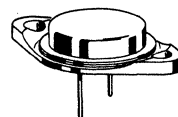
... designed for use in power amplifier and switching circuits applications.

- High DC Current Gain –
 $h_{FE} = 15$ (Min) @ $I_C = 15$ Adc – 2N3771, MJ3771
 15 (Min) @ $I_C = 10$ Adc – 2N3772, MJ3772
- Low Collector-Emitter Saturation Voltage –
 $V_{CE(sat)} = 1.0$ Vdc (Max) @ $I_C = 15$ Adc – MJ3771
 1.0 Vdc (Max) @ $I_C = 10$ Adc – MJ3772

20 AND 30 AMPERE POWER TRANSISTORS

NPN SILICON

40-60 VOLTS
150 WATTS



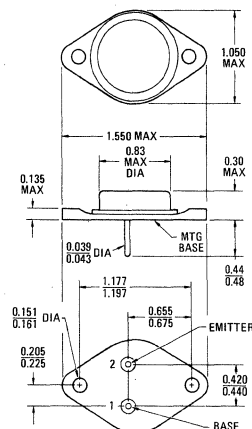
*MAXIMUM RATINGS

Rating	Symbol	2N3771 MJ3771	2N3772 MJ3772	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	I_C	30	20	Adc
Collector Current – Peak		30	30	
Base Current – Continuous	I_B	7.5	5.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	150 0.86		Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

*THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.17	$^\circ\text{C/W}$

*Indicates JEDEC Registered Data (2N3771, 2N3772).



CASE 11
TO-3

Collector Connected to Case

2N3771, 2N3772, MJ3771, MJ3772 (continued)

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
*Collector-Emitter Sustaining Voltage (Note 1) (I _C = 200 mAdc, I _B = 0)	2N3771, MJ3771 2N3772, MJ3772	V _{CEO(sus)}	40 60	— —	— —	Vdc
*Collector Cutoff Current (V _{CE} = 30 Vdc, I _B = 0) (V _{CE} = 50 Vdc, I _B = 0)	2N3771, MJ3771 2N3772, MJ3772	I _{CEO}	— —	— —	10 10	mAdc
*Collector Cutoff Current (V _{CE} = Rated V _{CB} , V _{EB(off)} = 1.5 Vdc) (V _{CE} = 30 Vdc, V _{EB(off)} = 1.5 Vdc, T _C = 150°C)	2N3771, MJ3771 2N3772, MJ3772 All Types	I _{CEX}	— — —	— — —	2.0 5.0 10	mAdc
Collector Cutoff Current *(V _{CB} = Rated V _{CB} , I _E = 0) (V _{CB} = 30 Vdc, I _E = 0, T _C = 150°C)	2N3771, MJ3771 2N3772, MJ3772 All Types	I _{CBO}	— — —	— — —	2.0 5.0 10	mAdc
*Emitter Cutoff Current (V _{BE} = Rated V _{BE} , I _C = 0)		I _{EBO}	—	—	5.0	mAdc

ON CHARACTERISTICS

*DC Current Gain (Note 1) (I _C = 15 Adc, V _{CE} = 4.0 Vdc) (I _C = 10 Adc, V _{CE} = 4.0 Vdc) (I _C = 30 Adc, V _{CE} = 4.0 Vdc) (I _C = 20 Adc, V _{CE} = 4.0 Vdc)	2N3771, MJ3771 2N3772, MJ3772 2N3771, MJ3771 2N3772, MJ3772	h _{FE}	15 15 5.0 5.0	— — — —	60 60 — —	—
*Collector-Emitter Saturation Voltage (Note 1) (I _C = 15 Adc, I _B = 1.5 Adc) (I _C = 10 Adc, I _B = 1.0 Adc) (I _C = 30 Adc, I _B = 6.0 Adc) (I _C = 20 Adc, I _B = 4.0 Adc)	2N3771 MJ3771 2N3772 MJ3772 2N3771, MJ3771 2N3772, MJ3772	V _{CE(sat)}	— — — — — —	— — — — — —	2.0 1.0 1.4 1.0 4.0 4.0	Vdc
Base-Emitter Saturation Voltage (Note 1) (I _C = 10 Adc, I _B = 1.0 Adc) (I _C = 15 Adc, I _B = 1.5 Adc) (I _C = 20 Adc, I _B = 2.0 Adc)	MJ3771, MJ3772 MJ3771, MJ3772 MJ3771, MJ3772	V _{BE(sat)}	— — —	— — —	1.7 1.8 2.5	Vdc
*Base-Emitter On Voltage (Note 1) (I _C = 15 Adc, V _{CE} = 4.0 Vdc) (I _C = 10 Adc, V _{CE} = 4.0 Vdc)	2N3771 MJ3771 2N3772 MJ3772	V _{BE(on)}	— — — —	— — — —	2.7 1.7 2.2 1.7	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain–Bandwidth Product (I _C = 1.0 Adc, V _{CE} = 4.0 Vdc, f = 50 kHz) (I _C = 1.0 Adc, V _{CE} = 10 Vdc, f = 1.0 MHz)	2N3771, 2N3772 MJ3771, MJ3772	f _T	0.2 2.0	— —	— —	MHz
Small Signal Current Gain (I _C = 10 Adc, V _{CE} = 4.0 Vdc, f = 1.0 kHz)		h _{fe}	40	—	—	—

SWITCHING CHARACTERISTICS

Rise Time	(V _{CC} = 10 Vdc, I _C = 10 Adc, I _{B1} = I _{B2} = 1.0 Adc)	MJ3771, MJ3772	t _r	—	350	—	ns
Storage Time		MJ3771, MJ3772	t _s	—	700	—	ns
Fall Time		MJ3771, MJ3772	t _f	—	300	—	ns

*Indicates JEDEC Registered Data (2N3771, 2N3772).
Note 1: Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

ACTIVE REGION DC SAFE OPERATING AREA

FIGURE 1 – 2N3771, 2N3772

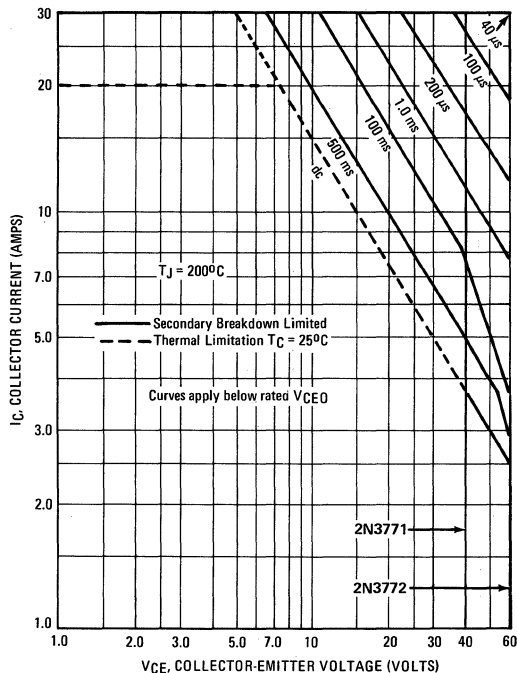
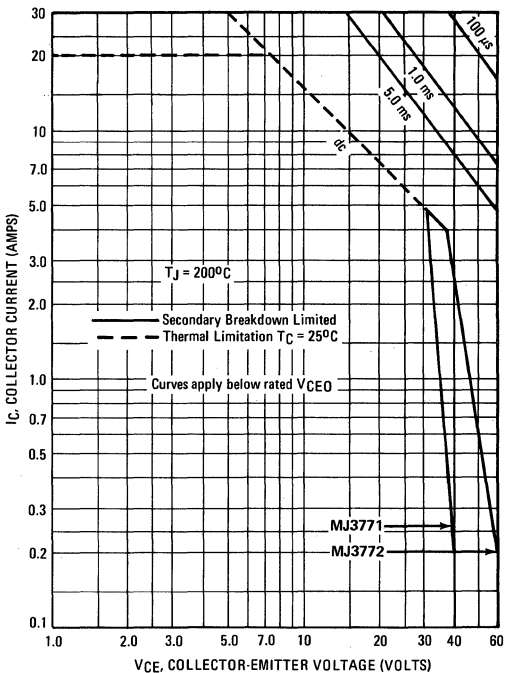


FIGURE 2 – MJ3771, MJ3772



The Safe Operating Area Curves indicate I_C – V_{CE} limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.