

### FEATURES:

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)

### MAXIMUM RATINGS

Ratings	Symbol	2N3771	2N3772	Unit
Collector-emitter voltage	$V_{CEO}$	40	60	V
Collector-emitter voltage	$V_{CEX}$	50	80	V
Collector-base voltage	$V_{CBO}$	50	100	V
Emitter-base voltage	$V_{EBO}$	5	7	V
Collector current				
Continuous	$I_C$	30	20	A
Peak		30	30	
Base current				
Continuous	$I_B$	7.5	5.0	A
Peak		15	15	
Total power dissipation @ $T_C = 25^\circ\text{C}$	$P_T$	150		W
Derate above $25^\circ\text{C}$		0.855		W/ $^\circ\text{C}$
Operating & storage junction temperature range	$T_J, T_{STG}$	-65 to +200		$^\circ\text{C}$
Maximum thermal resistance, junction-to-case	$R_{\theta JC}$	1.17		$^\circ\text{C}/\text{W}$

### ELECTRICAL CHARACTERISTICS @ $25^\circ\text{C}$ unless otherwise noted

Characteristics		Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-emitter sustaining voltage <sup>(1)</sup> ( $I_C = 0.2\text{A}, I_B = 0$ )	2N3771 2N3772	$V_{CEO(sus)}$	40 60	- -	V
Collector-emitter sustaining voltage ( $I_C = 0.2\text{A}, V_{EB(off)} = 1.5\text{V}, R_{BE} = 100\Omega$ )	2N3771 2N3772	$V_{CEX(sus)}$	50 80	- -	V
Collector-emitter sustaining voltage ( $I_C = 0.2\text{A}, R_{BE} = 100\Omega$ )	2N3771 2N3772	$V_{CER(sus)}$	45 70	- -	V
Collector cutoff current <sup>(1)</sup> ( $V_{CE} = 30\text{V}, I_B = 0$ ) ( $V_{CE} = 50\text{V}, I_B = 0$ ) ( $V_{CE} = 25\text{V}, I_B = 0$ )	2N3771 2N3772	$I_{CEO}$	- -	10 10	mA
Collector cutoff current <sup>(1)</sup> ( $V_{CE} = 50\text{V}, V_{EB(off)} = 1.5\text{V}$ ) ( $V_{CE} = 100\text{V}, V_{EB(off)} = 1.5\text{V}$ ) ( $V_{CE} = 30\text{V}, V_{EB(off)} = 1.5\text{V}, T_C = 150^\circ\text{C}$ ) ( $V_{CE} = 45\text{V}, V_{EB(off)} = 1.5\text{V}, T_C = 150^\circ\text{C}$ )	2N3771 2N3772 2N3771 2N3772	$I_{CEV}$	- - - -	2.0 5.0 10 10	mA
Collector cutoff current ( $V_{CB} = 50\text{V}, I_E = 0$ ) ( $V_{CB} = 100\text{V}, I_E = 0$ )	2N3771 2N3772	$I_{CBO}$	- -	2.0 5.0	mA

# 2N3771, 2N3772

## NPN SILICON POWER TRANSISTORS

### ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted

Characteristics		Symbol	Min	Max	Unit
<b>Emitter cutoff current</b>					
( $V_{BE} = 5.0V, I_C = 0$ )	2N3771	$I_{EBO}$	-	5.0	mA
( $V_{BE} = 7.0V, I_C = 0$ )	2N3772		-	5.0	
<b>ON CHARACTERISTICS</b>					
<b>DC current gain <sup>(1)</sup></b>					
( $I_C = 15A, V_{CE} = 4.0V$ )	2N3771	$h_{fe}$	15	60	-
( $I_C = 10A, V_{CE} = 4.0V$ )	2N3772		15	60	
( $I_C = 30A, V_{CE} = 4.0V$ )	2N3771		5.0	-	
( $I_C = 20A, V_{CE} = 4.0V$ )	2N3772		5.0	-	
<b>Collector emitter saturation voltage</b>					
( $I_C = 15A, I_B = 1.5A$ )	2N3771	$V_{CE(sat)}$	-	2.0	V
( $I_C = 10A, I_B = 1.0A$ )	2N3772		-	1.4	
( $I_C = 30A, I_B = 6.0A$ )	2N3771		-	4.0	
( $I_C = 20A, I_B = 4.0A$ )	2N3772		-	4.0	
<b>Base emitter on voltage</b>					
( $I_C = 15A, V_{CE} = 4.0V$ )	2N3771	$V_{BE(on)}$	-	2.7	V
( $I_C = 10A, V_{CE} = 4.0V$ )	2N3772		-	2.2	
<b>DYNAMIC CHARACTERISTICS <sup>(1)</sup></b>					
<b>Current gain – bandwidth product</b>					
( $I_C = 1.0A, V_{CE} = 4.0V, f_{test} = 50kHz$ )		$f_T$	0.2	-	MHz
<b>Small signal current gain</b>					
( $I_C = 1.0A, V_{CE} = 4.0V, f = 1.0kHz$ )		$h_{fe}$	40	-	-
<b>SECOND BREAKDOWN</b>					
<b>Second breakdown energy with base forward biased, t= 1.0s (non-repetitive)</b>					
( $V_{CE} = 40V$ )	2N3771	$I_{S/b}$	3.75	-	A
( $V_{CE} = 60V$ )	2N3772		2.5	-	

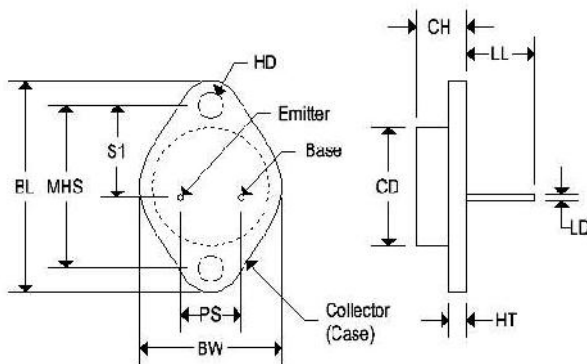
Note 1: Pulse test = 300μs, rep rate 60cps.

# 2N3771, 2N3772

## NPN SILICON POWER TRANSISTORS

### MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Pin out	See below



	Dimensions			
	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	-	1.573	-	39.960
CD	0.759	0.875	19.280	22.230
CH	0.313	0.365	7.960	9.280
LL	0.440	0.480	11.180	12.190
BW	0.992	1.050	25.200	26.670
LD	0.036	0.043	0.920	1.090
HT	0.054	0.064	1.380	1.620
MHS	1.177	1.197	29.900	30.400
SI	0.655	0.681	16.640	17.300
HD	0.153	0.172	3.880	4.360
PS	0.420	0.440	10.670	11.180

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## NPN SILICON POWER TRANSISTORS

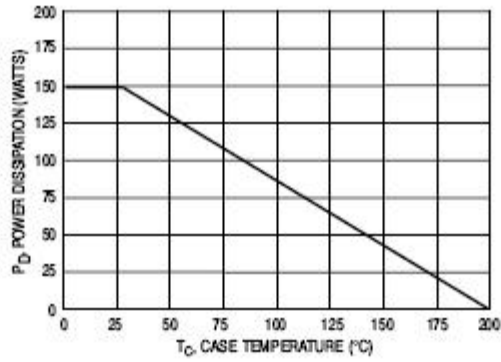


Figure 1. Power Derating

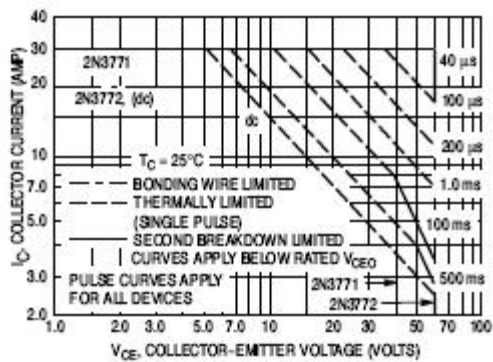
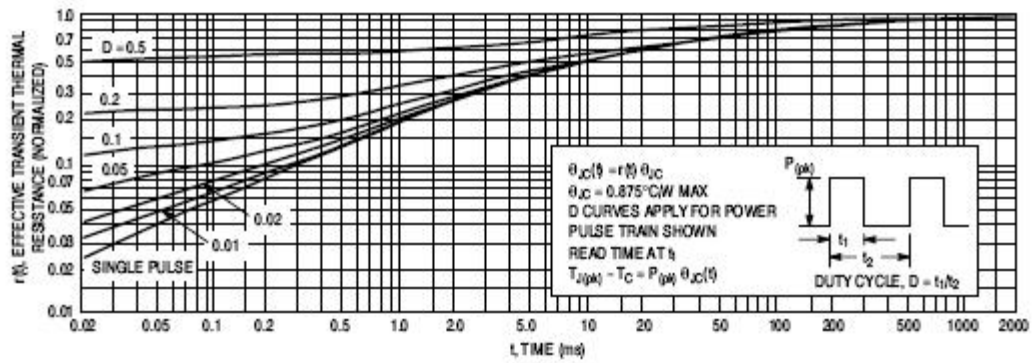


Figure 3. Active-Region Safe Operating Area  
— 2N3771, 2N3772

# 2N3771, 2N3772

## NPN SILICON POWER TRANSISTORS

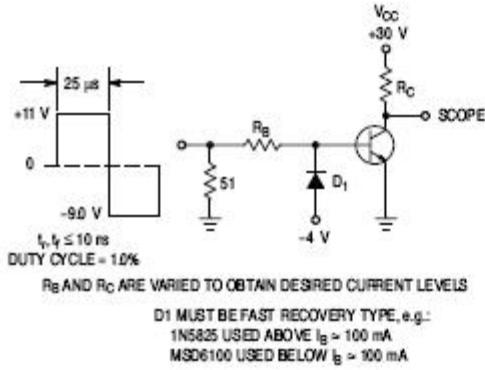


Figure 4. Switching Time Test Circuit

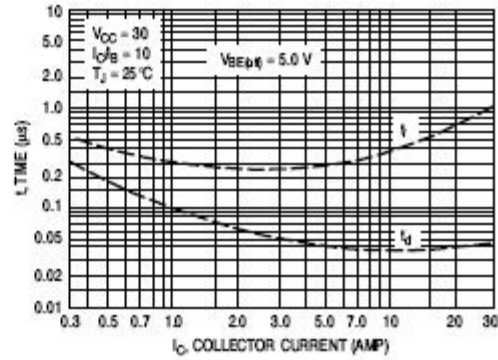


Figure 5. Turn-On Time

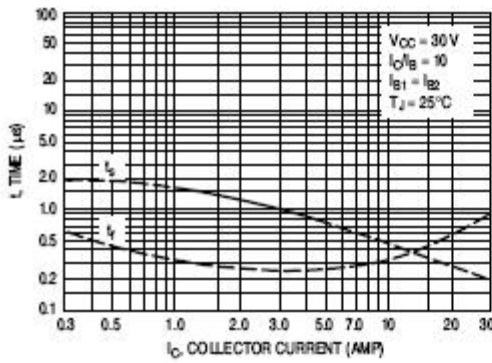


Figure 6. Turn-Off Time

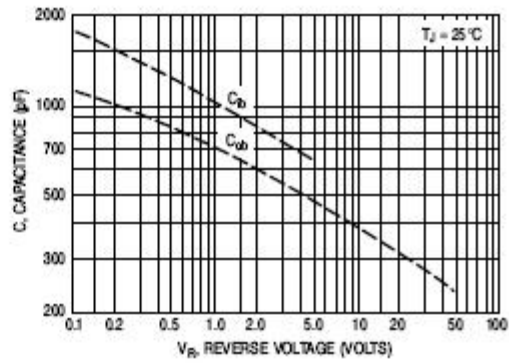


Figure 7. Capacitance

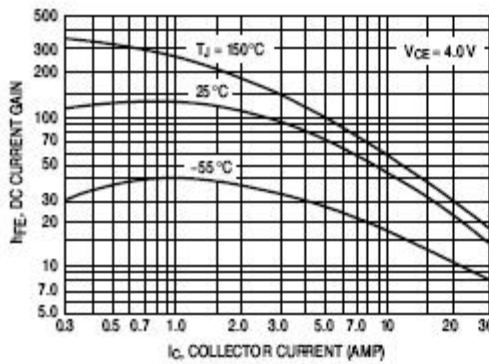


Figure 8. DC Current Gain

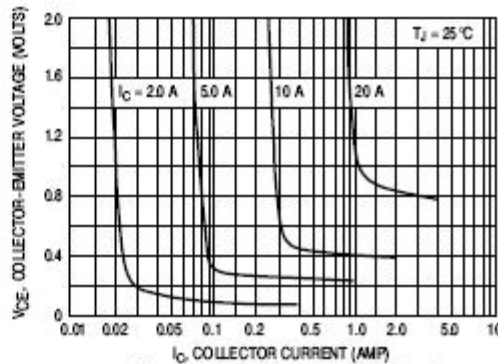


Figure 9. Collector Saturation Region