

NPN 2N3773*, PNP 2N6609

Complementary Silicon Power Transistors

The 2N3773 and 2N6609 are PowerBase™ power transistors designed for high power audio, disk head positioners and other linear applications. These devices can also be used in power switching circuits such as relay or solenoid drivers, DC-DC converters or inverters.

Features

- Pb-Free Packages are Available**
- High Safe Operating Area (100% Tested) 150 W @ 100 V
- Completely Characterized for Linear Operation
- High DC Current Gain and Low Saturation Voltage
 $h_{FE} = 15$ (Min) @ 8.0 A, 4.0 V
 $V_{CE(sat)} = 1.4$ V (Max) @ $I_C = 8.0$ A, $I_B = 0.8$ A
- For Low Distortion Complementary Designs

MAXIMUM RATINGS (Note 1)

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V_{CEO}	140	Vdc
Collector - Emitter Voltage	V_{CEX}	160	Vdc
Collector - Base Voltage	V_{CBO}	160	Vdc
Emitter - Base Voltage	V_{EBO}	7	Vdc
Collector Current	I_C		Adc
- Continuous		16	
- Peak (Note 2)		30	
Base Current	I_B		Adc
- Continuous		4	
- Peak (Note 2)		15	
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	150 0.855	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

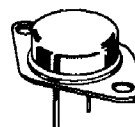
1. Indicates JEDEC Registered Data.
2. Pulse Test: Pulse Width = 5 ms, Duty Cycle $\leq 10\%$.

THERMAL CHARACTERISTICS

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

16 A COMPLEMENTARY POWER TRANSISTORS 140 V, 150 W

MARKING DIAGRAM



TO-204



- xxxx = 3773 or 6609
- A = Assembly Location
- YY = Year
- WW = Work Week



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ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS (Note 3)

Collector-Emitter Breakdown Voltage (Note 4) ($I_C = 0.2 \text{ A dc}$, $I_B = 0$)	$V_{CEO(sus)}$	140	-	Vdc
Collector-Emitter Sustaining Voltage (Note 4) ($I_C = 0.1 \text{ A dc}$, $V_{BE(off)} = 1.5 \text{ Vdc}$, $R_{BE} = 100 \text{ Ohms}$)	$V_{CEX(sus)}$	160	-	Vdc
Collector-Emitter Sustaining Voltage ($I_C = 0.2 \text{ A dc}$, $R_{BE} = 100 \text{ Ohms}$)	$V_{CER(sus)}$	150	-	Vdc
Collector Cutoff Current (Note 4) ($V_{CE} = 120 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	-	10	mA dc
Collector Cutoff Current (Note 4) ($V_{CE} = 140 \text{ Vdc}$, $V_{BE(off)} = 1.5 \text{ Vdc}$) ($V_{CE} = 140 \text{ Vdc}$, $V_{BE(off)} = 1.5 \text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	-	2 10	mA dc
Collector Cutoff Current ($V_{CB} = 140 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	2	mA dc
Emitter Cutoff Current (Note 4) ($V_{BE} = 7 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	-	5	mA dc

ON CHARACTERISTICS (Note 3)

DC Current Gain ($I_C = 8 \text{ A dc}$, $V_{CE} = 4 \text{ Vdc}$) (Note 4) ($I_C = 16 \text{ A dc}$, $V_{CE} = 4 \text{ Vdc}$)	h_{FE}	15 5	60 -	-
Collector-Emitter Saturation Voltage ($I_C = 8 \text{ A dc}$, $I_B = 800 \text{ mA dc}$) (Note 4) ($I_C = 16 \text{ A dc}$, $I_B = 3.2 \text{ A dc}$)	$V_{CE(sat)}$	-	1.4 4	Vdc
Base-Emitter On Voltage (Note 4) ($I_C = 8 \text{ A dc}$, $V_{CE} = 4 \text{ Vdc}$)	$V_{BE(on)}$	-	2.2	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common-Emitter Small-Signal, Short-Circuit, Forward Current Transfer Ratio ($I_C = 1 \text{ A}$, $f = 50 \text{ kHz}$)	$ h_{fe} $	4	-	-
Small-Signal Current Gain (Note 4) ($I_C = 1 \text{ A dc}$, $V_{CE} = 4 \text{ Vdc}$, $f = 1 \text{ kHz}$)	h_{fe}	40	-	-

SECOND BREAKDOWN CHARACTERISTICS

Second Breakdown Collector Current with Base Forward Biased $t = 1 \text{ s}$ (non-repetitive), $V_{CE} = 100 \text{ V}$, See Figure 12	$I_{S/b}$	1.5	-	A dc
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3. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.
 4. Indicates JEDEC Registered Data.