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NPN 2N3773*, PNP 2N6609

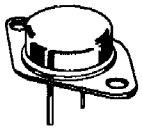
Complementary Silicon Power Transistors

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.

16 A COMPLEMENTARY POWER TRANSISTORS 140 V, 150 W

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



TO–204

MARKING DIAGRAM

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

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 – Continuous – Peak (Note 2)	I_C	 16 30	Adc
Base Current – Continuous – Peak (Note 2)	I_B	 4 15	Adc
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	150 0.855	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +200	°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 ≤ 10%.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	1.17	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS (Note 3)				
Collector−Emitter Breakdown Voltage (Note 4) (I_C = 0.2 Adc, I_B = 0)	$V_{CEO(sus)}$	140	–	Vdc
Collector−Emitter Sustaining Voltage (Note 4) (I_C = 0.1 Adc, $V_{BE(off)}$ = 1.5 Vdc, R_{BE} = 100 Ohms)	$V_{CEX(sus)}$	160	–	Vdc
Collector−Emitter Sustaining Voltage (I_C = 0.2 Adc, R_{BE} = 100 Ohms)	$V_{CER(sus)}$	150	–	Vdc
Collector Cutoff Current (Note 4) (V_{CE} = 120 Vdc, I_B = 0)	I_{CEO}	–	10	mAdc
Collector Cutoff Current (Note 4) (V_{CE} = 140 Vdc, $V_{BE(off)}$ = 1.5 Vdc) (V_{CE} = 140 Vdc, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)	I_{CEX}	 – –	 2 10	mAdc
Collector Cutoff Current (V_{CB} = 140 Vdc, I_E = 0)	I_{CBO}	–	2	mAdc
Emitter Cutoff Current (Note 4) (V_{BE} = 7 Vdc, I_C = 0)	I_{EBO}	–	5	mAdc
ON CHARACTERISTICS (Note 3)				
DC Current Gain (I_C = 8 Adc, V_{CE} = 4 Vdc) (Note 4) (I_C = 16 Adc, V_{CE} = 4 Vdc)	h_{FE}	 15 5	 60 –	–
Collector−Emitter Saturation Voltage (I_C = 8 Adc, I_B = 800 mAdc) (Note 4) (I_C = 16 Adc, I_B = 3.2 Adc)	$V_{CE(sat)}$	 – –	 1.4 4	Vdc
Base−Emitter On Voltage (Note 4) (I_C = 8 Adc, V_{CE} = 4 Vdc)	$V_{BE(on)}$	—	2.2	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common−Emitter Small−Signal, Short−Circuit, Forward Current Transfer Ratio (I_C = 1 A, f = 50 kHz)	$\|h_{fe}\|$	4	–	–
Small−Signal Current Gain (Note 4) (I_C = 1 Adc, V_{CE} = 4 Vdc, f = 1 kHz)	h_{fe}	40	–	–
SECOND BREAKDOWN CHARACTERISTICS				
Second Breakdown Collector Current with Base Forward Biased t = 1 s (non−repetitive), V_{CE} = 100 V, See Figure 12	$I_{S/b}$	1.5	–	Adc

3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.
4. Indicates JEDEC Registered Data.