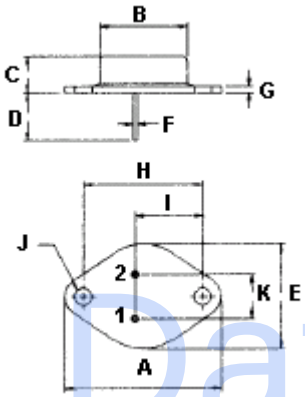
2N3773, 6609

Complementary Power Transistors

The 2N3773 and 2N6609 are power base power transistors designed for high power audio, disk head positioners, linear amplifiers, switching regulators, solenoid drivers and dc to dc converters or inverters.

Features:

- High Power Dissipation
  P_D = 150W (T_C = 25°C).
- High DC Current Gain and Low Saturation Voltage
  h_{FE} = 15 - 60 at I_C = 8A, V_{CE} = 4V
  $V_{CE(SAT)}$ = 1.4V (Maximum) at I_C = 8A, I_B = 0.8A.



Pin 1. Base
2. Emitter
Collector(Case)

Dimensions	Minimum	Maximum
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

Dimensions : Millimetres

NPN	PNP
2N3773	2N6609

16 Ampere
Complementary
Silicon Power
Transistors
140 Volts
150 Watts

TO-3

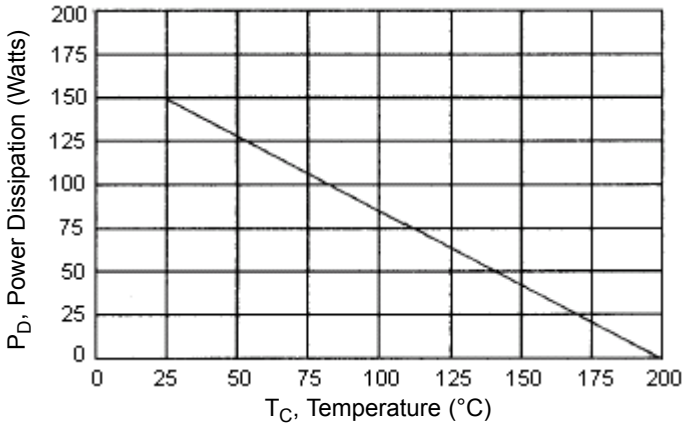
Maximum Ratings

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO(SUS)}$	140	V
Collector-Emitter Voltage	V_{CEX}	160	
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	7	
Collector Current-Continuous -Peak (1)	I_C I_{CM}	16 30	A
Base Current-Continuous -Peak (1)	I_B I_{BM}	4.0 15	
Total Power Dissipation at T_C = 25°C Derate above 25°C	P_D	150 0.857	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200	°C

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	Rθjc	1.17	°C/W

Figure - 1 Power Derating



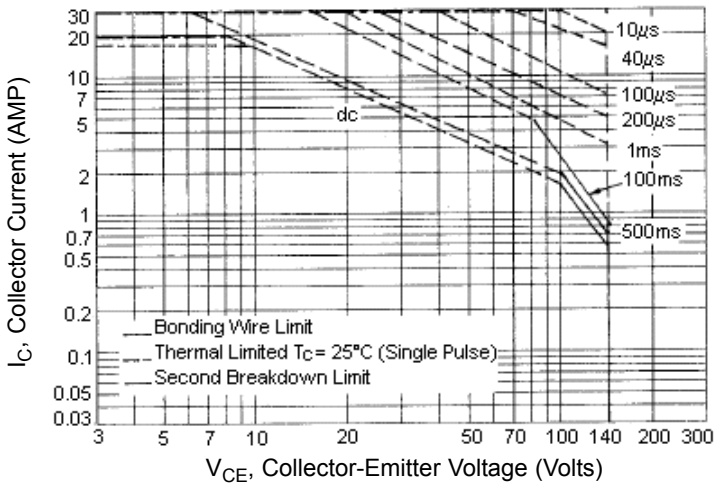
(1) Pulse Test: Pulse Width = 5ms, Duty Cycle <10%

Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) (I_C = 200mA, I_B = 0)	$V_{CEO(sus)}$	140	-	V
Collector Cutoff Current (V_{CE} = 120V, I_B = 0)	I_{CEO}	-	10	mA
Collector Cutoff Current (V_{CE} = 140V, $V_{BE(off)}$ = 1.5V)	I_{CEX}	-	2.0	
Collector Cutoff Current (V_{CB} = 140V, I_E = 0)	I_{CBO}	-		
Emitter Cutoff Current (V_{EB} = 7.0V, I_C = 0)	I_{EBO}	-	5.0	
ON Characteristics (1)				
DC Current Gain (I_C = 8.0A, V_{CE} = 4.0V) (I_C = 16A, V_{CE} = 4.0V)	h_{FE}	15 5.0	60	-
Collector-Emitter Saturation Voltage (I_C = 8.0A, I_B = 800mA) (I_C = 16A, I_B = 3.2A)	$V_{CE(sat)}$	-	1.4 4.0	V
Base-Emitter On Voltage (I_C = 8.0A, V_{CE} = 4.0V)	$V_{BE(on)}$	-	2.2	

(1) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤2.0%

Active-Region Safe Operating Area (SOA)

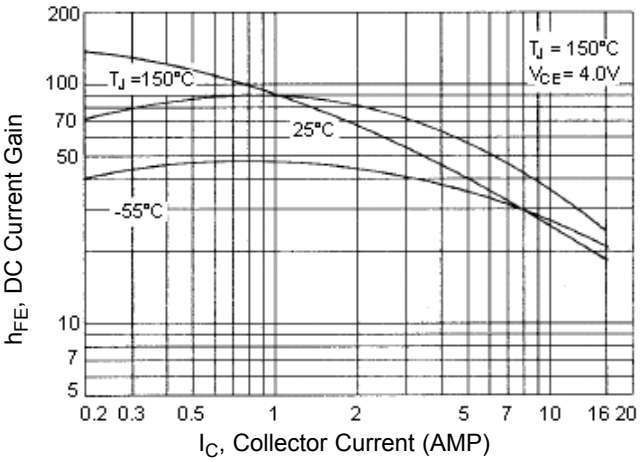


There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

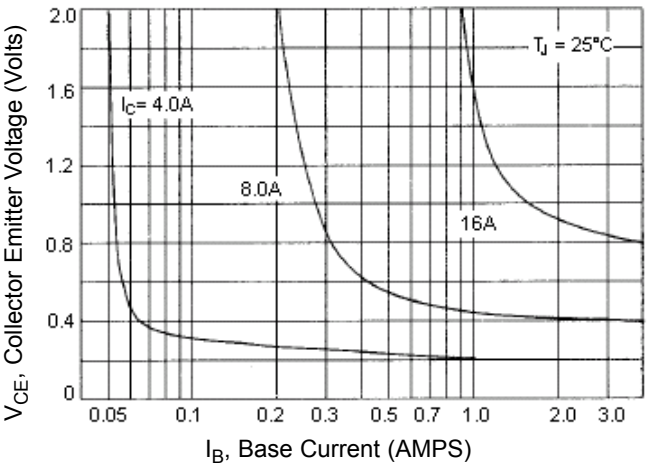
The data of SOA curve is based on $T_{J(PK)}$ = 200°C; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 200°C$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

NPN 2N3773

DC Current Gain

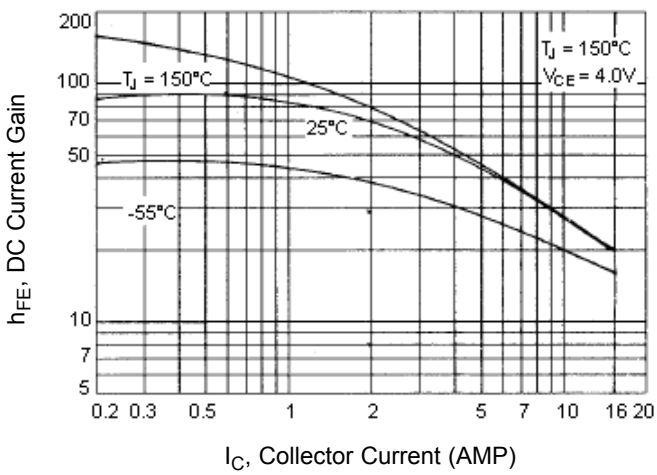


Collector Saturation Region

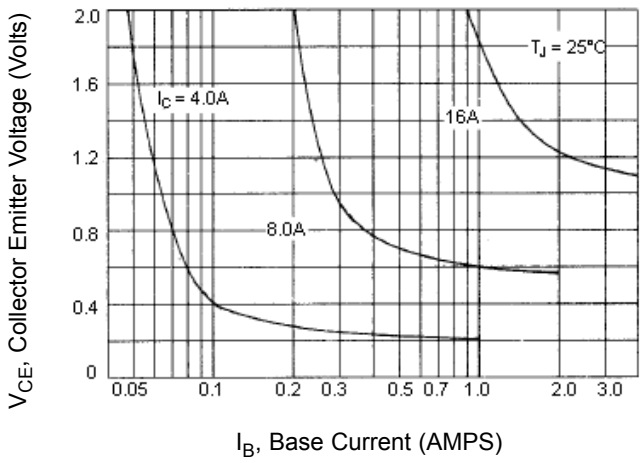


PNP 2N6609

DC Current Gain

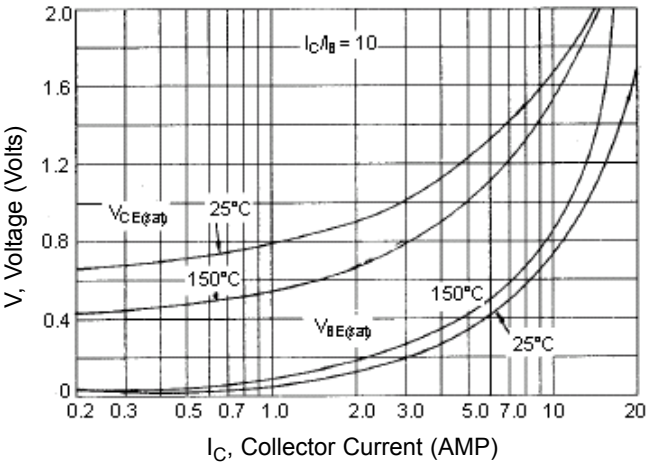


Collector Saturation Region



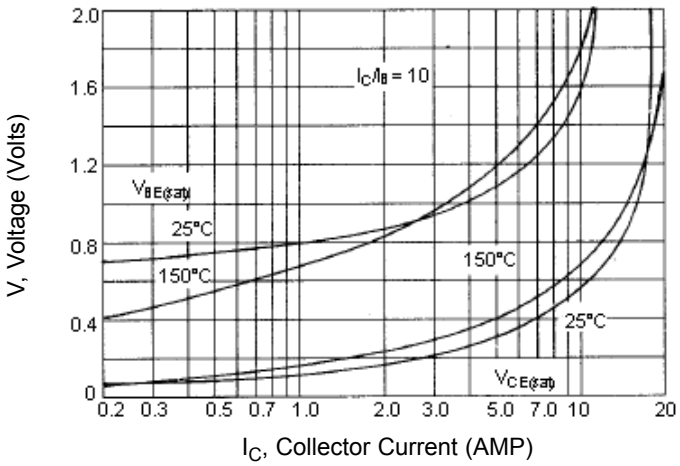
NPN 2N3773

"ON" Voltages



PNP 2N6609

"ON" Voltages



Specifications

I_C (av) maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum at I_C = 8A	P_{tot} at 25°C (W)	Package	Type	Part Number
16	140	15	150	TO-3	NPN	2N3773
					PNP	2N6609

Notes:

International Sales Offices:

AUSTRALIA – Farnell InOne
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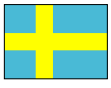

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