

Silicon Power Transistor 2N3773AR

Technical Data

Typical Applications : These devices are 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 to dc converters or inverters.

Specification Features :

- ☞ **Complementary** NPN Silicon Power Transistor
- ☞ 16 Amp / 140 V device in TO-204AA [TO-3] package
- ☞ 150 Watts device
- ☞ High safe operating area [150 W @ 100 V]
- ☞ Completely characterized for linear operation
- ☞ High DC current gain & low saturation voltage

Symbol	Parameters / Conditions	Ratings
Maximum Ratings :		
V_{CEO}	Collector- Emitter Voltage	140 Vdc
V_{CEX}	Collector- Emitter Voltage	160 Vdc
V_{CBO}	Collector - Base Voltage	160 Vdc
V_{EBO}	Emitter Base Voltage	7 Vdc
I_C	Collector Current – Continuous	16 Adc
I_{CM}	Peak : Pulse width = 5 ms , Duty Cycle 10 %	30 Adc
I_B	Base Current – Continuous	4 Adc
I_{BM}	Peak : Pulse width = 5 ms , Duty Cycle 10 %	15 Adc



Thermal Characteristics :		
R_{thjc}	Thermal resistance junction to case	1.17 °C/W
P_D	Total Power Dissipation @ $T_c = 25\text{ °C}$ Derate above 25 °C	150 Watta 0.855 W/°C
T_j & T_{stg}	Operating and Storage Junction Temperature Range	-65 °C+ 200 °C

ELECTRICAL CHARACTERISTICS :

[$T_c = 25\text{ °C}$ unless otherwise noted]

Characteristic	Symbol	Min	Typ	Max	Unit
Off Characteristics : [Pulse Test : Pulse width = 300 μs , Duty Cycle 2 %]					
Collector – Emitter Breakdown Voltage [$I_c = 0.2\text{ Adc}$, $I_B = 0$]	$V_{CEO(sus)}$	140			Vdc
Collector – Emitter Sustaining Voltage [$I_c = 0.1\text{ Adc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $R_{BE} = 100\text{ Ohms}$]	$V_{CEX(sus)}$	160			Vdc
Collector – Emitter Sustaining Voltage [$I_c = 0.2\text{ Adc}$, $R_{BE} = 100\text{ Ohms}$]	$V_{CER(sus)}$	150			Vdc
Collector Cutoff Current [$V_{CE} = 120\text{ Vdc}$, $I_B = 0$]	I_{CEO}			10	Vdc
Collector Cutoff Current [$V_{CE} = 140\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$] [$V_{CE} = 140\text{ V}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_c = 150\text{ °C}$]	I_{CEX}			2 10	mAdc
Collector Cutoff Current [$V_{CB} = 140\text{ Vdc}$, $I_E = 0$]	I_{CBO}			2	Vdc
Emitter Base Leakage [$V_{EB} = 7\text{ Vdc}$, $I_c = 0$]	I_{EBO}			5	mAdc
On Characteristics : [Pulse Test : Pulse width = 300 μs , Duty Cycle 2 %]					
DC Current Gain [$I_c = 4\text{ Adc}$, $V_{CE} = 4\text{ Vdc}$]	h_{FE}	80		110	

Collector-Emitter Saturation Voltage [$I_C = 8 \text{ A}_{dc}$, $I_B = 800 \text{ mA}_{dc}$] [$I_C = 16 \text{ A}_{dc}$, $I_B = 3.2 \text{ A}_{dc}$]	$V_{CE(sat)}$				1.4 4	Vdc
Base-Emitter Saturation Voltage [$I_C = 8 \text{ A}_{dc}$, $I_B = 4 \text{ A}_{dc}$]	$V_{BE(on)}$				2.2	Vdc

Dynamic Characteristics :						
Magnitude of Common Emitter small signal , short circuit , forward current transfer ratio [$I_C = 1 \text{ A}_{dc}$, $f=50 \text{ KHz}$]	$ h_{fe} $	4				
Small signal current gain [$I_C = 1 \text{ A}_{dc}$, $V_{CE} = 100 \text{ V}_{dc}$, $f = 1 \text{ KHz}$]	h_{fe}	40				
Second Breakdown Characteristics :						
Second Breakdown Collector Current with Base Forward Biased $t = 1 \text{ s}$ [non-repetitive] , $V_{CE} = 100 \text{ V}_{dc}$	$I_{S/b}$	1.5				A _{dc}