

2N3773, 2N4348, 2N6259

Hometaxial-Base, High-Current Silicon N-P-N Transistors

Rugged High Voltage Devices for Applications
in Industrial and Commercial Equipment

These types are hometaxial-base silicon n-p-n transistors intended for a wide variety of high-voltage high-current applications. Typical applications for these transistors include power-switching circuits, audio amplifiers, series- and shunt-regulator driver and output stages, dc-to-dc

converters, inverters, and solenoid (hammer)/relay driver service.

These devices employ the popular JEDEC TO-3 package; they differ in maximum ratings for voltage, current, and power.

Features:

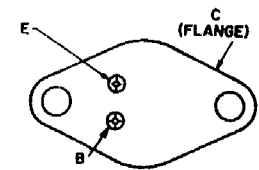
- High dissipation capability –
120 W (2N4348), 150 W (2N3773), 250 W (2N6259)
- 5-A specification for h_{FE} , V_{BE} , & $V_{CE(sat)}$ (2N4348)
- 8-A specification for
 h_{FE} , V_{BE} , & $V_{CE(sat)}$ (2N3773, 2N6259)
- V_{CEX} –
140 V min (2N4348), 160 V min (2N3773)
170 V min (2N6259)
- Low saturation voltage with high beta

MAXIMUM RATINGS, Absolute Maximum Values:

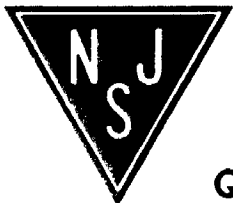
	2N4348	2N3773	2N6259	
*COLLECTOR-TO-BASE VOLTAGE V_{CBO}	140	160	170	V
COLLECTOR-TO-EMITTER VOLTAGE				
* With base open V_{CEO}	120	140	150	V
* With reverse bias (V_{BE}) of -1.5 V V_{CEX}	140	160	170	V
*EMITTER-TO-BASE VOLTAGE V_{EBO}	7	7	7	V
*COLLECTOR CURRENT:				
Continuous I_C	10	16	16	A
Peak I_{CP}	30	30	30	A
*BASE CURRENT:				
Continuous I_B	4	4	4	A
Peak I_{BP}	15	15	15	A
*TRANSISTOR DISSIPATION:				
At case temperatures up to 25°C P_T	120	150	250	W
At case temperatures above 25°C	Derate linearly to 200°C			
*TEMPERATURE RANGE:				
Storage & Operating (Junction) °C	← -65 to +200 →			
*PIN TEMPERATURE (During Soldering):				
At distances $\geq 1/32$ in. (0.8 mm) from case for 10 s max. °C	← 230 →			

* In accordance with JEDEC registration data format (J5 6, RDF 2).

TERMINAL DESIGNATIONS



JEDEC TO-3



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C Unless Otherwise Specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS						UNITS	
		VOLTAGE V dc		CURRENT A dc		2N4348		2N3773		2N6259			
		VCE	VBE	IC	IB	Min.	Max.	Min.	Max.	Min.	Max.		
Collector-Cutoff Current: With emitter open, $V_{CB} = 140$ V	I_{CBO}							2				mA	
With base-emitter junction reverse-biased	I_{CEX}	120	-1.5			2						mA	
		140	-1.5					2					
		150	-1.5							0.2			
With base-emitter junction reverse-biased and $T_C = 150^\circ\text{C}$	I_{CEX}	120	-1.5			10						mA	
		140	-1.5					10					
		150	-1.5								4		
With base open	I_{CEO}	100				20						mA	
		120						10			2		
Emitter-Cutoff Current	I_{EBO}		-7	0		5		5			2	mA	
DC Forward Current Transfer Ratio	h_{FE}	4		5 ^a		15	60						
		4		8 ^a				15	60				
		2		8 ^a		10				15	60		
		4		10 ^a				5			10		
		4		16 ^a									
Collector-to-Emitter Sustaining Voltage: With base-emitter junction reverse-biased ($R_{BE} = 100\Omega$)	$V_{CEX(sus)}$		-1.5	0.1		140		160		170		V	
With external base-to-emitter resistance ($R_{BE} = 100\Omega$)	$V_{CER(sus)}$			0.2 ^a		140		150		160		V	
With base open	$V_{CEO(sus)}$			0.2 ^a	0	120		140		150		V	
Base-to-Emitter Voltage	V_{BE}	4		5 ^a			2		2			V	
		4		8 ^a					2				
		2		8 ^a							2		
		4		10 ^a				3					
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$			5 ^a	0.5		1		1.4		1	V	
				8 ^a	0.8								
				10 ^a	1.25		2		4		2.5		
				16 ^a	3.2								
Second Breakdown Collector Current With base forward-biased and 1- μ s nonrepetitive pulse	$I_{S/b}^b$	80				1.5		1.5		2.5		A	
		100											
Second Breakdown Energy With base reverse-biased and L = 40 mH, $R_{BE} = 100\Omega$	ES_{b}^c		-1.5	2.5		0.125		0.125		0.125		J	
Magnitude of Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio (f = 50 kHz)	$ h_{fe} $	4		1		4		4		4			
Common-Emitter, Small- Signal, Short-Circuit, Forward Current Transfer Ratio (f = 1 kHz)	h_{fe}	4		1		40		40		40			
Thermal Resistance Junction-to-Case	$R_{\theta JC}$					1.46		1.17		0.7		$^\circ\text{C/W}$	

^a In accordance with JEDEC registration data format JS-6 R0F-2.

^b Pulsed; pulse duration = 300 μ s, rep. rate = 60 Hz.

^c $I_{S/b}$ is defined as the current at which second breakdown occurs at a specified collector voltage with the emitter-base junction forward biased for transistor operation in the active region.

^d ES_{b} is defined as the energy at which second breakdown occurs under specified reverse bias conditions: $ES_{b} = 1/2LI^2$ where L is a series load or leakage inductance and I is the peak collector current.