ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

2N3417
NPN Silicon Transistor
General Purpose Amplifier
TO–92 Type Package

Description:
The 2N3417 is a silicon NPN transistor in a TO–92 type package designed for use as a general purpose amplifier and switch requiring collector currents to 300mA.

Absolute Maximum Ratings: (T_A = +25°C, Note 1 unless otherwise specified)

Collector–Emitter Voltage, V_{CEO} 50V
Collector–Base Voltage, V_{CBO} 50V
Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 500mA
Total Device Dissipation, P_D 625mW
Derat Above +25°C . . . . . 5mW/°C
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . +83.3°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . +200°C/W

Note 1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.
Note 2. These ratings are based on a maximum junction temperature of +150 degrees C.
Note 3. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle. operations.

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0, Note 4	50	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10≤A, I_E = 0	50	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)CEO}$	I_E = 10≤A, I_C = 0	5	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 25V, I_E = 0	–	–	100	nA
		V_{CB} = 18V, I_E = 0, T_A = +100°C	–	–	15	≤A
Emitter Cutoff Current	I_{EBO}	V_{EB} = 5V, I_C = 0	–	–	100	nA

Note 4. Pulse test: Pulse Width ≤ 300≤s, Duty Cycle ≤ 2%.

Electrical Characteristics (Cont'd): (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 4)						
DC Current Gain	h_{FE}	V_{CE} = 4.5V, I_C = 2mA	180	–	540	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 3mA	–	–	0.3	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 50mA, I_B = 3mA	0.6	–	1.3	V
Small–Signal Characteristics						
Small–Signal Current Gain	h_{fe}	I_C = 2mA, V_{CE} = 4.V, f = 1kHz	180	–	–	

Note 4. Pulse test: Pulse Width ≤ 300≤s, Duty Cycle ≤ 2%.