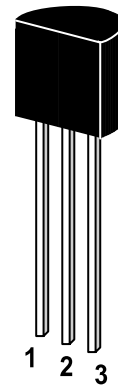


# ST 2N3416 / 2N3417

## NPN Silicon Epitaxial Planar Transistor General Purpose Amplifier

For use as general purpose amplifiers and switches requiring collector current to 300 mA.



1. Emitter 2. Collector 3. Base

TO-92 Plastic Package  
Weight approx. 0.19g

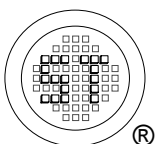
### Absolute Maximum Ratings\* ( $T_a = 25^\circ\text{C}$ )

	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	50	V
Collector Base Voltage	$V_{CBO}$	50	V
Emitter Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	500	mA
Total Device Dissipation	$P_{tot}$	625	mW
Derate above $25^\circ\text{C}$		5	mW/ $^\circ\text{C}$
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_s$	-55 to +150	$^\circ\text{C}$

\*These ratings are limiting values above which the serviceability of semiconductor device may be impaired.

Notes:

- 1) These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.



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ISO/TS 16949 : 2002 Certificate No. 05103  
ISO 14001:2004 Certificate No. 05104  
ISO 9001:2000 Certificate No. 05105

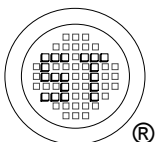
# ST 2N3416 / 2N3417

Characteristics at  $T_{amb}=25\text{ }^{\circ}\text{C}$

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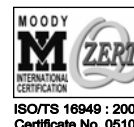
	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE}=4.5\text{V}$ , $I_C=2\text{mA}$	ST 2N3416 $h_{FE}$	75	-	225	-
	ST 2N3417 $h_{FE}$	180	-	540	-
Small Signal Current Gain at $V_{CE}=4.5\text{V}$ , $I_C=2\text{mA}$ , $f=1\text{kHz}$	ST 2N3416 $h_{fe}$	75	-	-	-
	ST 2N3417 $h_{fe}$	180	-	-	-
Collector Cutoff Current at $V_{CB}=25\text{V}$ at $V_{CB}=18\text{V}$ , $T_a=100^{\circ}\text{C}$	$I_{CBO}$	-	-	100	nA
	$I_{CBO}$	-	-	15	$\mu\text{A}$
Emitter Cutoff Current at $V_{EB}=5\text{V}$	$I_{EBO}$	-	-	100	nA
Collector Saturation Voltage at $I_C=50\text{mA}$ , $I_B=3\text{mA}$	$V_{CE(sat)}$	-	-	0.3	V
Base Saturation Voltage at $I_C=50\text{mA}$ , $I_B=3\text{mA}$	$V_{BE(sat)}$	0.6	-	1.3	V
Collector Emitter Breakdown Voltage* at $I_C=10\text{Ma}$	$V_{(BR)CEO}$	50	-	-	V
Collector Base Breakdown Voltage at $I_C=10\mu\text{A}$	$V_{(BR)CBO}$	50	-	-	V
Emitter Base Breakdown Voltage at $I_E=10\mu\text{A}$	$V_{(BR)EBO}$	5	-	-	V
Thermal Resistance Junction to Ambient	$R_{thA}$	-	-	200	$^{\circ}\text{C/W}$
Thermal Resistance Junction to Case	$R_{thC}$	-	-	83.3	$^{\circ}\text{C/W}$

\*Pulse Test : Pulse width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .



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