

**2N3442**  
**2N4347**

## HIGH POWER INDUSTRIAL TRANSISTORS

NPN silicon transistors designed for applications in industrial and commercial equipment including high fidelity audio amplifiers, series and shunts regulators and power switches.

- Low Collector-Emitter Saturation Voltage –  
 $V_{CE(sat)} = 1.0 \text{ Vdc (Max) @ } I_C = 2.0 \text{ Adc} - 2N4347$
- Collector-Emitter Sustaining Voltage-  
 $V_{CEO(sus)} = 120 \text{ Vdc (Min)} - 2N4347$   
 $140 \text{ Vdc (Min)} - 2N3442$
- Excellent Second-Breakdown Capability

### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit	
$V_{CEO}$	#Collector-Emitter Voltage		<b>2N4347</b>	120	V
			<b>2N3442</b>	140	
$V_{CB}$	Collector-Base Voltage		<b>2N4347</b>	140	Vdc
			<b>2N3442</b>	160	
$V_{EB}$	Emitter-Base Voltage		<b>2N4347</b>	7.0	Vdc
			<b>2N3442</b>		
$I_C$	Collector Current	Continuous	<b>2N4347</b>	5.0	Adc
			<b>2N3442</b>	10	
		Peak	<b>2N4347</b>	10	
			<b>2N3442</b>	15 (**)	
$I_B$	Base Current	Continuous	<b>2N4347</b>	3.0	Adc
			<b>2N3442</b>	7.0	
		Peak	<b>2N4347</b>	8.0	
			<b>2N3442</b>	-	
$P_D$	Total Device Dissipation	@ $T_C = 25^\circ$	<b>2N4347</b>	100	Watts W/°C
			<b>2N3442</b>	117	
		Derate above $25^\circ$	<b>2N4347</b>	0.57	
			<b>2N3442</b>	0.67	
$T_J$	Junction Temperature		<b>2N4347</b>	-65 to +200	°C
			<b>2N3442</b>		
$T_S$	Storage Temperature		<b>2N4347</b>	-65 to +200	°C
			<b>2N3442</b>		

(\*\*) This data guaranteed in addition to JEDEC registered data.

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## THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit	
$R_{thJC}$	Thermal Resistance, Junction to Case	2N4347	1.75	°C/W
		2N3442	1.5	

## ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage (1)	$I_C=200\text{ mAdc}, I_B=0$	2N4347	120	-	-	Vdc
			2N3442	140	-	-	
$V_{CER(SUS)}$ $R_{BE}=100\Omega$	Collector-Emitter Sustaining Voltage	$I_C=0.1\text{ Adc}$	2N4347	130	-	-	V
		$I_C=0.2\text{ Adc}$	2N3442	150	-	-	
$I_{CEO}$	Collector-Emitter Current	$V_{CE}=100\text{ Vdc}, I_B=0$	2N4347	-	-	200	mAdc
		$V_{CE}=140\text{ Vdc}, I_B=0$	2N3442			200	
$I_{CEX}$	Collector Cutoff Current	$V_{CE}=125\text{ Vdc}, V_{EB(off)}=1.5\text{ Vdc}$	2N4347	-	-	2.0	mAdc
		$V_{CE}=120\text{ Vdc}, V_{EB(off)}=1.5\text{ Vdc}, T_C = 150^\circ\text{C}$				10	
		$V_{CE}=140\text{ Vdc}, V_{EB(off)}=1.5\text{ Vdc}$	2N3442	-	-	5.0	
		$V_{CE}=140\text{ Vdc}, V_{EB(off)}=1.5\text{ Vdc}, T_C = 150^\circ\text{C}$				30	
$I_{EBO}$	Emitter Cutoff Current	$V_{BE}=7.0\text{ Vdc}, I_C=0$	2N4347 2N3442	-	-	5.0	mAdc
$h_{FE}$	DC Current Gain	$I_C=2.0\text{ Adc}, V_{CE}=4.0\text{ Vdc}$	2N4347	-	-	15	-
		$I_C=5.0\text{ Adc}, V_{CE}=4.0\text{ Vdc}$				10	
		$I_C=3.0\text{ Adc}, V_{CE}=4.0\text{ Vdc}$	2N3442	-	-	20	
		$I_C=10\text{ Adc}, V_{CE}=4.0\text{ Vdc}$				4.0	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage	$I_C=2.0\text{ Adc}, I_B=200\text{ mAdc}$	2N4347	-	-	1.0	Vdc
		$I_C=5.0\text{ Adc}, I_B=0.63\text{ Adc}$				2.0	
		$I_C=3.0\text{ Adc}, I_B=0.3\text{ Adc}$	2N3442	-	-	1.0	
		$I_C=10\text{ Adc}, I_B=0.2\text{ Adc}$				5.0	

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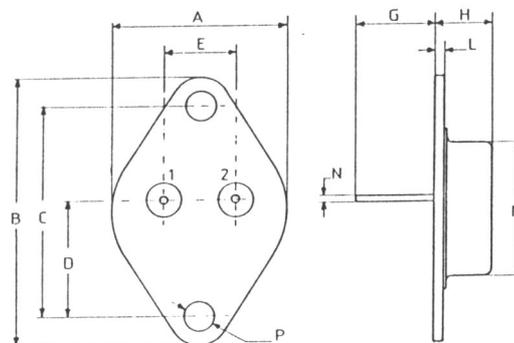
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$V_{BE(on)}$	Base-Emitter Voltage	$I_C=2.0 \text{ A dc}, V_{CE}=4.0 \text{ V dc}$	<b>2N4347</b>	-	-	2.0	Vdc
		$I_C=5.0 \text{ A dc}, V_{CE}=4.0 \text{ V dc}$		-	-	3.0	
		$I_C=3.0 \text{ A dc}, V_{CE}=4.0 \text{ V dc}$	<b>2N3442</b>	-	-	1.7	
		$I_C=10 \text{ A dc}, V_{CE}=4.0 \text{ V dc}$		-	-	5.7	
$h_{fe}$	Small Signal Current Gain	$V_{CE}=4.0 \text{ V dc}, I_C=0.5 \text{ A dc}, f=1.0 \text{ kHz}$	<b>2N4347</b>	40	-	-	-
		$V_{CE}=4.0 \text{ V dc}, I_C=2.0 \text{ A dc}, f=1.0 \text{ kHz}$	<b>2N3442</b>	12	-	72	-
$f_T$	Current Gain – Bandwidth Product (2)	$V_{CE}=4.0 \text{ V dc}, I_C=0.5 \text{ A dc}, f_{test} = 50 \text{ kHz}$	<b>2N4347</b>	200	-	-	kHz
		$V_{CE}=4.0 \text{ V dc}, I_C=2.0 \text{ A dc}, f_{test} = 40 \text{ kHz}$	<b>2N3442</b>	80	-	-	
$I_{s/b}$	Second Breakdown Collector Current	$V_{CE}=67 \text{ V dc}, I_C=1.5 \text{ A dc}$	<b>2N4347</b>	1.0	-	-	s
		$V_{CE}=78 \text{ V dc}, I_C=1.5 \text{ A dc}$	<b>2N3442</b>	1.0	-	-	

(1) Pulse Width  $\approx 300 \mu\text{s}$ , Duty Cycle  $\angle 2.0\%$

(2)  $f_T = |h_{fe}| * f_{test}$

## MECHANICAL DATA CASE TO-3

DIMENSIONS		
	mm	inches
A	25,51	1,004
B	38,93	1,53
C	30,12	1,18
D	17,25	0,68
E	10,89	0,43
G	11,62	0,46
H	8,54	0,34
L	1,55	0,6
M	19,47	0,77
N	1	0,04
P	4,06	0,16



Pin 1 :	Base
Pin 2 :	Emitter
Case :	Collector

*Information furnished is believed to be accurate and reliable. However, CS assumes no responsibility for the consequences of use of such information nor for errors that could appear.*

Data are subject to change without notice.