

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

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

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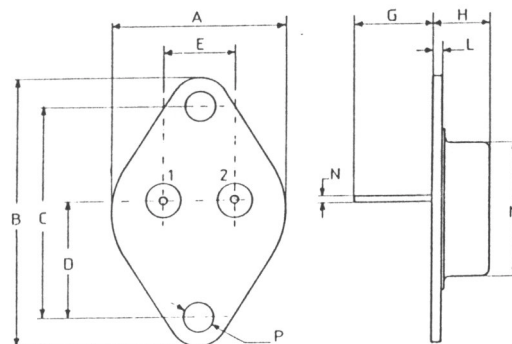
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$V_{BE(on)}$	Base-Emitter Voltage	$I_C=2.0 \text{ Adc}, V_{CE}=4.0 \text{ Vdc}$	2N4347	-	-	2.0	Vdc
		$I_C=5.0 \text{ Adc}, V_{CE}=4.0 \text{ Vdc}$		-	-	3.0	
		$I_C=3.0 \text{ Adc}, V_{CE}=4.0 \text{ Vdc}$	2N3442	-	-	1.7	
		$I_C=10 \text{ Adc}, V_{CE}=4.0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