



**General
Semiconductor
Industries, Inc.**

2N3418
2N3419
2N3420
2N3421

**NPN SILICON
POWER TRANSISTORS**



DIFFUSED SILICON EPITAXIAL PASSIVATED TRANSISTOR

These NPN devices are designed for use in high speed switching and medium power amplifier applications. JAN, JANTX, and JANTXV devices to MIL-S-19500/393 are available. The latest technologies are used to offer the highest degree of reliability.

FEATURES

- Fast Switching
- High Power Dissipation
- Low Leakage Current
- Low Saturation Voltage

APPLICATIONS

- Switching Regulators
- High Frequency Inverters
- Converters
- DC-RF Amplifiers

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature

-65°C to +200°C

Operating Junction Temperature

+200°C

Lead Temperature (Soldering, 60 second time limit)

+300°C

Maximum Power Dissipation

Total Dissipation at 100°C Case Temperature

15 Watts

Linear Derating Factor

0.15 W/°C

Maximum Voltages and Current

V_{CEO} Collector to Emitter Voltage

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60 Volts 80 Volts

V_{CBO} Collector to Base Voltage

85 Volts 125 Volts

V_{EBO} Emitter to Base Voltage

8 Volts 8 Volts

I_C Collector Current

3 Amps 3 Amps

MECHANICAL CHARACTERISTICS

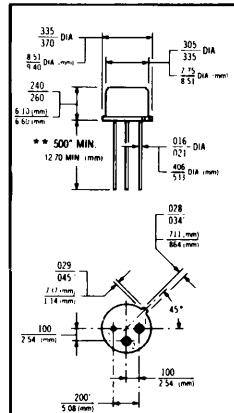
Case: TO-5 Package

Weight: 1.8 grams (maximum)

Leads: Gold Plated Kovar

1. Emitter 2. Base 3. Collector

Body marked with Logo and type number



**Also available in 1.5" lead length.

***ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)**

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	2N3418 MIN.	2N3419 MIN.	2N3420 MAX.	2N3421 MIN.	2N3421 MAX.	UNITS
†Collector to Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 50mA, I_E = 0$	60	80				Volts
Collector Cutoff Current	I_{CEX}	$V_{CE} = 80V, V_{BE} = -0.5V$ $V_{CE} = 120V, V_{BE} = -0.5V$		0.5			0.5	μ Amps
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 6V, I_C = 0$ $V_{EB} = 8V, I_C = 0$	0.5	0.5	0.5	0.5	0.5	μ Amps
†Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 1A, I_B = 100mA$ $I_C = 2A, I_B = 200mA$	0.25	0.25				Volts
†Base Saturation Voltage	$V_{BE(sat)}$	$I_C = 1A, I_B = 100mA$ $I_C = 2A, I_B = 200mA$	0.6	0.6	1.2	0.6	1.2	Volts
†DC Current Gain (2N3418/19)	h_{FE}	$I_C = 1A, V_{CE} = 2V$		20 MIN.	—	60 MAX.		
†DC Current Gain (2N3420/21)	h_{FE}	$I_C = 1A, V_{CE} = 2V$		40 MIN.	—	120 MAX.		

*JEDEC registered data. † Pulse Conditions: Width = 10/ μ s, Duty Cycle \leq 2% (measured using Kelvin connections).

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*DYNAMIC CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	2N3418 2N3420	2N3419 2N3421	MIN. MAX.	UNITS
Turn-On Time	t_{on}	See Figure 2	0.3	0.3	μSec	
Turn-Off Time	t_{off}	See Figure 2	1.2	1.2	μSec	
Collector Base Capacitance	C_{ob}	$V_{CE}=10V, f=1MHz$	150	150	pF	
Collector Gain-Bandwidth Product	f_T	$I_C=.1A, V_{CE}=10V, f=20MHz$	40	40	MHz	

*JEDEC registered data.

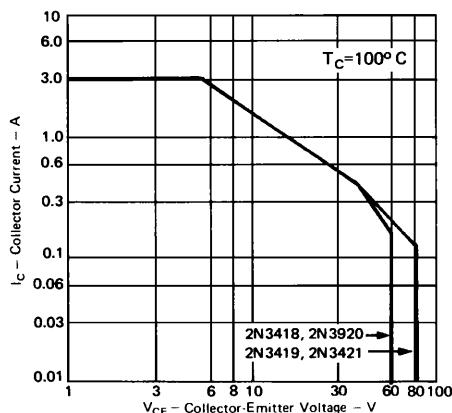
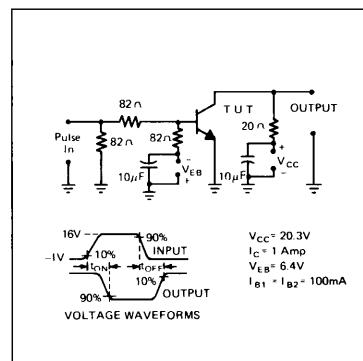


Figure 1
MAXIMUM SAFE
OPERATING
REGION

Figure 2
SWITCHING
CIRCUIT



TRANSISTORS

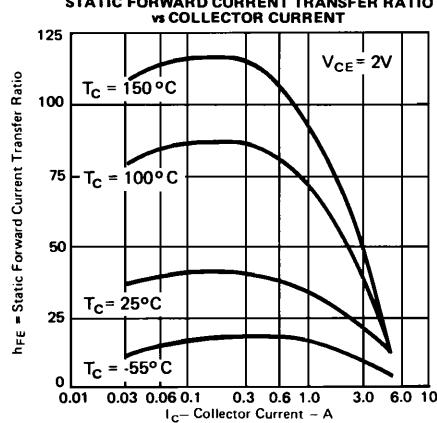


Figure 3
TYPICAL DC
CURRENT GAIN
(2N3418 - 2N3419)

Figure 4
TYPICAL DC
CURRENT GAIN
(2N3420 - 2N3421)

