



**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

	2N3418 2N3420	2N3419 2N3421
V _{CEO} Collector to Emitter Voltage	60 Volts	80 Volts
V _{CBO} Collector to Base Voltage	85 Volts	125 Volts
V _{EB0} Emitter to Base Voltage	8 Volts	8 Volts
I _C Collector Current	3 Amps	3 Amps

MECHANICAL CHARACTERISTICS

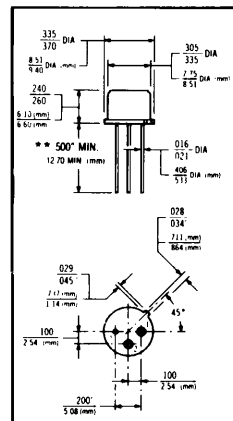
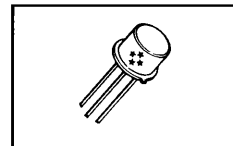
Case: TO-5 Package

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 2N3420 MIN. MAX.	2N3419 2N3421 MIN. 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	0.5		μ Amps
		V _{CE} = 120V, V _{BE} = -0.5V		0.5	μ Amps
Emitter Cutoff Current	I _{EB0}	V _{EB} = 6V, I _C = 0	0.5	0.5	μ Amps
		V _{EB} = 8V, I _C = 0	10	10	μ Amps
† Collector Saturation Voltage	V _{CE(sat)}	I _C = 1A, I _B = 100mA	0.25	0.25	Volts
		I _C = 2A, I _B = 200mA	0.5	0.5	Volts
† Base Saturation Voltage	V _{BE(sat)}	I _C = 1A, I _B = 100mA	0.6 1.2	0.6 1.2	Volts
		I _C = 2A, I _B = 200mA	0.7 1.4	0.7 1.4	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.		

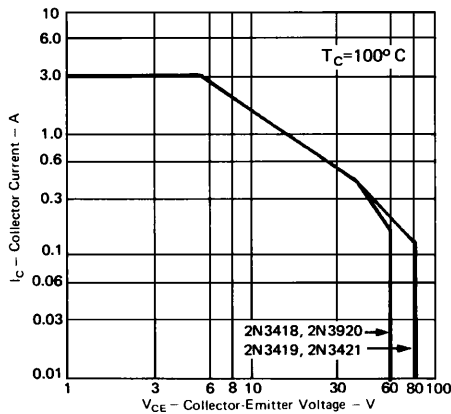
* JEDEC registered data. † Pulse Conditions: Width = 10μs; Duty Cycle ≤ 2% (measured using Kelvin connections).

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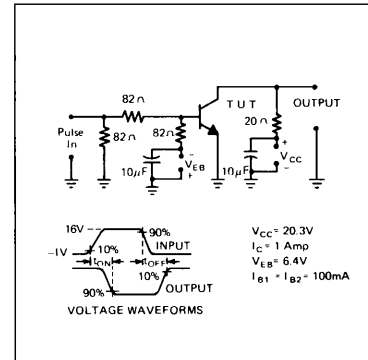
*DYNAMIC CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	2N3418 2N3420		2N3419 2N3421		UNITS
			MIN.	MAX.	MIN.	MAX.	
Turn-On Time	t_{on}	See Figure 2	0.3	0.3	0.3	0.3	μ Sec
Turn-Off Time	t_{off}	See Figure 2	1.2	1.2	1.2	1.2	μ Sec
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

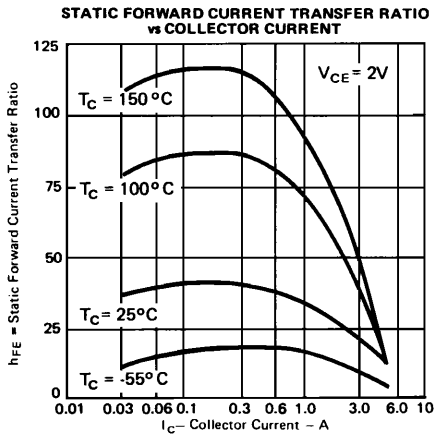
*JEDEC registered data.



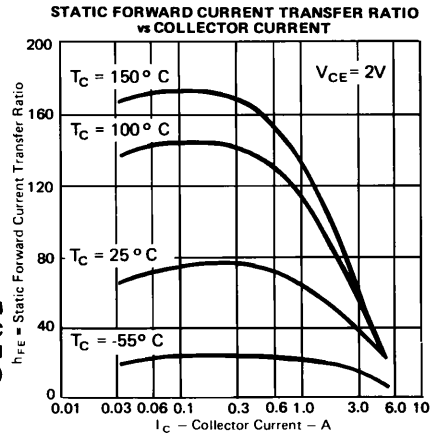
**Figure 1
MAXIMUM SAFE
OPERATING
REGION**



**Figure 2
SWITCHING
CIRCUIT**



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



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

NPN SWITCHING
TRANSISTORS

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