



NPN Medium Power Silicon Transistor

2N3418, 2N3419, 2N3420 & 2N3421

2N3418S, 2N3419S, 2N3420S & 2N3421S



Features

- Available in commercial, JAN, JANTX, JANTXV, JANS and JANSR 100K rads (Si) per MIL-PRF-19500/393
- TO-5, TO-39 (TO-205AD) Package



Maximum Ratings

Ratings	Symbol	2N3418, S 2N3420, S	2N3419, S 2N3421, S	Units
Collector - Emitter Voltage	V_{CEO}	60	80	Vdc
Collector - Base Voltage	V_{CBO}	85	125	Vdc
Emitter - Base Voltage	V_{EBO}	8.0		Vdc
Collector Current $T_p \leq 1.0$ ms, duty cycle $\leq 50\%$	I_C	3.0 5.0		Adc
Total Power Dissipation @ $T_A = +25$ °C @ $T_C = +100$ °C	P_T	1.0 5.0		W W
Operating & Storage Temperature Range	T_{Op}, T_{stg}	-65 to +200		°C

Electrical Characteristics

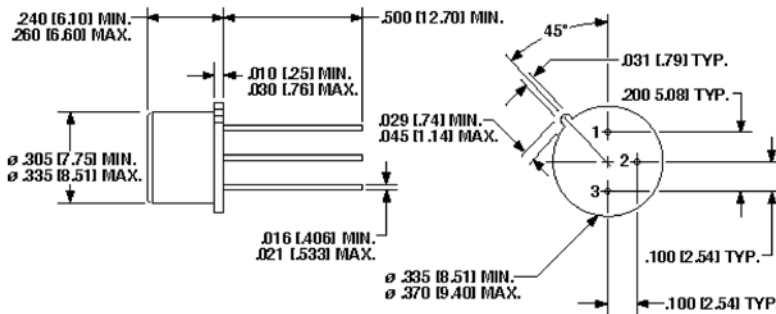
OFF Characteristics	Symbol	Mimimum	Maximum	Units
Collector - Emitter Breakdown Voltage $I_C = 50$ mAdc 2N3418, S, 2N3420, S 2N3419, S, 2N3421, S	$V_{(BR)CEO}$	60 80	---	Vdc
Collector - Emitter Cutoff Current $V_{CE} = 80$ Vdc, $V_{BE} = -0.5$ Vdc $V_{CE} = 120$ Vdc, $V_{BE} = -0.5$ Vdc 2N3418, S, 2N3420, S 2N3419, S, 2N3421, S	I_{CEX}	---	0.3 0.3	μ Adc
Collector - Emitter Cutoff Current $V_{CE} = 45$ Vdc $V_{CE} = 60$ Vdc 2N3418, S, 2N3420, S 2N3419, S, 2N3421, S	I_{CEO}	---	5.0 5.0	μ Adc
Emitter - Base Cutoff Current $V_{EB} = 6.0$ Vdc, $I_C = 0$ $V_{EB} = 8.0$ Vdc, $I_C = 0$	I_{EBO}	---	0.5 10.0	μ Adc



Electrical Characteristics -con't

ON Characteristics (1)		Symbol	Minimum	Maximum	Unit
Forward Current Transfer Ratio					
$I_C = 100 \text{ mAdc}, V_{CE} = 2.0 \text{ Vdc}$	2N3418, S, 2N3419, S	H_{FE}	20	60	
	2N3420, S, 2N3421, S		40		
$I_C = 1.0 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$	2N3418, S, 2N3419, S		20	120	
	2N3420, S, 2N3421, S		40		
$I_C = 2.0 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$	2N3418, S, 2N3419, S		15		
	2N3420, S, 2N3421, S		30		
$I_C = 5.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$	2N3418, S, 2N3419, S		10		
	2N3420, S, 2N3421, S		15		
Base - Emitter Voltage		$V_{BE(sat)}$			Vdc
$I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$			0.6	1.2	
$I_C = 2.0 \text{ Adc}, I_B = 0.2 \text{ Adc}$			0.7	1.4	
Collector - Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
$I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$			---	0.25	
$I_C = 2.0 \text{ Adc}, I_B = 0.2 \text{ Adc}$			---	0.5	
DYNAMIC Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio					
$I_C = 0.1 \text{ Adc}, V_{CE} = 10.0 \text{ Vdc}, f = 20 \text{ MHz}$		$ h_{fe} $	1.3	8.0	
Output Capacitance					pF
$V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		C_{obo}	---	150	
Switching Characteristics					
Delay Time	$V_{BE(off)} = -3.7 \text{ Vdc}$	t_d	---	0.08	μs
Rise Time	$I_C = 1.0 \text{ Adc}, I_{B2} = 100 \text{ mAdc}$	t_r	---	0.22	μs
Storage Time	$V_{BE(off)} = -3.7 \text{ Vdc}$	t_s	---	1.10	μs
Fall Time	$I_C = 1.0 \text{ Adc}, I_{B2} = -100 \text{ mAdc}$	t_f	---	0.20	μs
SAFE OPERATING AREA					
DC Tests:	$T_C = 100 \text{ }^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s s}$				
Test 1:	$V_{CE} = 5.0 \text{ Vdc}, I_C = 3.0 \text{ Adc}$				
Test 2:	$V_{CE} = 37 \text{ Vdc}, I_C = 0.4 \text{ Adc}$				
Test 3:	$V_{CE} = 60 \text{ Vdc}, I_C = 0.185 \text{ mAdc}$	2N3418, S;	2N3420, S		
	$V_{CE} = 80 \text{ Vdc}, I_C = 0.12 \text{ mAdc}$	2N3419, S;	2N3421, S		

Outline Drawing



NOTE: Dimensions in Inches [mm]

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