

2N5302, 2N5303 JAN SERIES

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
DC CHARACTERISTICS				
Forward-Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ All Types $I_C = 15 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ 2N5302 $I_C = 10 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ 2N5303 $I_C = 30 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ 2N5302 $I_C = 20 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ 2N5303	h_{FE}	40 15 15 5.0 5.0	60 60	
Base-Emitter Saturation Voltage $I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$ All Types $I_C = 15 \text{ Adc}, I_B = 1.5 \text{ Adc}$ 2N5302 $I_C = 15 \text{ Adc}, I_B = 1.5 \text{ Adc}$ 2N5303 $I_C = 20 \text{ Adc}, I_B = 2.0 \text{ Adc}$ 2N5302 $I_C = 20 \text{ Adc}, I_B = 4.0 \text{ Adc}$ 2N5303	$V_{BE(sat)}$		1.7 1.8 2.0 2.5 2.5	Vdc
Base-Emitter Non-Saturation Voltage $V_{CE} = 2.0 \text{ Vdc}; I_C = 15 \text{ Adc}$ 2N5302 $V_{CE} = 2.0 \text{ Vdc}; I_C = 10 \text{ Adc}$ 2N5303 $V_{CE} = 4.0 \text{ Vdc}; I_C = 30 \text{ Adc}$ 2N5302 $V_{CE} = 4.0 \text{ Vdc}; I_C = 20 \text{ Adc}$ 2N5303	V_{BE}		1.8 1.5 3.0 2.5	Vdc
Collector-Emitter Saturation Voltage $I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$ 2N5302 $I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$ 2N5303 $I_C = 15 \text{ Adc}, I_B = 1.5 \text{ Adc}$ 2N5302 $I_C = 15 \text{ Adc}, I_B = 1.5 \text{ Adc}$ 2N5303 $I_C = 20 \text{ Adc}, I_B = 2.0 \text{ Adc}$ 2N5302 $I_C = 20 \text{ Adc}, I_B = 4.0 \text{ Adc}$ 2N5303 $I_C = 30 \text{ Adc}, I_B = 6.0 \text{ Adc}$ 2N5302	$V_{CE(sat)}$		0.75 1.0 1.0 1.5 2.0 2.0 3.0	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Small-Signal Short Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ MHz}$	$ h_{fe} $	2.0	40	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		800	pF

SWITCHING CHARACTERISTICS

Delay Time	$V_{CC} = 30 \text{ Vdc}; I_C = 10 \text{ Adc}; I_B = 1.0 \text{ Adc}$	t_d	0.2	μs
Rise Time		t_r	0.9	μs
Storage Time		t_s	2.0	μs
Fall Time		t_f	1.0	μs

SAFE OPERATING AREA

DC Tests: $T_C = 25^\circ\text{C}$, 1 Cycle, $t \geq 1.0 \text{ s}$	
Test 1	
$V_{CE} = 6.67 \text{ Vdc}, I_C = 30 \text{ Adc}$ 2N5302	
$V_{CE} = 10 \text{ Vdc}, I_C = 20 \text{ Adc}$ 2N5303	
Test 2	
$V_{CE} = 20 \text{ Vdc}, I_C = 10 \text{ Adc}$ 2N5302; 2N5303	
Test 3	
$V_{CE} = 40 \text{ Vdc}, I_C = 3.0 \text{ Adc}$ 2N5302; 2N5303	
Test 4	
$V_{CE} = 50 \text{ Vdc}, I_C = 600 \text{ mAdc}$ 2N5302	
$V_{CE} = 60 \text{ Vdc}, I_C = 600 \text{ mAdc}$ 2N5303	
Clamped Switching: $T_A = 25^\circ\text{C}$, $V_{CE} = 15 \text{ Vdc}$	
Clamp Voltage = 60 Vdc, $I_C = 30 \text{ Adc}$ 2N5302	
Clamp Voltage = 80 Vdc, $I_C = 20 \text{ Adc}$ 2N5303	