

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/509

Devices

2N6338

2N6341

Qualified Level

JANTX
JANTXV

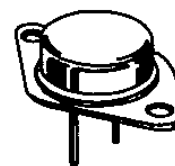
MAXIMUM RATINGS

Ratings	Symbol	2N6338	2N6341	Unit
Collector-Emitter Voltage	V_{CEO}	100	150	Vdc
Collector-Base Voltage	V_{CBO}	120	180	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Base Current	I_B	10		Adc
Collector Current	I_C	25		Adc
Total Power Dissipation ⁽¹⁾	P_T	200		W
@ $T_A = +25^{\circ}\text{C}$		112		W
@ $T_C = +100^{\circ}\text{C}$				
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-65 to +175		$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.875	$^{\circ}\text{C/W}$

1) Derate linearly 1.14 W/ $^{\circ}\text{C}$ for $T_C = +25^{\circ}\text{C}$ and $T_C = +200^{\circ}\text{C}$



TO-3*
(TO-204AA)

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 50 \text{ mAdc}$	2N6338 2N6341	$V_{(BR)CEO}$	100 150	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 50 \text{ Vdc}$ $V_{CE} = 75 \text{ Vdc}$	2N6338 2N6341	I_{CEO}	50	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 150 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N6338 2N6341	I_{CEX}	10 10	μAdc
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$		I_{EBO}	100	μAdc
Collector-Base Cutoff Current $V_{CB} = 120 \text{ Vdc}$ $V_{CB} = 180 \text{ Vdc}$	2N6338 2N6341	I_{CEO}	10 10	μAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽²⁾

Forward-Current Transfer Ratio $I_C = 0.5 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ $I_C = 10 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ $I_C = 25 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$	h_{FE}	40 30 12	120	
Collector-Emitter Saturation Voltage $I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$ $I_C = 25 \text{ Adc}, I_B = 2.5 \text{ Adc}$	$V_{CE(sat)}$		1.0 1.8	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$	$V_{BE(sat)}$		1.8	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	4.0	12	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 0.1 \text{ MHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		450	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 80 \text{ Vdc}, I_C = 10 \text{ Adc}, I_B = 1.0 \text{ Adc}$	t_{on}		0.5	μs
Turn-Off Time $V_{CC} = 80 \text{ Vdc}, I_C = 10 \text{ Adc}, I_{B1} = I_{B2} = 1.0 \text{ Adc}$	t_{off}		1.25	μs
Storage Time $V_{CC} = 80 \text{ Vdc}, I_C = 10 \text{ Adc}, I_{B1} = I_{B2} = 1.0 \text{ Adc}$	t_s		1.0	μs

SAFE OPERATING AREA

DC Tests		
T _C = +25 ⁰ C, 1 Cycle, t = 1.0 s		
Test 1		
V _{CE} = 8.0 Vdc, I _C = 25 Adc	All Types	
Test 2		
V _{CE} = 14 Vdc, I _C = 14 Adc	All Types	
Test 3		
V _{CE} = 100 Vdc, I _C = 100 mAdc	2N6338	
V _{CE} = 150 Vdc, I _C = 66 mAdc	2N6341	

(2) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.