

PNP HIGH VOLTAGE SILICON TRANSISTOR

Qualified per MIL-PRF-19500/397

Devices

2N3743

2N4930

2N4931

Qualified Level

JAN, JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Sym	2N3743	2N4930	2N4931	Unit
Collector-Emitter Voltage	V_{CEO}	300	200	250	Vdc
Collector-Base Voltage	V_{CBO}	300	200	250	Vdc
Emitter-Base Voltage	V_{EBO}	5.0			Vdc
Collector Current	I_C	200			mAdc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}\text{C}$ ¹			W
		@ $T_C = +25^{\circ}\text{C}$ ²			W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200			$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	35	$^{\circ}\text{C/W}$

- 1) Derate linearly 5.71 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$
- 2) Derate linearly 28.6 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



TO-39*
(TO-205AD)

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 1.0 \text{ mAdc}$	2N3743 2N4930 2N4931	$V_{(BR)CEO}$	300 200 250	Vdc
Collector-Emitter Breakdown Voltage $I_C = 100 \mu\text{Adc}$	2N3743 2N4930 2N4931	$V_{(BR)CBO}$	300 200 250	Vdc
Emitter-Base Breakdown Voltage $I_E = 100 \mu\text{Adc}$		$V_{(BR)EBO}$	5.0	Vdc
Collector-Base Cutoff Current $V_{CB} = 250 \text{ Vdc}$ $V_{CB} = 150 \text{ Vdc}$ $V_{CB} = 200 \text{ Vdc}$	2N3743 2N4930 2N4931	I_{CBO}	250 250 250	ηAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{ Vdc}$	I_{EBO}		150	ηAdc

ON CHARACTERISTICS ⁽³⁾

Forward-Current Transfer Ratio $I_C = 0.1 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 30 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 50 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}$	h_{FE}	30 40 40 50 30	200	
Collector-Emitter Saturation Voltage $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$ $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$	$V_{CE(sat)}$		1.2 1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$	$V_{BE(sat)}$		1.0 1.2	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}, f = 20 \text{ MHz}$	$ h_{fe} $	2.0	8.0	
Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ kHz}$	h_{fe}	30	300	
Output Capacitance $V_{CB} = 20 \text{ Vdc}, I_E = 0, f \geq 0.1 \text{ MHz}$	C_{obo}		15	pF
Input Capacitance $V_{EB} = 1.0 \text{ Vdc}, I_C = 0, f \geq 0.1 \text{ MHz}$	C_{ibo}		400	pF

SAFE OPERATING AREA

DC Tests		
$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t \geq 1.0 \text{ s}$		
Test 1		
$V_{CE} = 20 \text{ Vdc}, I_C = 50 \text{ mAdc}$	All Types	
Test 2		
$V_{CE} = 100 \text{ Vdc}, I_C = 10 \text{ mAdc}$	All Types	
Test 3		
$V_{CE} = 300 \text{ Vdc}, I_C = 3.3 \text{ mAdc}$	2N3743	
$V_{CE} = 200 \text{ Vdc}, I_C = 5.0 \text{ mAdc}$	2N4930	
$V_{CE} = 250 \text{ Vdc}, I_C = 4.0 \text{ mAdc}$	2N4931	

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