

PNP HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/433

Devices

2N4399

2N5745

Qualified Level

JANTX
JANTXV

MAXIMUM RATINGS

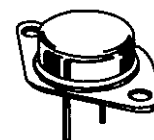
Ratings	Symbol	2N4399	2N5745	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Base Current	I_B	7.5		Adc
Collector Current	I_C	30	20	Adc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾ @ $T_C = +100^{\circ}\text{C}$ ⁽²⁾	P_T	5.0		W
		115		W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200		$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.875	$^{\circ}\text{C}/\text{W}$
Junction-to-Ambient	$R_{\theta JA}$	35	

1) Derate linearly @ 28.57 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly @ 1.15 W/ $^{\circ}\text{C}$ for $T_C > +100^{\circ}\text{C}$



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
-----------------	--------	------	------	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N4399 2N5745	$V_{(BR)CEO}$	60 80	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}$	2N4399 2N5745	I_{CEO}	100 100	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N4399 2N5745	I_{CEX}	5.0 5.0	μAdc
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$		I_{EBO}	5.0	μAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio I _C = 1.0 Adc, V _{CE} = 2.0 Vdc	h _{FE}	40	425	
I _C = 15 Adc, V _{CE} = 2.0 Vdc		15	60	
I _C = 10 Adc, V _{CE} = 2.0 Vdc		15	60	
I _C = 30 Adc, V _{CE} = 5.0 Vdc		5.0		
I _C = 20 Adc, V _{CE} = 5.0 Vdc		5.0		
Collector-Emitter Saturation Voltage I _C = 5.0 Adc, I _B = 0.5 Adc	V _{CE(sat)}		0.55	Vdc
I _C = 10 Adc, I _B = 1.0 Adc			0.75	
			1.0	
Base-Emitter Saturation Voltage I _C = 10 Adc, I _B = 1.0 Adc	V _{BE(sat)}		1.7	Vdc
I _C = 15 Adc, I _B = 1.5 Adc			1.8	
			2.0	

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 1.0 Adc, V _{CE} = 10 Vdc, f = 1.0 MHz	h _{fe}	4.0	40	
Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 1.0 Adc, V _{CE} = 10 Vdc, f = 1.0 MHz	h _{fe}	40	425	
Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{obo}		1000	pF

SAFE OPERATING AREA

DC Tests				
T _C = +25°C, 1 Cycle, t = 1.0 s				
Test 1				
V _{CE} = 6.67 Vdc, I _C = 30 Adc	2N4399			
V _{CE} = 10 Vdc, I _C = 20 Adc	2N5745			
Test 2				
V _{CE} = 20 Vdc, I _C = 10 Adc	All Types			
Test 3				
V _{CE} = 40 Vdc, I _C = 3.0 Adc	All Types			
Test 4				
V _{CE} = 50 Vdc, I _C = 600 mAdc	2N4399			
V _{CE} = 60 Vdc, I _C = 600 mAdc	2N5745			

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