

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/528

Devices

2N6032

2N6033

Qualified Level

JANTX
JANTXV

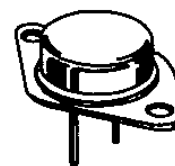
MAXIMUM RATINGS

Ratings	Symbol	2N6032	2N6033	Units
Collector-Emitter Voltage	V_{CEO}	90	120	Vdc
Collector-Base Voltage	V_{CBO}	120	150	Vdc
Collector Current	I_C	50	40	Adc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	10		Adc
Total Power Dissipation @ $T_C = +25^{\circ}\text{C}$ ⁽¹⁾	P_T	140		W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.25	$^{\circ}\text{C/W}$

1) Derate linearly 800 mW/ $^{\circ}\text{C}$ between $T_C = 25^{\circ}\text{C}$ and $T_C = 200^{\circ}\text{C}$



TO-3*
(TO-204AA)

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N6032 2N6033	$V_{(BR)CEO}$	90 120	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N6032 2N6033	$V_{(BR)CER}$	110 140	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}, V_{EB} = 1.5 \text{ Vdc}$	2N6032 2N6033	$V_{(BR)CEX}$	120 150	Vdc
Collector-Base Cutoff Current $V_{CB} = 120 \text{ Vdc}$ $V_{CB} = 150 \text{ Vdc}$	2N6032 2N6033	I_{CBO}	25 25	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 110 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$ $V_{CE} = 135 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$	2N6032 2N6033	I_{CEX}	12 10	mAdc

2N6032, 2N6033, JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

OFF CHARACTERISTICS (con't)

Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$	I_{EBO}		10	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}$	I_{CEO}		10	mAdc

ON CHARACTERISTICS ⁽²⁾

Forward-Current Transfer Ratio $I_C = 50 \text{ Adc}, V_{CE} = 2.6 \text{ Vdc}$ 2N6032 $I_C = 40 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ 2N6033	h_{FE}	10 10	50 50	
Collector-Emitter Saturation Voltage $I_C = 50 \text{ Adc}, I_B = 5.0 \text{ Adc}$ 2N6032 $I_C = 40 \text{ Adc}, I_B = 4.0 \text{ Adc}$ 2N6033	$V_{CE(sat)}$		1.3 1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 50 \text{ Adc}, I_B = 5.0 \text{ Adc}$ 2N6032 $I_C = 40 \text{ Adc}, I_B = 4.0 \text{ Adc}$ 2N6033	$V_{BE(sat)}$		2.0 2.0	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 2.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 5.0 \text{ MHz}$	$ h_{fe} $	10	40	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		1,000	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 30 \text{ Vdc}; I_C = 50 \text{ Adc}; I_B = 5.0 \text{ Adc}$ 2N6032 $V_{CC} = 30 \text{ Vdc}; I_C = 40 \text{ Adc}; I_B = 4.0 \text{ Adc}$ 2N6033	t_{on}		0.5 0.5	μs
Turn-Off Time $V_{CC} = 30 \text{ Vdc} \pm 2; I_C = 50 \text{ Adc}; I_{B1} = 5 I_{B2} = -5 \text{ Adc}$ 2N6032 $V_{CC} = 30 \text{ Vdc} \pm 2; I_C = 40 \text{ Adc}; I_{B1} = 4 I_{B2} = -4 \text{ Adc}$ 2N6033	t_{off}		2.0 2.0	μs

SAFE OPERATING AREA

DC Tests $T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$				
Test 1 $V_{CE} = 2.8 \text{ Vdc}, I_C = 50 \text{ Adc}$	2N6032			
Test 2 $V_{CE} = 3.5 \text{ Vdc}, I_C = 40 \text{ Adc}$	2N6033			
Test 3 $V_{CE} = 24 \text{ Vdc}, I_C = 5.8 \text{ Adc}$	All Types			
Test 4 $V_{CE} = 40 \text{ Vdc}, I_C = 0.9 \text{ Adc}$	All Types			
Test 5 $V_{CE} = 90 \text{ Vdc}, I_C = 0.18 \text{ Adc}$	2N6032			
Test 6 $V_{CE} = 120 \text{ Vdc}, I_C = 0.1 \text{ Adc}$	2N6033			

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