



TECHNICAL DATA

PNP HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/461

Devices

2N6211

2N6212

2N6213

Qualified Level

JAN
JANTX
JANTXV

MAXIMUM RATINGS

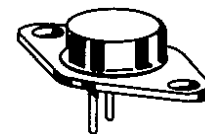
Ratings	Symbol	2N6211	2N6212	2N6213	Unit
Collector-Emitter Voltage	V_{CEO}	225	300	350	Vdc
Collector-Base Voltage	V_{CBO}	275	350	400	Vdc
Emitter-Base Voltage	V_{EBO}	6.0			Vdc
Base Current	I_B	1.0			Adc
Collector Current	I_C	2.0			Adc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾			W
		@ $T_C = +25^{\circ}\text{C}$ ⁽²⁾			W
Operating & Storage Temperature	T_{op}, T_{stg}	-55 to +200			$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	5.0	$^{\circ}\text{C/W}$

1) Derate linearly 17.1 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly 200 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



TO-66*
(TO-213AA)

*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 $I_C = 200 \text{ mAdc}, f = 30\text{-}60 \text{ Hz}$	2N6211	$V_{(BR)CEO}$	225	Vdc
	2N6212		300	
	2N6213		350	
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}, f = 30\text{-}60 \text{ Hz}, R_{BE} = 50 \Omega$	2N6211	$V_{(BR)CER}$	250	Vdc
	2N6212		325	
	2N6213		375	
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}, f = 30\text{-}60 \text{ Hz}, R_{BE} = 50 \Omega, V_{BE} = -1.5 \text{ Vdc}$	2N6211	$V_{(BR)CEX}$	275	Vdc
	2N6212		350	
	2N6213		400	

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
Collector-Emitter Cutoff Current $V_{CE} = 150 \text{ Vdc}$	I_{CEO}		5.0	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 250 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ 2N6211 $V_{CE} = 315 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ 2N6212 $V_{CE} = 360 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ 2N6213	I_{CEX}		0.5 0.5 0.5	mAdc
Collector-Base Cutoff Current $V_{CB} = 275 \text{ Vdc}$ 2N6211 $V_{CB} = 350 \text{ Vdc}$ 2N6212 $V_{CB} = 400 \text{ Vdc}$ 2N6213	I_{CBO}		15 15 15	mAdc
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$	I_{EBO}		0.5	mAdc

ON CHARACTERISTICS ⁽³⁾

Forward-Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 2.8 \text{ Vdc}$ 2N6211 $I_C = 1.0 \text{ Adc}, V_{CE} = 3.2 \text{ Vdc}$ 2N6212 $I_C = 1.0 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ 2N6213 $I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ 2N6211 2N6212 2N6213	h_{FE}	10 10 10 30 30 30	100 100 100 175 175 150	
Collector-Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.125 \text{ Adc}$ 2N6211 2N6212 2N6213	$V_{CE(sat)}$		1.4 1.6 2.0	Vdc
Base-Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.125 \text{ Adc}$	$V_{BE(sat)}$		1.4	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 0.2 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 5.0 \text{ MHz}$	$ h_{fe} $	4.0	20	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		220	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 200 \pm 10 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_{B1} = -0.125 \text{ Adc}$	t_{on}		0.6	μs
Turn-Off Time $V_{CC} = 200 \pm 10 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_{B1} = -0.125 \text{ Adc}, I_{B2} = 0.125 \text{ Adc}$	t_{off}		3.1	μs

SAFE OPERATING AREA

DC Tests $T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$ Test 1 $V_{CE} = 17.5 \text{ Vdc}, I_C = 2.0 \text{ Adc}$ All Types Test 2 $V_{CE} = 40 \text{ Vdc}, I_C = 0.875 \text{ Adc}$ All Types Test 3 $V_{CE} = 225 \text{ Vdc}, I_C = 0.034 \text{ Adc}$ 2N6211 Test 4 $V_{CE} = 300 \text{ Vdc}, I_C = 0.02 \text{ Adc}$ 2N6212 Test 5 $V_{CE} = 350 \text{ Vdc}, I_C = 0.015 \text{ Adc}$ 2N6213				
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(3) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.