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TECHNICAL DATA

NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/455

Devices

2N5664 2N5665

Qualified Level

JAN
 JANTX
 JANTXV

Devices

2N5666 2N5667
 2N5666S 2N5667S

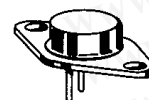
Qualified Level

JAN
 JANTX
 JANTXV
 JANS

MAXIMUM RATINGS

Ratings	Symbol	2N5664 2N5666, S	2N5665 2N5667, S	Unit
Collector-Emitter Voltage	V_{CEO}	200	300	Vdc
Collector-Base Voltage	V_{CBO}	250	400	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Base Current	I_B	1.0		Adc
Collector Current	I_C	5.0		Adc
		2N5664 2N5665	2N5666, S 2N5667, S	
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ @ $T_C = +100^{\circ}\text{C}$	P_T	2.5 ⁽¹⁾	1.2 ⁽²⁾	W
		30 ⁽³⁾	15 ⁽⁴⁾	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^{\circ}\text{C}$

- 1) Derate linearly 14.3 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$
- 2) Derate linearly 6.9 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$
- 3) Derate linearly 300 mW/ $^{\circ}\text{C}$ for $T_C > +100^{\circ}\text{C}$
- 4) Derate linearly 150 mW/ $^{\circ}\text{C}$ for $T_C > +100^{\circ}\text{C}$



TO-66* (TO-213AA)
 2N5664, 2N5665



TO-5*
 2N5666, 2N5667



TO-39* (TO-205AD)
 2N5666S, 2N5667S

*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 $I_C = 10 \text{ mAdc}$	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage $I_E = 10 \mu\text{Adc}$	$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 200 \text{ Vdc}$ $V_{CE} = 300 \text{ Vdc}$	I_{CES}		0.2 0.2	μAdc

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2N5664, 2N5665, 2N5666, 2N5666S, 2N5667, 2N5667S JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
Collector-Base Cutoff Current $V_{CB} = 200 \text{ Vdc}$ $V_{CB} = 250 \text{ Vdc}$ $V_{CB} = 300 \text{ Vdc}$ $V_{CB} = 400 \text{ Vdc}$	I_{CBO}		0.1 1.0 0.1 1.0	μAdc mAdc μAdc mAdc

ON CHARACTERISTICS ⁽⁵⁾

Forward-Current Transfer Ratio $I_C = 0.5 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 3.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 5.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$	2N5664, 2N5666, S 2N5665, 2N5667, S 2N5664, 2N5666, S 2N5665, 2N5667, S 2N5664, 2N5666, S 2N5665, 2N5667, S All Types	h_{FE}	40 25 40 25 15 10 5.0	120 75	
Collector-Emitter Saturation Voltage $I_C = 3.0 \text{ Adc}, I_B = 0.3 \text{ Adc}$ $I_C = 3.0 \text{ Adc}, I_B = 0.6 \text{ Adc}$ $I_C = 5.0 \text{ Adc}, I_B = 1.0 \text{ Adc}$	2N5664, 2N5666, S 2N5665, 2N5667, S All Types	$V_{CE(sat)}$		0.4 0.4 1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 3.0 \text{ Adc}, I_B = 0.3 \text{ Adc}$ $I_C = 3.0 \text{ Adc}, I_B = 0.6 \text{ Adc}$ $I_C = 5.0 \text{ Adc}, I_B = 1.0 \text{ Adc}$	2N5664, 2N5666, S 2N5665, 2N5667, S All Types	$V_{BE(sat)}$		1.2 1.2 1.5	Vdc

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio $I_C = 0.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	2.0	7.0	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		120	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 100 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_{B1} = 30 \text{ mAdc}$	t_{on}		0.25	μs
Turn-Off Time $V_{CC} = 30 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_{B1} = -I_{B2} = 50 \text{ mAdc}$ 2N5664, 2N5666, S 2N5665, 2N5667, S	t_{off}		1.5 2.0	μs

SAFE OPERATING AREA

DC Tests (2N5664 and 2N5665 only) $T_C = 100^\circ\text{C}, 1 \text{ Cycle}, t \geq 1.0 \text{ s}, t_r + t_f = 10 \mu\text{s}$				
Test 1 $V_{CE} = 6.0 \text{ Vdc}, I_C = 5.0 \text{ Adc}$ $V_{CE} = 3.0 \text{ Vdc}, I_C = 5.0 \text{ Adc}$				
	2N5664 and 2N5665			
	2N5666 and 2N5667			
Test 2 $V_{CE} = 40 \text{ Vdc}, I_C = 0.75 \text{ Adc}$ $V_{CE} = 37.5 \text{ Vdc}, I_C = 0.4 \text{ Adc}$				
	2N5664 and 2N5665			
	2N5666 and 2N5667			
Test 3 $V_{CE} = 200 \text{ Vdc}, I_C = 43 \text{ mAdc}$ $V_{CE} = 200 \text{ Vdc}, I_C = 27 \text{ mAdc}$				
	2N5664			
	2N5666			
Test 4 $V_{CE} = 300 \text{ Vdc}, I_C = 21 \text{ mAdc}$ $V_{CE} = 300 \text{ Vdc}, I_C = 14 \text{ mAdc}$				
	2N5665			
	2N5667			

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

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Datasheets for electronics components.

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