



# TECHNICAL DATA

## NPN POWER SILICON SWITCHING TRANSISTOR

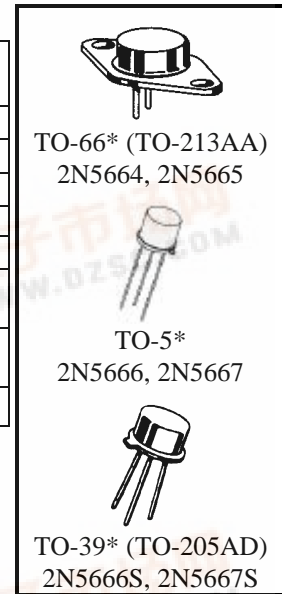
Qualified per MIL-PRF-19500/455

Devices	Qualified Level	Devices	Qualified Level
2N5664 2N5665	JAN JANTX JANTXV	2N5666 2N5667 2N5666S 2N5667S	JAN JANTX JANTXV JANS

### MAXIMUM RATINGS

Ratings	Symbol	2N5664	2N5665	Unit
		2N5666, S	2N5667, S	
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
Total Power Dissipation	$P_T$	2N5664	2N5666, S	W
		2N5665	2N5667, S	
		@ $T_A = +25^{\circ}C$	2.5 <sup>(1)</sup>	
	@ $T_C = +100^{\circ}C$	30 <sup>(3)</sup>	15 <sup>(4)</sup>	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^{\circ}C$

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



\*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
Collector-Emitter Breakdown Voltage $I_C = 10$ mAdc	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage $I_E = 10$ $\mu$ Adc	$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 200$ Vdc $V_{CE} = 300$ Vdc	$I_{CES}$		0.2 0.2	$\mu$ Adc



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

**ELECTRICAL CHARACTERISTICS (con't)**

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

**ON CHARACTERISTICS <sup>(5)</sup>**

Forward-Current Transfer Ratio	$h_{FE}$			
$I_C = 0.5$ Adc, $V_{CE} = 2.0$ Vdc				
$I_C = 1.0$ Adc, $V_{CE} = 5.0$ Vdc				
$I_C = 3.0$ Adc, $V_{CE} = 5.0$ Vdc				
$I_C = 5.0$ Adc, $V_{CE} = 5.0$ Vdc				
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			Vdc
$I_C = 3.0$ Adc, $I_B = 0.3$ Adc				
$I_C = 5.0$ Adc, $I_B = 1.0$ Adc				
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			Vdc
$I_C = 3.0$ Adc, $I_B = 0.3$ Adc				
$I_C = 5.0$ Adc, $I_B = 1.0$ Adc				

**DYNAMIC CHARACTERISTICS**

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

**SWITCHING CHARACTERISTICS**

Turn-On Time	$t_{on}$		0.25	$\mu$ s
$V_{CC} = 100$ Vdc; $I_C = 1.0$ Adc; $I_{B1} = 30$ mAdc				
Turn-Off Time	$t_{off}$			$\mu$ s
$V_{CC} = 30$ Vdc; $I_C = 1.0$ Adc; $I_{B1} = -I_{B2} = 50$ mAdc				

**SAFE OPERATING AREA**

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

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