

NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/455

DEVICES

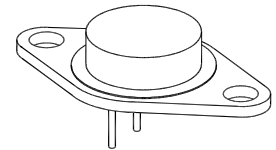
2N5664 2N5666 2N5667
 2N5665 2N5666S 2N5667S
 2N5666U3

LEVELS

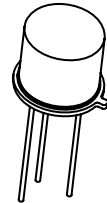
JAN
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ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

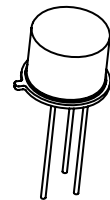
Parameters / Test Conditions	Symbol	2N5664 2N5666, S	2N5665 2N5667, S	Unit	
Collector-Emitter Voltage	V_{CEO}	200	300	Vdc	
Collector-Base Voltage	V_{CBO}	250	400	Vdc	
Emitter-Base Voltage	V_{EBO}	6.0		Vdc	
Base Current	I_B	1.0		Adc	
Collector Current	I_C	5.0		Adc	
		2N5664 2N5665	2N5666, S 2N5667, S	2N5666U3	
Total Power Dissipation 1/ @ $T_A = +25^\circ\text{C}$ @ $T_C = +100^\circ\text{C}$	P_T	2.5 30	1.2 15	1.5 35	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$	



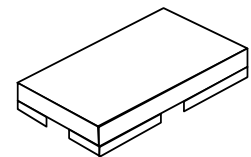
TO-66 (TO-213AA)
2N5664, 2N5665



TO-5
2N5666, 2N5667



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



U-3
2N5666U3

Note: 1) Consult 19500/455 for thermal derating curves.

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 10\text{mA}$	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage $I_E = 10\mu\text{A}$	$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 200\text{Vdc}$ $V_{CE} = 300\text{Vdc}$	I_{CES}		0.2 0.2	μA
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	μA mA

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ELECTRICAL CHARACTERISTICS (con't)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS				
Forward-Current Transfer Ratio $I_C = 0.5A_{dc}, V_{CE} = 2.0V_{dc}$		40 25		
	2N5664, 2N5666 2N5665, 2N5667			
$I_C = 1.0A_{dc}, V_{CE} = 5.0V_{dc}$		40 25	120 75	
	2N5664, 2N5666 2N5665, 2N5667			
$I_C = 3.0A_{dc}, V_{CE} = 5.0V_{dc}$		15 10		
	2N5664, 2N5666 2N5665, 2N5667			
$I_C = 5.0A_{dc}, V_{CE} = 5.0V_{dc}$		5.0		
	All Types			
Collector-Emitter Saturation Voltage $I_C = 3.0A_{dc}, I_B = 0.3A_{dc}$			0.4	
	2N5664, 2N5666			
$I_C = 3.0A_{dc}, I_B = 0.6A_{dc}$			0.4	
	2N5665, 2N5667			
$I_C = 5.0A_{dc}, I_B = 1.0A_{dc}$			1.0	
	All Types			
Base-Emitter Saturation Voltage $I_C = 3.0A_{dc}, I_B = 0.3A_{dc}$			1.2	
	2N5664, 2N5666			
$I_C = 3.0A_{dc}, I_B = 0.6A_{dc}$			1.2	
	2N5665, 2N5667			
$I_C = 5.0A_{dc}, I_B = 1.0A_{dc}$			1.5	
	All Types			

DYNAMIC CHARACTERISTICS

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

SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-On Time $V_{CC} = 100V_{dc}; I_C = 1.0A_{dc}; I_{B1} = 30mA_{dc}$	t_{on}		0.25	μs
Turn-Off Time $V_{CC} = 100V_{dc}; I_C = 1.0A_{dc}; I_{B1} = -I_{B2} = 50mA_{dc}$	t_{off}		1.5 2.0	μs
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SAFE OPERATING AREA

DC Tests

$T_C = 100^\circ\text{C}$, 1 Cycle, $t \geq 1.0\text{s}$, $t_r + t_f = 10\mu\text{s}$

Test 1

$V_{CE} = 6.0\text{Vdc}$, $I_C = 5.0\text{Adc}$ 2N5664, 2N5665

$V_{CE} = 3.0\text{Vdc}$, $I_C = 5.0\text{Adc}$ 2N5666, 2N5667

Test 2

$V_{CE} = 32\text{Vdc}$, $I_C = 0.75\text{Adc}$ 2N5664

$V_{CE} = 40\text{Vdc}$, $I_C = 0.75\text{Adc}$ 2N5665

$V_{CE} = 29\text{Vdc}$, $I_C = 0.4\text{Adc}$ 2N5666

$V_{CE} = 37.5\text{Vdc}$, $I_C = 0.4\text{Adc}$ 2N5667

Test 3

$V_{CE} = 200\text{Vdc}$, $I_C = 29\text{mAdc}$ 2N5664

$V_{CE} = 200\text{Vdc}$, $I_C = 19\text{mAdc}$ 2N5666

$V_{CE} = 300\text{Vdc}$, $I_C = 21\text{mAdc}$ 2N5665

$V_{CE} = 300\text{Vdc}$, $I_C = 14\text{mAdc}$ 2N5667

(2) Pulse Test: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2.0\%$