



6 Lake Street, Lawrence, MA 01841
1-800-446-1158 / (978) 620-2600 / Fax: (978) 689-0803
Website: <http://www.microsemi.com>

TECHNICAL DATA SHEET

NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/455

DEVICES

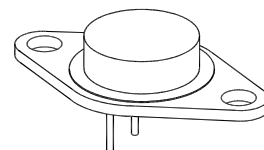
2N5664 2N5666 2N5667
2N5665 2N5666S 2N5667S
 2N5666U3

LEVELS

JAN
JANTX
JANTV
JANS

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

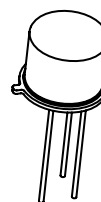
Parameters / Test Conditions	Symbol		2N5664 2N5666, S	2N5665 2N5667, S	Unit
Collector-Emitter Voltage	V _{CEO}		200	300	Vdc
Collector-Base Voltage	V _{CBO}		250	400	Vdc
Emitter-Base Voltage	V _{EBO}		6.0		Vdc
Base Current	I _B		1.0		Adc
Collector Current	I _C		5.0		Adc
			2N5664 2N5665	2N5666, S 2N5667, S	2N5666U3
Total 1/ Power Dissipation @ T _A = +25°C @ T _C = +100°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			°C



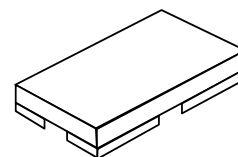
TO-66 (TO-213AA)
2N5664, 2N5665



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 $I_C = 10\text{mA}$ 2N5664, 2N5666 2N5665, 2N5667	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage $I_E = 10\mu\text{A}$	$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 200\text{Vdc}$ 2N5664, 2N5666 $V_{CE} = 300\text{Vdc}$ 2N5665, 2N5667	I_{CES}		0.2 0.2	μA
Collector-Base Cutoff Current $V_{CB} = 200\text{Vdc}$ 2N5664, 2N5666 $V_{CB} = 250\text{Vdc}$ $V_{CB} = 300\text{Vdc}$ 2N5665, 2N5667 $V_{CB} = 400\text{Vdc}$	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 $I_C = 0.5A_{dc}$, $V_{CE} = 2.0V_{dc}$ 2N5664, 2N5666 2N5665, 2N5667	h_{FE}	40 25		
$I_C = 1.0A_{dc}$, $V_{CE} = 5.0V_{dc}$ 2N5664, 2N5666 2N5665, 2N5667		40 25	120 75	
$I_C = 3.0A_{dc}$, $V_{CE} = 5.0V_{dc}$ 2N5664, 2N5666 2N5665, 2N5667		15 10		
$I_C = 5.0A_{dc}$, $V_{CE} = 5.0V_{dc}$ All Types		5.0		
Collector-Emitter Saturation Voltage $I_C = 3.0A_{dc}$, $I_B = 0.3A_{dc}$ $I_C = 3.0A_{dc}$, $I_B = 0.6A_{dc}$ $I_C = 5.0A_{dc}$, $I_B = 1.0A_{dc}$ 2N5664, 2N5666 2N5665, 2N5667 All Types	$V_{CE(sat)}$		0.4 0.4 1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 3.0A_{dc}$, $I_B = 0.3A_{dc}$ $I_C = 3.0A_{dc}$, $I_B = 0.6A_{dc}$ $I_C = 5.0A_{dc}$, $I_B = 1.0A_{dc}$ 2N5664, 2N5666 2N5665, 2N5667 All Types	$V_{BE(sat)}$		1.2 1.2 1.5	Vdc

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 $V_{CC} = 100V_{dc}$, $I_C = 1.0A_{dc}$, $I_{B1} = -I_{B2} = 50mA_{dc}$ 2N5664, 2N5666 2N5665, 2N5667	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 $\leq 2.0\%$