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Microsemi LAWRENCE

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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

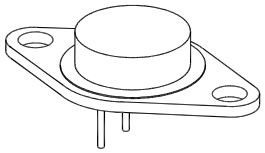
ABSOLUTE MAXIMUM RATINGS *(T_C = +25°C unless otherwise noted)*

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°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

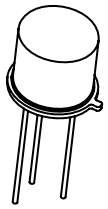
Note: 1) Consult 19500/455 for thermal derating curves.

ELECTRICAL CHARACTERISTICS *(T_C = +25°C, unless otherwise noted)*

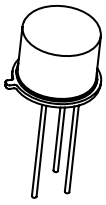
Parameters / Test Conditions		Symbol	Min.	Max.	Unit
OFF CHARACTERTICS					
Collector-Emitter Breakdown Voltage I_C = 10mAdc	2N5664, 2N5666 2N5665, 2N5667	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage I_E = 10µAdc		$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current V_{CE} = 200Vdc V_{CE} = 300Vdc	2N5664, 2N5666 2N5665, 2N5667	I_{CES}		0.2 0.2	µAdc
Collector-Base Cutoff Current V_{CB} = 200Vdc V_{CB} = 250Vdc V_{CB} = 300Vdc V_{CB} = 400Vdc	2N5664, 2N5666 2N5665, 2N5667	I_{CBO}		0.1 1.0 0.1 1.0	µAdc mAdc µAdc mAdc



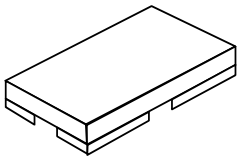
TO-66 (TO-213AA)
2N5664, 2N5665



TO-5
2N5666, 2N5667



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



U-3
2N5666U3

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TECHNICAL DATA SHEET

NPN POWER SILICON SWITCHING TRANSISTOR

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ELECTRICAL CHARACTERISTICS (con't)

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

DYNAMIC CHARACTERISTICS

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

SWITCHING CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Turn-On Time V_{CC} = 100Vdc; I_C = 1.0Adc; I_{B1} = 30mAdc		t_{on}		0.25	µs
Turn-Off Time					
V_{CC} = 100Vdc; I_C = 1.0Adc; I_{B1} = -I_{B2} = 50mAdc	2N5664, 2N5666	t_{off}		1.5	µs
	2N5665, 2N5667			2.0	

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SAFE OPERATING AREA

DC Tests
T_C = 100°C, 1 Cycle, t ≥ 1.0s, $t_r + t_f$ = 10µs

Test 1

V_{CE} = 6.0Vdc, I_C = 5.0Adc	2N5664 , 2N5665
V_{CE} = 3.0Vdc, I_C = 5.0Adc	2N5666, 2N5667

Test 2

V_{CE} = 32Vdc, I_C = 0.75Adc	2N5664
V_{CE} = 40Vdc, I_C = 0.75Adc	2N5665
V_{CE} = 29Vdc, I_C = 0.4Adc	2N5666
V_{CE} = 37.5Vdc, I_C = 0.4Adc	2N5667

Test 3

V_{CE} = 200Vdc, I_C = 29mAdc	2N5664
V_{CE} = 200Vdc, I_C = 19mAdc	2N5666
V_{CE} = 300Vdc, I_C = 21mAdc	2N5665
V_{CE} = 300Vdc, I_C = 14mAdc	2N5667

(2) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%