Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON SWITCHING TRANSISTOR

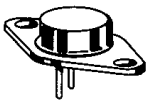
Qualified per MIL-PRF-19500/455

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

MAXIMUM RATINGS

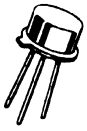
Ratings	Symbol	2N5664 2N5666, S	2N5665 2N5667, S	Unit
Collector-Emitter Voltage	V_{CEO}	200	300	Vdc
Collector-Base Voltage	V_{CBO}	250	400	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Base Current	I_B	1.0		Adc
Collector Current	I_C	5.0		Adc
		2N5664 2N5665	**2N5666, S 2N5667, S**	
Total Power Dissipation @ $T_A = +25^0C$ @ $T_C = +100^0C$	P_T	2.5 (1) 30 (3)	1.2 (2) 15 (4)	W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

1) Derate linearly 14.3 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly 6.9 mW/^{0}C for $T_A > +25^0C$
3) Derate linearly 300 mW/^{0}C for $T_C > +100^0C$
4) Derate linearly 150 mW/^{0}C for $T_C > +100^0C$



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

TO-5*
2N5666, 2N5667



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

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_C = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C = 10 mAdc	2N5664, 2N5666, S 2N5665, 2N5667, S	$V_{(BR)CER}$	250 400		Vdc
Emitter-Base Breakdown Voltage I_E = 10 µAdc		$V_{(BR)EBO}$	6.0		Vdc
Collector-Emitter Cutoff Current V_{CE} = 200 Vdc V_{CE} = 300 Vdc	2N5664, 2N5666, S 2N5665, 2N5667, S	I_{CES}		0.2 0.2	µAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
Collector-Base Cutoff Current					
V_{CB} = 200 Vdc	2N5664, 2N5666, S	I_{CBO}		0.1	µAdc
V_{CB} = 250 Vdc				1.0	mAdc
V_{CB} = 300 Vdc	2N5665, 2N5667, S			0.1	µAdc
V_{CB} = 400 Vdc				1.0	mAdc
ON CHARACTERISTICS (5)					
Forward-Current Transfer Ratio					
I_C = 0.5 Adc, V_{CE} = 2.0 Vdc	2N5664, 2N5666, S	h_{FE}	40		
	2N5665, 2N5667, S		25		
I_C = 1.0 Adc, V_{CE} = 5.0 Vdc	2N5664, 2N5666, S		40	120	
	2N5665, 2N5667, S		25	75	
I_C = 3.0 Adc, V_{CE} = 5.0 Vdc	2N5664, 2N5666, S		15		
	2N5665, 2N5667, S		10		
I_C = 5.0 Adc, V_{CE} = 5.0 Vdc	All Types		5.0		
Collector-Emitter Saturation Voltage					
I_C = 3.0 Adc, I_B = 0.3 Adc	2N5664, 2N5666, S	$V_{CE(sat)}$		0.4	
I_C = 3.0 Adc, I_B = 0.6 Adc	2N5665, 2N5667, S			0.4	Vdc
I_C = 5.0 Adc, I_B = 1.0 Adc	All Types			1.0	
Base-Emitter Saturation Voltage					
I_C = 3.0 Adc, I_B = 0.3 Adc	2N5664, 2N5666, S	$V_{BE(sat)}$		1.2	
I_C = 3.0 Adc, I_B = 0.6 Adc	2N5665, 2N5667, S			1.2	Vdc
I_C = 5.0 Adc, I_B = 1.0 Adc	All Types			1.5	
DYNAMIC CHARACTERISTICS					
Forward Current Transfer Ratio					
I_C = 0.5 Adc, V_{CE} = 5.0 Vdc, f = 10 MHz		$\lvert h_{fe} \rvert$	2.0	7.0	
Output Capacitance					
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}		120	pF
SWITCHING CHARACTERISTICS					
Turn-On Time					
V_{CC} = 100 Vdc; I_C = 1.0 Adc; I_{B1} = 30 mAdc		t_{on}		0.25	µs
Turn-Off Time					
V_{CC} = 30 Vdc; I_C = 1.0 Adc; I_{B1} = $-I_{B2}$ = 50 mAdc		t_{off}			µs
	2N5664, 2N5666, S			1.5	
	2N5665, 2N5667, S			2.0	

SAFE OPERATING AREA

DC Tests (2N5664 and 2N5665 only)

T_C = 100^{0}C, 1 Cycle, t ≥ 1.0 s, $t_r + t_f$ = 10 µs

Test 1	
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
Test 2	
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
Test 3	
V_{CE} = 200 Vdc, I_C = 43 mAdc	2N5664
V_{CE} = 200 Vdc, I_C = 27 mAdc	2N5666
Test 4	
V_{CE} = 300 Vdc, I_C = 21 mAdc	2N5665
V_{CE} = 300 Vdc, I_C = 14 mAdc	2N5667

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