Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/466

Devices		*Qualified Level*
2N5683	**2N5684**	**JAN JANTX JANTXV**

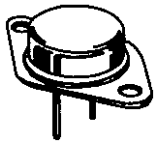
MAXIMUM RATINGS

Ratings	Symbol	2N5683	2N5684	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Base Current	I_B	15		Adc
Collector Current	I_C	50		Adc
Total Power Dissipation [1] @ $T_C = 25^0C$ @ $T_C = 100^0C$	P_T	300 171		W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.584	$^0C/W$

1) Derate linearly 1.715 $W/^0C$ between $T_C = +25^0C$ and $T_C = +200^0C$



TO-3*
(TO-204AA)

*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 = 200 mAdc	2N5683 2N5684	$V_{(BR)CEO}$	60 80		Vdc
Collector-Emitter Cutoff Current V_{CE} = 30 Vdc V_{CE} = 40 Vdc	2N5683 2N5684	I_{CEO}		5.0 5.0	µAdc
Collector-Emitter Cutoff Current V_{CE} = 60 Vdc, V_{BE} = 1.5 Vdc V_{CE} = 80 Vdc, V_{BE} = 1.5 Vdc	2N5683 2N5684	I_{CEX}		5.0 5.0	µAdc
Collector-Base Cutoff Current V_{CB} = 60 Vdc V_{CB} = 80 Vdc	2N5683 2N5684	I_{CBO}		5.0 5.0	µAdc
Emitter-Base Cutoff Current V_{EB} = 5.0 Vdc		I_{EBO}		5.0	µAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (2)				
Forward-Current Transfer Ratio I_C = 5.0 Adc, V_{CE} = 2.0 Vdc I_C = 25 Adc, V_{CE} = 2.0 Vdc I_C = 50 Adc, V_{CE} = 5.0 Vdc	h_{FE}	30 15 5.0	60	
Collector-Emitter Saturation Voltage I_C = 25 Adc, I_B = 2.5 Adc I_C = 50 Adc, I_B = 10 Adc	$V_{CE(sat)}$		1.0 5.0	Vdc
Base-Emitter Saturation Voltage I_C = 25 Adc, I_B = 2.5 Adc	$V_{BE(sat)}$		2.0	Vdc
Base-Emitter Voltage I_C = 25 Adc, V_{CE} = 2.0 Vdc	$V_{BE(on)}$		2.0	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 5.0 Adc, V_{CE} = 10 Vdc, f = 1.0 MHz	$\lvert h_{fe} \rvert$	2.0	20	
Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 10 Adc, V_{CE} = 5.0 Vdc, f = 1.0 kHz	h_{fe}	15		
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C_{obo}		2,000	pF
SWITCHING CHARACTERISTICS				
Turn-On Time V_{CC} = 30 Vdc; I_C = 25 Adc; I_B = 2.5 Adc	t_{on}		1.5	µs
Turn-Off Time V_{CC} = 30 Vdc; I_C = 25 Adc; I_{B1} = I_{B2} = 2.5 Adc	t_{off}		3.0	µs

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C, 1 Cycle, t = 1.0 s

Test 1

V_{CE} = 6.0 Vdc, I_C = 50 Adc — All Types

Test 2

V_{CE} = 30 Vdc, I_C = 10 Adc — All Types

Test 3

V_{CE} = 50 Vdc, I_C = 560 mAdc — 2N5683

V_{CE} = 60 Vdc, I_C = 640 mAdc — 2N5684

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