Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/525

Devices		*Qualified Level*
2N6546	**2N6547**	**JAN JANTX JANTXV**

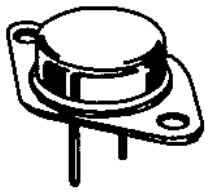
MAXIMUM RATINGS

Ratings	Symbol	2N6546	2N6547	Units
Collector-Emitter Voltage	V_{CEO}	300	400	Vdc
Collector-Base Voltage	V_{CEX}	600	850	Vdc
Emitter-Base Voltage	V_{EBO}	8		Vdc
Base Current	I_B	10		Adc
Collector Current	I_C	15		Adc
Total Power Dissipation @ $T_C = +25^0C$ (1) @ $T_C = +100^0C$ (1)	P_T	175 100		W W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^0C/W$

1) Between $T_C = +25^0C$ and $T_C = +200^0C$, linear derating factor (average) = 1.0 $W/^0C$



TO-3 (TO-204AA)*

*See Appendix A for Package Outline

ELECTRICAL CHARACTERISTICS

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C = 100 mAdc	2N6546 2N6547	$V_{(BR)CEO}$	300 400		Vdc
Collector-Emitter Cutoff Current V_{CE} = 600 Vdc; V_{BE} = 1.5 Vdc V_{CE} = 850 Vdc; V_{BE} = 1.5 Vdc	 2N6546 2N6547	I_{CEX}		 1.0 1.0	mAdc
Emitter-Base Cutoff Current V_{EB} = 8 Vdc		I_{EBO}		1.0	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
Forward-Current Transfer Ratio I_C = 1 Adc; V_{CE} = 2 Vdc I_C = 5 Adc; V_{CE} = 2 Vdc I_C = 10 Adc; V_{CE} = 2 Vdc	h_{FE}	 15 12 6	 60	
Base-Emitter Saturated Voltage I_B = 2.0 Adc; I_C = 10 Adc	$V_{BE(sat)}$		1.6	Vdc
Collector-Emitter Saturated Voltage I_B = 2.0 Adc; I_C = 10 Adc I_B = 3.0 Adc; I_C = 15 Adc	$V_{CE(sat)}$		1.5 5.0	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common-Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 1 MHz	$\lvert h_{fe} \rvert$	6.0	30	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C_{obo}		500	pF
SWITCHING CHARACTERISTICS				
Turn-On Time V_{CC} = 250 Vdc; I_C = 10 Adc; I_{B1} = I_{B2} = 2 Adc	t_{on}		1.0	µs
Turn-Off Time V_{CC} = 250 Vdc; I_C = 10 Adc; I_{B1} = I_{B2} = 2 Adc	t_{off}		4.7	µs

SAFE OPERATING AREA

DC Tests

T_C = +25°C; t_p = 1 s; 1 cycle (See Figure 3 of MIL-PRF-19500/525)

Test 1

V_{CE} = 11.7 Vdc; I_C = 15 Adc

Test 2

V_{CE} = 20 Vdc; I_C = 8.75 Adc

Test 3

V_{CE} = 250 Vdc; I_C = 45 mAdc 2N6546

V_{CE} = 350 Vdc; I_C = 30 mAdc 2N6547

Unclamped Inductive lOAD

T_C = +25°C; duty cycle ≤ 10%; R_S = 0.1 Ω; t_r = t_f ≤ 500 ηs (See Figure 4 of MIL-PRF-19500/525)

Test 1

Tp = 5 ms; (vary to obtain I_C); R_{BB1} = 15 Ω; $V_{BB}1$ = 38.5 Vdc; R_{BB2} = 50 Ω;
V_{BB2} = -4 Vdc; V_{CC} = 20 Vdc; IC = 15 Adc; L = 10 µH

Test 2

Tp = 5 ms; (vary to obtain I_C); R_{BB1} = 15 Ω; $V_{BB}1$ = 38.5 Vdc; R_{BB2} = 50 Ω;
V_{BB2} = -4 Vdc; V_{CC} = 20 Vdc; IC = 100 mAdc; L = 1 mH

Clamped Inductive Load

T_A = +25°C; duty cycle ≤ 5%; Tp = 1.5 ms; (vary to obtain I_C); V_{CC} = 20 Vdc; I_C = 8 Adc; L = 180 µH
(See Figure 5 of MIL-PRF-19500/525)

Clamped Voltage = 350 Vdc 2N6546

Clamped Voltage = 450 Vdc 2N6547

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

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