Microsemi LAWRENCE

TECHNICAL DATA

NPN DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/523

Devices			*Qualified Level*
2N6383	**2N6384**	**2N6385**	**JAN, JANTX JANTXV**

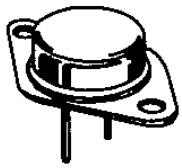
MAXIMUM RATINGS

Ratings	Symbol	2N6383	2N6384	2N6385	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	80	Vdc
Collector-Base Voltage	V_{CBO}	40	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0			Vdc
Base Current	I_B	0.25			Adc
Collector Current	I_C	10			Adc
Total Power Dissipation @ $T_A = +25^0C$ (1) @ $T_C = +25^0C$ (2)	P_T	6.0 100			W W
Operating & Storage Temperature	T_{op}, T_{stg}	-55 to +175			^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.75	$^0C/W$

1) Derate linearly 34.2 mW/^{0}C above $T_A > +25^0C$
2) Derate linearly 571 mW/^{0}C above $T_C > +25^0C$



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	2N6383	$V_{(BR)CEO}$	40		Vdc
	2N6384		60		
	2N6385		80		
Collector-Emitter Breakdown Voltage					
I_C = 200 mAdc, R_{BB} = 100 Ω	2N6383	$V_{(BR)CER}$	40		Vdc
	2N6384		60		
	2N6385		80		
Collector-Base Cutoff Current					
V_{CE} = 40 Vdc	2N6383	I_{CBO}		1.0	mAdc
V_{CE} = 60 Vdc	2N6384			1.0	
V_{CE} = 80 Vdc	2N6385			1.0	

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
Emitter-Base Cutoff Current V_{EB} = 5.0 Vdc		I_{EBO}		5.0	mAdc
Collector-Emitter Cutoff Current		I_{CEO}			mAdc
V_{CE} = 40 Vdc	2N6383			1.0	
V_{CE} = 60 Vdc	2N6384			1.0	
V_{CE} = 80 Vdc	2N6385			1.0	
Collector-Emitter Cutoff Current		I_{CEX}			mAdc
V_{CE} = 40 Vdc, V_{BE} = 1.5 Vdc	2N6383			0.3	
V_{CE} = 60 Vdc, V_{BE} = 1.5 Vdc	2N6384			0.3	
V_{CE} = 80 Vdc, V_{BE} = 1.5 Vdc	2N6385			0.3	
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio		h_{FE}			
I_C = 5.0 Adc, V_{CE} = 3.0 Vdc			1,000	20,000	
I_C = 10 Adc, V_{CE} = 3.0 Vdc			100		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
I_C = 5.0 Adc, I_B = 10 mAdc				2.0	
I_C = 10 Adc, I_B = 0.1 Adc				3.0	
Base-Emitter Voltage		$V_{BE(on)}$			Vdc
I_C = 5.0 Adc, V_{CE} = 3.0 Vdc				2.8	
I_C = 10 Adc, V_{CE} = 3.0 Vdc				4.5	
DYNAMIC CHARACTERISTICS					
Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 1.0 Adc, V_{CE} = 5.0 Vdc, f = 1.0 MHz		$\lvert h_{fe} \rvert$	20	300	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}		200	pF
SWITCHING CHARACTERISTICS					
Turn-On Time V_{CC} = 30 Vdc; I_C = 5.0 Adc; I_{B1} = 20 mAdc		t_{on}		2.5	µs
Turn-Off Time V_{CC} = 30 Vdc; I_C = 5.0 Adc; I_{B1} = $-I_{B2}$ = 20 mAdc		t_{off}		10	µs

SAFE OPERATING AREA

DC Tests	
T_C = +25^{0}C, 1 Cycle, t = 1.0 s	
Test 1	
V_{CE} = 10 Vdc, I_C = 10 Adc	All Types
Test 2	
V_{CE} = 30 Vdc, I_C = 3.33 Adc	All Types
Test 3	
V_{CE} = 40 Vdc, I_C = 1.5 Adc	2N6383
V_{CE} = 60 Vdc, I_C = 0.4 Adc	2N6384
V_{CE} = 80 Vdc, I_C = 0.16 Adc	2N6385

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