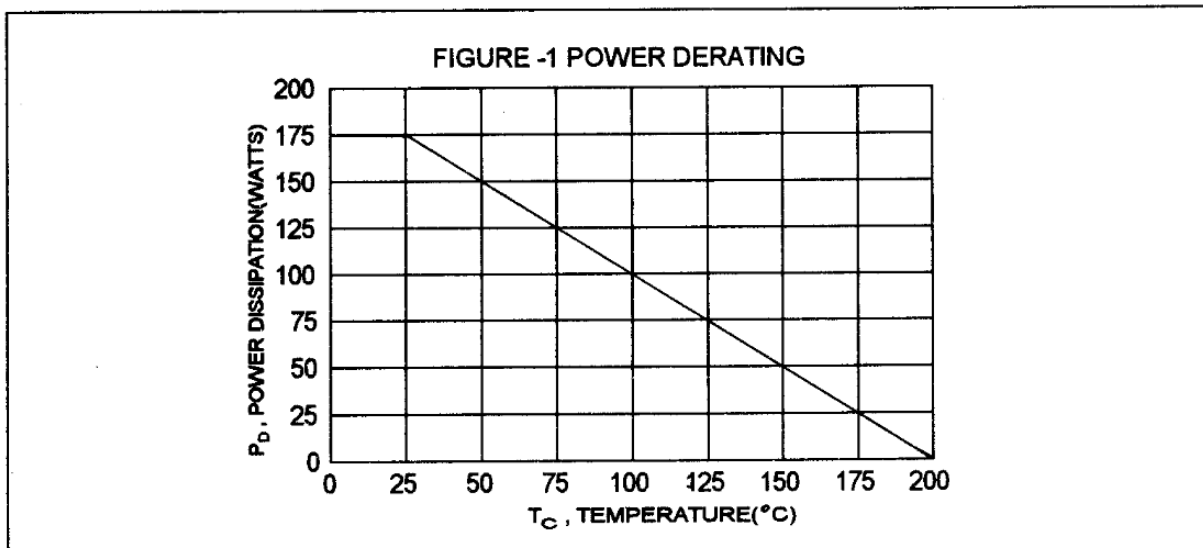


MAXIMUM RATINGS

Characteristic	Symbol	MJ10008	MJ10009	Unit
Collector-Emitter Voltage	V_{CEV}	650	700	V
Collector-Emitter Voltage	$V_{CEX(SUS)}$	450	500	V
Collector-Emitter Voltage	$V_{CEO(SUS)}$	450	500	V
Emitter-Base Voltage	V_{EBO}	8.0		V
Collector Current-Continuous	I_C	20		A
-Peak	I_{CM}	30		
Base current	I_B	2.5		A
Total Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	175		W
@ $T_C=100^\circ\text{C}$		100		W
Derate above 25°C		1.0		W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	- 65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.0	$^\circ\text{C/W}$



MJ10008, MJ10009

NPN Silicon Power Darlington Transistor

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage ($I_C = 100\text{ mA}, I_B = 0, V_{\text{clamp}} = \text{Rate } V_{\text{CEO}}$)	MJ10008 MJ10009	$V_{\text{CEO(sus)}}$	450 500	V
Collector Cutoff Current ($V_{\text{CE}} = \text{Rated } V_{\text{CEV}}, R_{\text{BE}} = 50\text{ ohm}, T_c = 100^\circ\text{C}$)		I_{CER}	5.0	mA
Collector Cutoff Current ($V_{\text{CEV}} = \text{Rated Value}, V_{\text{BE(OFF)}} = 1.5\text{ V}$) ($V_{\text{CEV}} = \text{Rated Value}, V_{\text{BE(OFF)}} = 1.5\text{ V}, T_c = 100^\circ\text{C}$)		I_{CEV}	0.25 5.0	mA
Emitter Cutoff Current ($V_{\text{EB}} = 2.0\text{ V}, I_C = 0$)		I_{EBO}	175	mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 5.0\text{ A}, V_{\text{CE}} = 5.0\text{ V}$) ($I_C = 10\text{ A}, V_{\text{CE}} = 5.0\text{ V}$)		hFE	40 30	400 300	
Collector - Emitter Saturation Voltage ($I_C = 10\text{ A}, I_B = 500\text{ mA}$) ($I_C = 20\text{ A}, I_B = 2.0\text{ A}$) ($I_C = 10\text{ A}, I_B = 500\text{ mA}, T_c = 100^\circ\text{C}$)		$V_{\text{CE(sat)}}$		2.0 3.5 2.5	V
Base - Emitter Saturation Voltage ($I_C = 10\text{ A}, I_B = 500\text{ mA}$) ($I_C = 10\text{ A}, I_B = 500\text{ mA}, T_c = 100^\circ\text{C}$)		$V_{\text{BE(sat)}}$		2.5 2.5	V
Diode Forward Voltage ($I_F = 10\text{ A}$)		V_F		5.0	V

DYNAMIC CHARACTERISTICS

Small-Signal Current Gain(2) ($I_C = 1.0\text{ A}, V_{\text{CE}} = 10\text{ V}, f = 1.0\text{ MHz}$)		$ h_{fe} $	8.0		
Output Capacitance ($V_{\text{CB}} = 10\text{ V}, I_E = 0, f = 100\text{ kHz}$)		C_{ob}	100		pF

SWITCHING CHARACTERISTICS

Delay Time	$V_{\text{CC}} = 250\text{ V}, I_C = 10\text{ A}$ $I_{B1} = 500\text{ mA}, V_{\text{BE(off)}} = 5.0\text{ V}$ $t_p = 50\text{ us}, \text{Duty Cycle} \leq 2\%$	t_d	0.25	us
Rise Time		t_r	1.5	us
Storage Time		t_s	2.0	us
Fall Time		t_f	0.6	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle \leq 2.0%

(2) $f_T = |h_{fe}| \cdot f_{\text{test}}$