

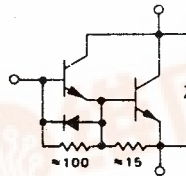
MOSPEC

SWITCHMODE SERIES NPN SILICON POWER DARLINGTON TRANSISTOR WITH BASE-EMITTER SPEEDUP DIODE

The MJ10006 and MJ10007 darlington transistors are designed for high-voltage, high-speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line operated switch-mode applications such as:

FEATURES:

- *Continuous Collector Current - $I_C = 10\text{ A}$
- *Switching Regulators
- *Inverters
- *Solenoid and Relay Drivers

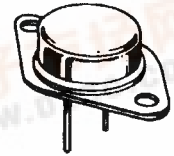


**NPN
MJ10006
MJ10007**

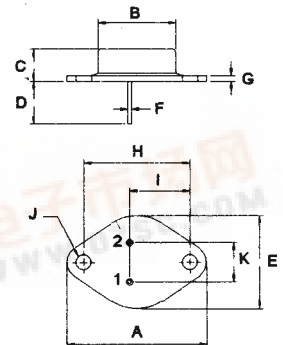
**10 AMPERE
POWER DARLINGTON
TRANSISTORS
350-400 VOLTS
150 WATTS**

MAXIMUM RATINGS

Characteristic	Symbol	MJ10006	MJ10007	Unit
Collector-Emitter Voltage	V_{CEV}	450	500	V
Collector-Emitter Voltage	$V_{CEX(SUS)}$	400	450	V
Collector-Emitter Voltage	$V_{CEO(SUS)}$	350	400	V
Emitter-Base Voltage	V_{EBO}	8.0		V
Collector Current-Continuous	I_C	10		A
-Peak	I_{CM}	20		
Base current	I_B	2.5		A
Total Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	150		W
@ $T_C=100^\circ\text{C}$		85		W
Derate above 25°C		0.86		W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	- 65 to +200		$^\circ\text{C}$



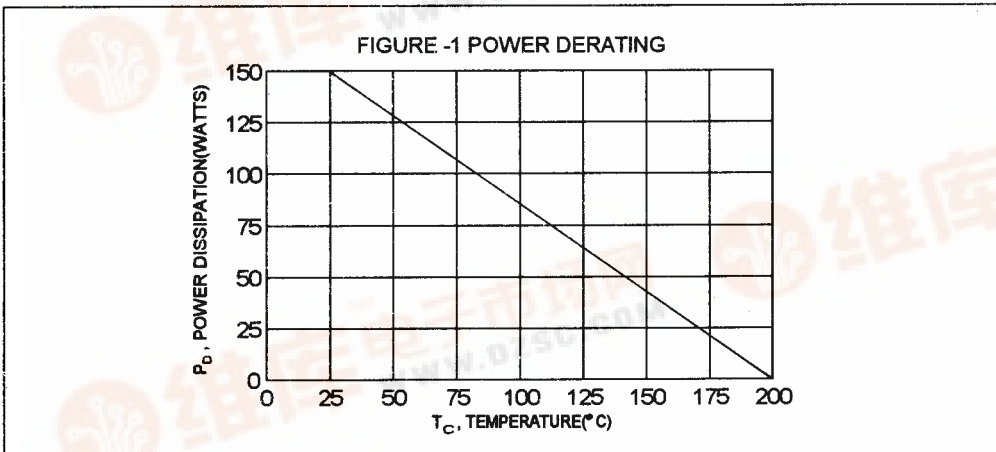
TO-3



PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.17	$^\circ\text{C/W}$



DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

ELECTRICAL CHARACTERISTICS (T_c = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage (I _c = 250 mA, I _B = 0, V _{clamp} = Rate V _{CEO})	MJ10006 MJ10007	V _{CEO(sus)}	350 400	V
Collector Cutoff Current (V _{CE} = Rated V _{CEV} , R _{BE} = 50 ohm, T _c = 100°C)		I _{CER}	5.0	mA
Collector Cutoff Current (V _{CEV} = Rated Value, V _{BE(OFF)} = 1.5 V) (V _{CEV} = Rated Value, V _{BE(OFF)} = 1.5 V, T _c = 100°C)		I _{CEV}	0.25 5.0	mA
Emitter Cutoff Current (V _{EB} = 2.0 V, I _c = 0)		I _{EBO}	175	mA

ON CHARACTERISTICS (1)

DC Current Gain (I _c = 2.5 A, V _{CE} = 5.0 V) (I _c = 5.0 A, V _{CE} = 5.0 V)		hFE	40 30	500 300	
Collector - Emitter Saturation Voltage (I _c = 5.0 A, I _B = 250mA) (I _c = 10 A, I _B = 1.0 A) (I _c = 5.0 A, I _B = 250 mA, T _c = 100°C)		V _{CE(sat)}		1.9 2.9 2.0	V
Base - Emitter Saturation Voltage (I _c = 5.0 A, I _B = 250 mA) (I _c = 5.0 A, I _B = 250 mA, T _c = 100°C)		V _{BE(sat)}		2.5 2.5	V
Diode Forward Voltage (I _F = 5.0 A)		V _F		5.0	V

DYNAMIC CHARACTERISTICS

Small-Signal Current Gain(2) (I _c = 1.0 A, V _{CE} = 10 V, f = 1.0 MHz)		h _{fe}	10		
Output Capacitance (V _{CB} = 10 V, I _E = 0, f = 100 kHz)		C _{ob}	60		pF

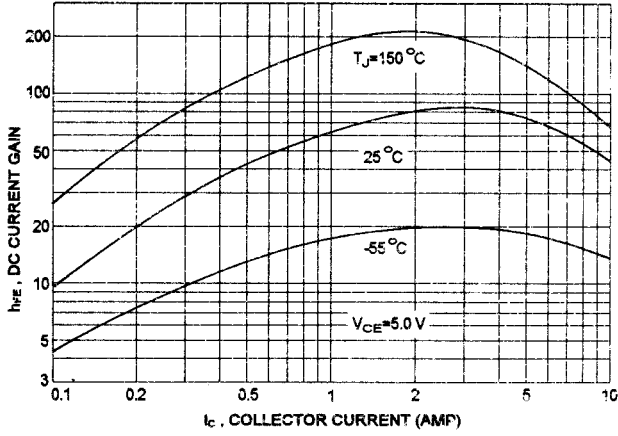
SWITCHING CHARACTERISTICS

Delay Time	V _{CC} = 250 V, I _c = 5.0 A I _{B1} = 250 mA, V _{BE(off)} = 5.0V tp = 50us, Duty Cycle ≤ 2%	t _d	0.2	us
Rise Time		t _r	0.6	us
Storage Time		t _s	1.5	us
Fall Time		t _f	0.5	us

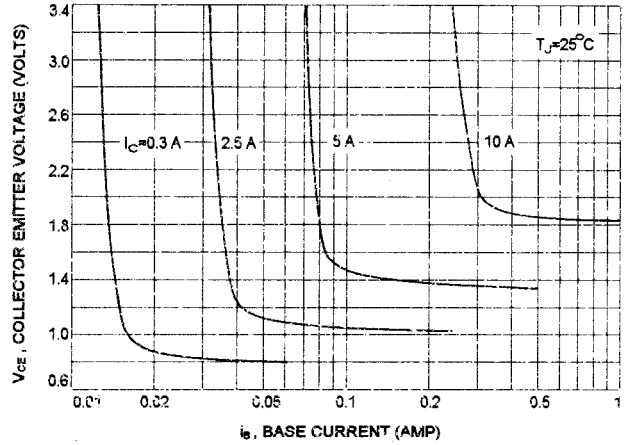
(1) Pulse Test: Pulse width = 300 us , Duty Cycle ≤ 2.0%

(2) f_T = | h_{fe} | ° f_{test}

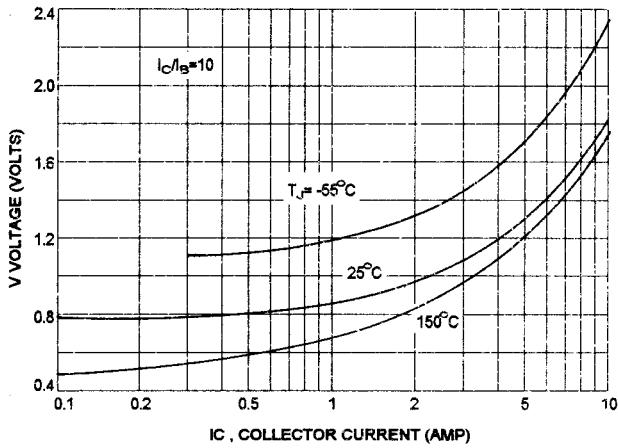
DC CURRENT GAIN



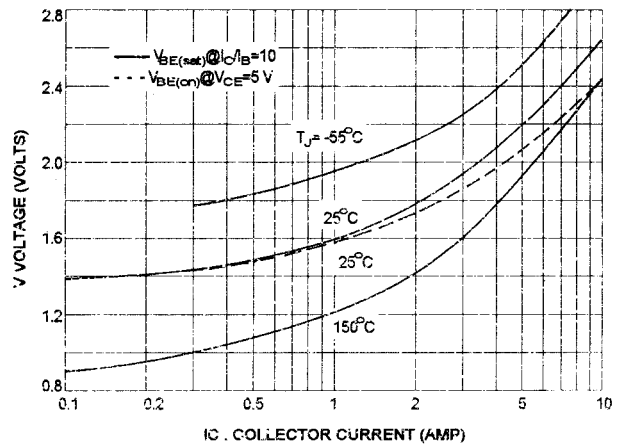
COLLECTOR SATURATION REGION



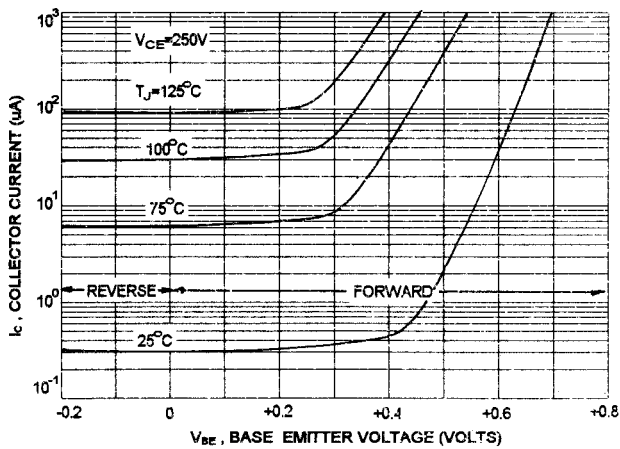
COLLECTOR EMITTER SATURATION VOLTAGE



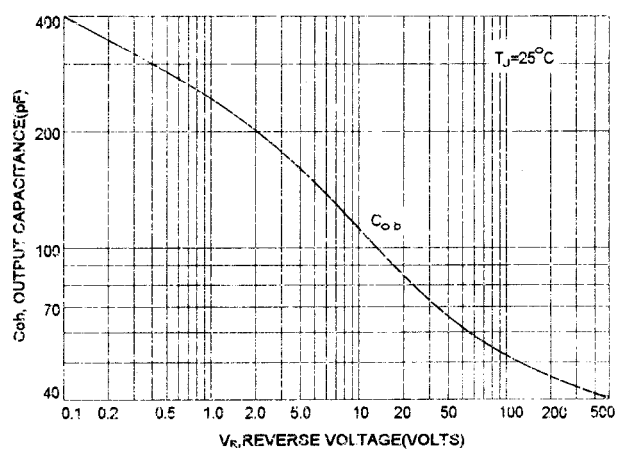
BASE EMITTER VOLTAGE



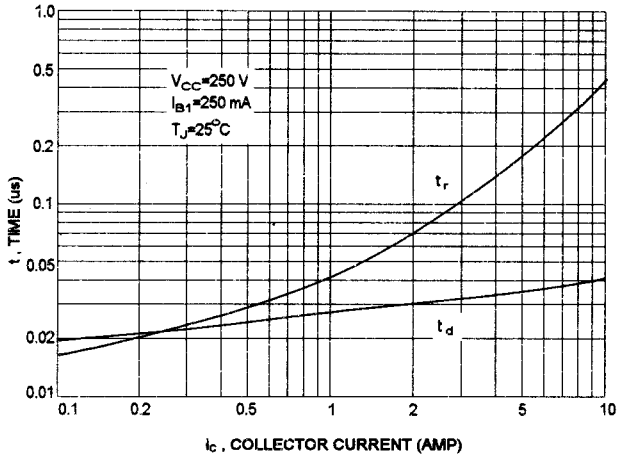
COLLECTOR CUT-OFF REGION



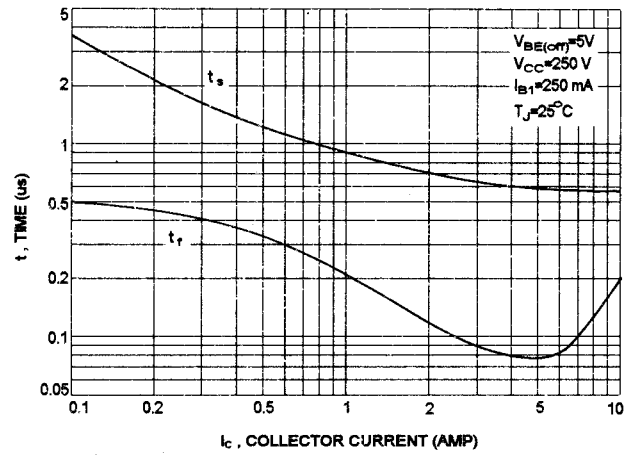
OUTPUT CAPACITANCES



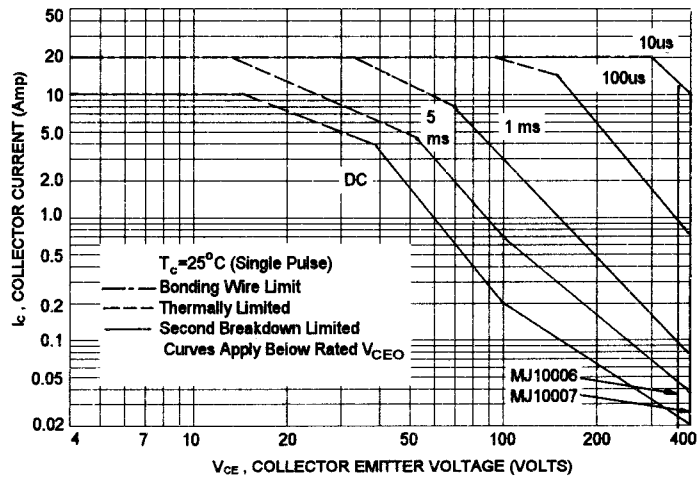
TURN-ON TIME



TURN-OFF TIME



ACTIVE REGION SAFE OPERATING AREA



REVERSE BIAS SWITCHING SAFE OPERATING AREA

