MOSPEC

SWITCHMODE SERIES
NPN SILICON TRANSISTORS

…designed for high-voltage, high-speed, power switching in inductive circuits where fall time is critical , They are particularly suited for line operated switchmode applications such as:

* Switching Regulators
* Inverters
* Solenoid and relay drivers
* Motor Controls
* Deflection Circuits

Fast Turn-off Times
400ns Inductive Fall Time –25°C(Typ)
2.5 us Inductive Storage Time—25°C(Typ)
Operating Temperature Range –65°C to +200°C
100°C performance Specified for:
Reversed Biased SOA with Inductive Loads
Switching Times with Inductive Loads
Leakage Currents

NPN
MJ13332
MJ13333
MJ13334
MJ13335

20 AMPERES

POWER TRANSISTOR
NPN SILICON

350-500 VOLTS
175 WATTS

TO-3

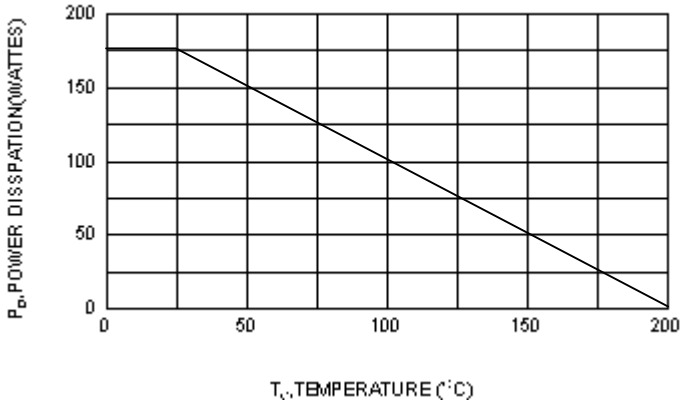
MAXIMUM RATINGS

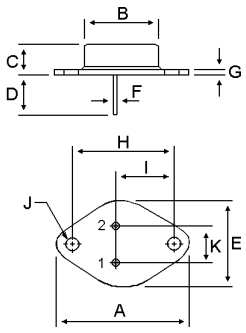
Rating	Symbol	MJ13332	MJ13333	MJ13334	MJ13335	Unit
Collector-Emitter Voltage	V_{CEV}	650	700	750	800	V
Collector-Emitter Voltage	V_{CEO}	350	400	450	500	V
Emitter-Base Voltage	V_{EB}	6.0				V
Collector Current-Continuous Peak	I_C I_{CM}	20 30				A
Base Current	I_B	10				A
Total Device Dissipation @ T_C=25°C Derate above 25°C	P_D	275 1.0				Watts W/°C
Operating and Storage Junction Temperature Range	T_J , T_{STG}	-65 to +200				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance to Case	$R_{\theta JC}$	1.0	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

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 CHARATERISTICS (T_C=25°C unless otherwise noted)

Characteristic		Symbol	Min.	Typ.	Max	Unit
OFFCHARACTERISTICS						
Collector-Emitter Sustaining Voltage (I_C = 100 mAdc, I_B = 0)	MJ13332 MJ13333 MJ13334 MJ13335	$V_{CEO(sus)}$	350 400 450 500	-- -- -- --	-- -- -- --	V
Collector Current (V_{CE} = Rated V_{CEV}, $V_{BE(off)}$ = 1.5V)		I_{CEV}	--	--	5.0	mAdc
Emitter Cutoff Current (V_{BE}= 6.0 Vdc, I_c = 0)		I_{EBO}	--	--	1.0	mAdc
ON CHARACTERISTICS(1)						
DC current gain (I_C = 5.0 Adc, V_{CE} = 5.0 Vdc)		h_{FE}	10	--	60	
Collector-Emitter Saturation Voltage (I_C = 10 Adc, I_B = 2.0 Adc) (I_C = 20 Adc, I_B = 6.7 Adc)		$V_{CE(sat)}$	-- --	-- --	1.8 5.0	Vdc
Base-Emitter Saturation Voltage (I_C = 10 Adc, I_B = 2.0 Adc)		$V_{BE(sat)}$	--	--	1.8	Vdc
DYNAMIC CHARACTERISTICS						
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0 , f=1.0 KHz)		C_{ob}	125	--	500	pF
SWITCHING CHARATERISTICS						
Delay time	V_{cc}=250V, I_C=10A I_{B1}=2.0A,V_{BE}=5.0V,t_P=10us Duty Cycle≦2.0%	t_d	--	--	0.1	μs
Rise Time		t_r	--	--	0.7	μs
Storage Time		t_S	--	--	4.0	μs
Fall Time		t_r	--	--	0.7	μs

(1) Pulse test: Pulse Width=300 s, Duty Cycle≦ 2.0%

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