New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

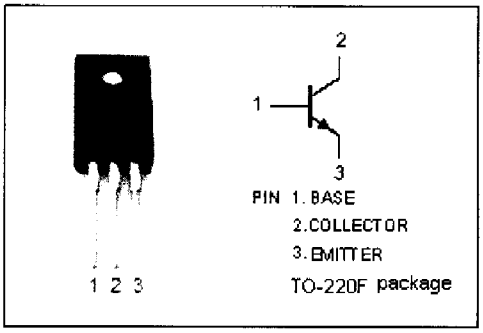
Silicon NPN Power Transistor — MJF13007

DESCRIPTION

- Collector–Emitter Sustaining Voltage
  : $V_{CEO(SUS)}$ = 400V(Min.)
- Collector Saturation Voltage
  : $V_{CE(sat)}$ = 2.0(Max) @ I_C= 5.0A
- Switching Time
  : t_f= 0.9 μ s(Max.)@ I_C= 5.0A

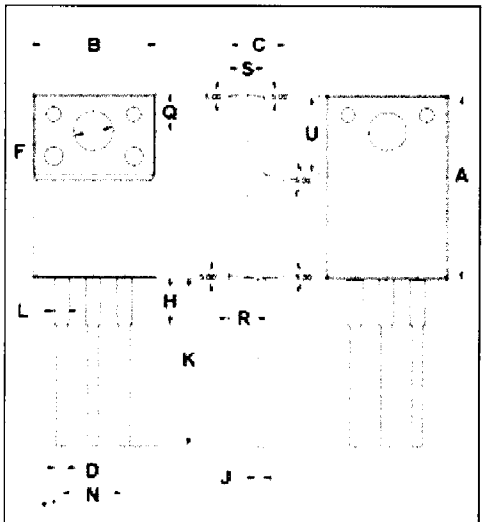
APPLICATIONS

- Designed for use in high-voltage, high-speed, power switching in inductive circuit, they are particularly suited for 115 and 220V switchmode applications such as switching regulators,inverters,Motor controls,Solenoid/Relay drivers and deflection circuits.



ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CEV}	Collector-Emitter Voltage	700	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current-Continuous	8	A
I_{CM}	Collector Current-peak	16	A
I_B	Base Current	4	A
I_{BM}	Base Current-Peak	8	A
I_E	Emitter Current	12	A
I_{EM}	Emitter Current-Peak	24	A
P_C	Collector Power Dissipation T_C=25℃	40	W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-65~150	℃



DIM	mm MIN	mm MAX
A	14.95	15.05
B	10.00	10.10
C	4.40	4.60
D	0.75	0.80
F	3.10	3.30
H	3.70	3.90
J	0.50	0.70
K	13.4	13.6
L	1.10	1.30
N	5.00	5.20
Q	2.70	2.90
R	2.20	2.40
S	2.65	2.85
U	6.40	6.60

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j\text{-}c}$	Thermal Resistance,Junction to Case	3.12	℃/W
$R_{th\ j\text{-}a}$	Thermal Resistance,Junction to Ambient	62.5	℃/W

ELECTRICAL CHARACTERISTICS

T_C =25℃ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	I_C= 10mA; I_B= 0	400			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	I_C= 2A ;I_B= 0.4A			1.0	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	I_C= 5A ;I_B= 1A T_C= 100℃			2.0 3.0	V
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage	I_C= 8A ;I_B= 2A			3.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	I_C= 2A ;I_B= 0.4A			1.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	I_C= 5A ;I_B= 1A T_C= 100℃			1.6 1.5	V
I_{CES}	Collector Cutoff Current	V_{CES}= 700V; $V_{BE(off)}$= 1.5V T_C= 125℃			0.1 1.0	mA
I_{EBO}	Emitter Cutoff Current	V_{EB}= 9V; I_C= 0			0.1	mA
h_{FE-1}	DC Current Gain	I_C= 2A; V_{CE}= 5V	8		40	
h_{FE-2}	DC Current Gain	I_C= 5A; V_{CE}= 5V	5		30	
f_T	Current-Gain—Bandwidth Product	I_C= 0.5 A; V_{CE}= 10V;	4			MHz
C_{OB}	Output Capacitance	I_E= 0; V_{CB}= 10V; f_{test} = 0.1MHz		80		pF

Switching Times; Resistive Load

t_d	Storage Time	I_C= 5A; V_{CC}= 125V; I_{B1}= I_{B2}= 1A; t_p= 25 μ s; Duty Cycle≤ 1%			0.1	μ s
t_r	Fall Time				1.5	μ s
t_s	Storage Time				3.0	μ s
t_f	Fall Time				0.7	μ s