

New Jersey Semi-Conductor Products, Inc.

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SWITCHMODE SERIES NPN SILICON POWER TRANSISTORS

These 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 switchmode applications. The MJ16008 is a selected high-gain version of the MJ16006 for applications where drive current is limited

Typical Applications:

- * Switching Regulators
- * Inverters
- * Solenoid and Relay Drives
- * Motor Controls
- * Deflection Circuits

Features:

- * Fast Turn-Off Times
- * Operating Temperature Range - 65 to +200°C
- * 100°C Performance Specified for:
 - Reverse-Biased SOA With Inductive Loads
 - Switching Times With Inductive Loads
 - Saturation Voltages
 - Leakage Currents

MAXIMUM RATINGS

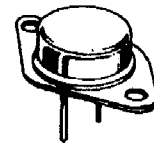
Characteristic	Symbol	MJ16006	MJ16008	Unit
Collector-Emitter Voltage	V_{CEO}	450	450	V
Collector-Emitter Voltage	V_{CEV}	850	850	V
Emitter-Base Voltage	V_{EBO}	6		V
Collector Current - Continuous	I_C	8		A
- Peak	I_{CM}	16		
Base Current-Continuous	I_B	6		A
-Peak	I_{BM}	12		
Total Power Dissipation	P_D			W
@ $T_c=25^\circ\text{C}$		150		
@ $T_c=100^\circ\text{C}$		85.5		
Derate above 25°C		0.86		W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200		°C

THERMAL CHARACTERISTICS

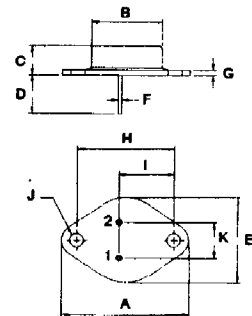
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.17	°C/W

NPN
MJ16006
MJ16008

8 AMPERE
SILICON POWER
TRANSISTORS
450 VOLTS
150 WATTS

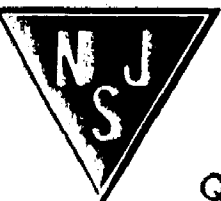


TO-3



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



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Quality Semi-Conductors

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(1) ($I_c = 100\text{ mA}$, $I_B = 0$)	$V_{CEO(sus)}$	450		V
Collector Cutoff Current ($V_{CE} = 850\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 850\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_c = 100^\circ\text{C}$)	I_{CEV}		0.25 1.5	mA
Collector Cutoff Current ($V_{CE} = 850\text{ V}$, $R_{BE} = 50\ \Omega$, $T_c = 100^\circ\text{C}$)	I_{CER}		2.5	mA
Emitter Cutoff Current ($V_{EB} = 6.0\text{ V}$, $I_c = 0$)	I_{EBO}		1.0	mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_c = 8.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	MJ16006 MJ16008	hFE	5.0 7.0	
Collector-Emitter Saturation Voltage ($I_c = 3.0\text{ A}$, $I_B = 0.4\text{ A}$) ($I_c = 5.0\text{ A}$, $I_B = 0.66\text{ A}$) ($I_c = 3.0\text{ A}$, $I_B = 0.3\text{ A}$) ($I_c = 5.0\text{ A}$, $I_B = 0.5\text{ A}$)	MJ16006 MJ16006 MJ16008 MJ16008	$V_{CE(sat)}$	2.5 3.0 2.5 3.0	V
Base-Emitter Saturation Voltage ($I_c = 5.0\text{ A}$, $I_B = 0.66\text{ A}$) ($I_c = 5.0\text{ A}$, $I_B = 0.5\text{ A}$)	MJ16006 MJ16008	$V_{BE(sat)}$	1.5 1.5	V

DYNAMIC CHARACTERISTICS

Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1.0\text{ KHz}$)	C_{ob}		350	pF
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SWITCHING CHARACTERISTICS

Delay Time	$V_{CC} = 250\text{ V}$, $I_c = 5\text{ A}$	$I_{B1} = -I_{B2} = 0.66\text{ A}$	t_d	100	ns
Rise Time	$R_{BE} = 4\ \Omega$	MJ16006	t_r	250	ns
Storage Time	$P_W = 30\ \mu\text{s}$	$I_{B1} = -I_{B2} = 0.50\text{ A}$	t_s	2500	ns
Fall Time	Duty Cycle $\leq 2\%$	MJ16008	t_f	300	ns

(1) Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$

