

Silicon NPN Power Transistor

MJW16010A

DESCRIPTION

- Low Collector Saturation Voltage
- Collector-Emitter Sustaining Voltage-
 : $V_{CE0(SUS)} = 500V(\text{Min})$
- Wide Area of Safe Operation

APPLICATIONS

- 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.

Typical applications:

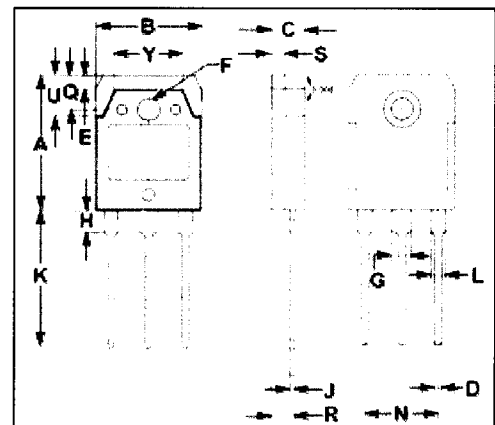
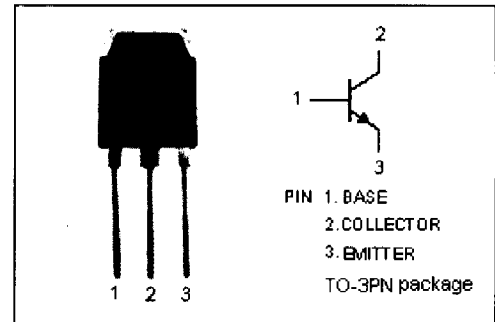
- Switching regulators
- Inverters
- Solenoids
- Relay drivers
- Motor controls
- Deflection circuits

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CEV}	Collector-Emitter Voltage	1000	V
V_{CEO}	Collector-Emitter Voltage	500	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current-Continuous	15	A
I_{CM}	Collector Current-Peak	20	A
I_B	Base Current	10	A
I_{BM}	Base Current-Peak	15	A
P_C	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	135	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55~150	$^\circ\text{C}$

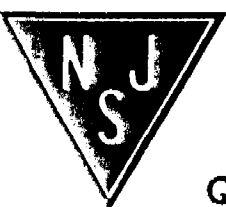
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	0.92	$^\circ\text{C/W}$



DIM	mm	
	MIN	MAX
A	19.90	20.10
B	15.50	15.70
C	4.70	4.90
D	0.90	1.10
E	1.90	2.10
F	3.40	3.60
G	2.90	3.10
H	3.20	3.40
J	0.595	0.605
K	20.50	20.70
L	1.90	2.10
N	10.89	10.91
Q	4.90	5.10
R	3.35	3.45
S	1.995	2.005
U	5.90	6.10
Y	9.90	10.10

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ELECTRICAL CHARACTERISTICS

$T_C=25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=100\text{mA}; I_B=0$	500			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=5\text{A}; I_B=1\text{A}$			0.7	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=2\text{A}$ $I_C=10\text{A}; I_B=2\text{A}; T_C=100^\circ\text{C}$			1.0 1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=2\text{A}$ $I_C=10\text{A}; I_B=2\text{A}; T_C=100^\circ\text{C}$			1.5	V
I_{CEV}	Collector Cutoff Current	$V_{CEV}=1000\text{V}; V_{BE(off)}=1.5\text{V}$ $V_{CEV}=1000\text{V}; V_{BE(off)}=1.5\text{V}; T_C=100^\circ\text{C}$			0.15 1.0	mA
I_{CER}	Collector Cutoff Current	$V_{CE}=1000\text{V}; R_{BE}=50\Omega; T_C=100^\circ\text{C}$			1.0	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}=6\text{V}; I_C=0$			0.15	mA
h_{FE}	DC Current Gain	$I_C=15\text{A}; V_{CE}=5\text{V}$	5	8		
C_{OB}	Output Capacitance	$I_E=0; V_{CB}=10\text{V}; f_{test}=1.0\text{kHz}$			400	pF

Switching times; Resistive load ($P_W=30\mu\text{s}$; Duty Cycle $\leq 2\%$)

t_d	Delay Time	$I_C=10\text{A}; I_{B1}=1.3\text{A}; I_{B2}=2.6\text{A};$ $R_{B2}=1.6\Omega; V_{CC}=250\text{V}$			0.1	μs
t_r	Rise Time				0.6	μs
t_{stg}	Storage Time				3.0	μs
t_f	Fall Time				0.4	μs