

Silicon NPN Power Transistor

BDY90

DESCRIPTION

- High DC Current Gain-
 : $h_{FE} = 30-120 @ I_C = 5A$
- Excellent Safe Operating Area
- High Current Capability

APPLICATIONS

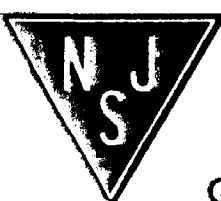
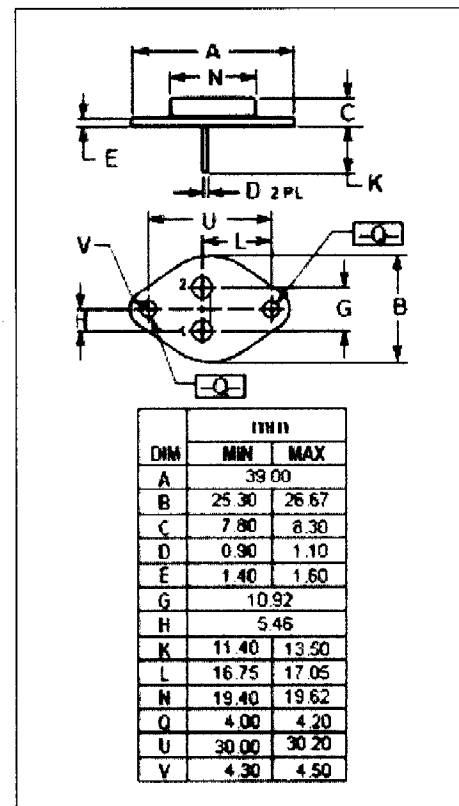
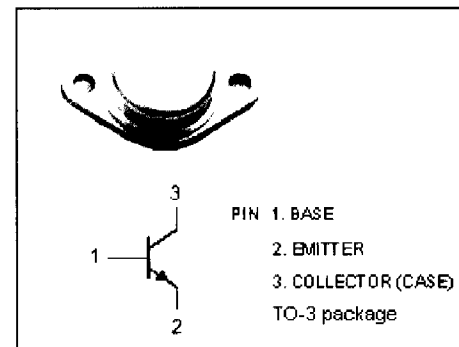
- Designed for use in switching-control amplifiers, power gates, switching regulators, converters, and inverters.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	120	V
V_{CEV}	Collector-Emitter Voltage $V_{BE} = -1.5V$	120	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current-Continuous	10	A
I_{CM}	Collector Current-Peak	15	A
I_B	Base Current-Continuous	2	A
P_C	Collector Power Dissipation @ $T_C \leq 25^\circ C$	60	W
T_J	Junction Temperature	175	$^\circ C$
T_{stg}	Storage Temperature Range	-65~175	$^\circ C$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	2.5	$^\circ C/W$



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{CEQ(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=100\text{mA}; I_B=0$	120			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=5\text{A}; I_B=0.5\text{A}$			0.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1\text{A}$			1.5	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C=5\text{A}; I_B=0.5\text{A}$			1.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1\text{A}$			1.5	V
I_{CBO}	Collector Cutoff Current	$V_{CB}=120\text{V}; I_E=0$			1.0	mA
I_{CEV}	Collector Cutoff Current	$V_{CE}=120\text{V}; V_{BE}=-1.5\text{V}$ $V_{CE}=120\text{V}; V_{BE}=-1.5\text{V}; T_C=150^\circ\text{C}$			1.0 3.0	mA
I_{EBO}	Emitter Cutoff current	$V_{EB}=6\text{V}; I_C=0$			1.0	mA
h_{FE-1}	DC Current Gain	$I_C=1\text{A}; V_{CE}=2\text{V}$	30			
h_{FE-2}	DC Current Gain	$I_C=5\text{A}; V_{CE}=5\text{V}$	30		120	
h_{FE-3}	DC Current Gain	$I_C=10\text{A}; V_{CE}=5\text{V}$	20			
f_T	Current-Gain—Bandwidth Product	$I_C=0.5\text{A}; V_{CE}=5\text{V}; f_{test}=5\text{MHz}$		70		MHz

Switching Times

t_{on}	Turn-On Time	$I_C=5\text{A}; I_{B1}=-I_{B2}=0.5\text{A}, V_{CC}=30\text{V}$			0.35	μs
t_{stg}	Storage Time				1.3	μs
t_f	Fall Time				0.2	μs