

**Silicon NPN Power Transistor**

**BDY91**

**DESCRIPTION**

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

**APPLICATIONS**

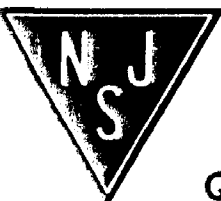
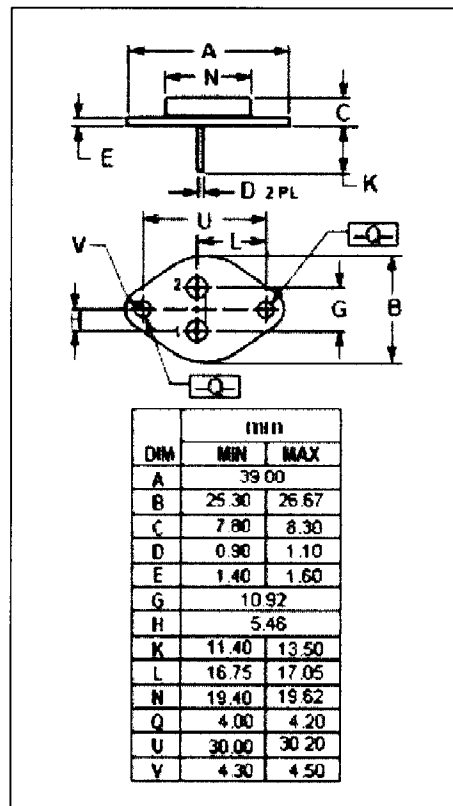
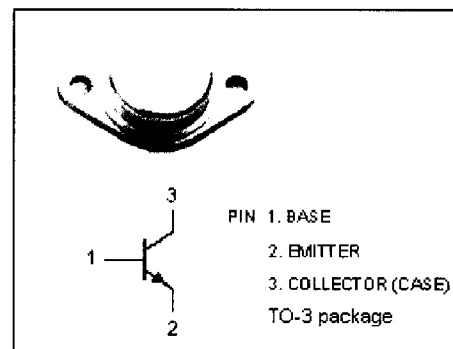
- Designed for use in switching-control amplifiers, power gates, switching regulators, converters, and inverters.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	100	V
$V_{CEV}$	Collector-Emitter Voltage $V_{BE} = -1.5V$	100	V
$V_{CEO}$	Collector-Emitter Voltage	80	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
$V_{CE0(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=100\text{mA}; I_B=0$	80			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	$V_{CB}=100\text{V}; I_E=0$			1.0	mA
$I_{CEV}$	Collector Cutoff Current	$V_{CE}=100\text{V}; V_{BE}=-1.5\text{V}$ $V_{CE}=100\text{V}; V_{BE}=-1.5\text{V}; T_C=150^\circ\text{C}$			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	$I_C=1\text{A}; V_{CE}=2\text{V}$	35			
$h_{FE-2}$	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	$\mu\text{s}$
$t_{stg}$	Storage Time				1.3	$\mu\text{s}$
$t_f$	Fall Time				0.2	$\mu\text{s}$