

**INCHANGE Semiconductor**

**isc Product Specification**

**isc Silicon NPN Power Transistor**

**BDY90A**

**DESCRIPTION**

- High Current Capability
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 100V(\text{Min})$
- High Switching Speed

**APPLICATIONS**

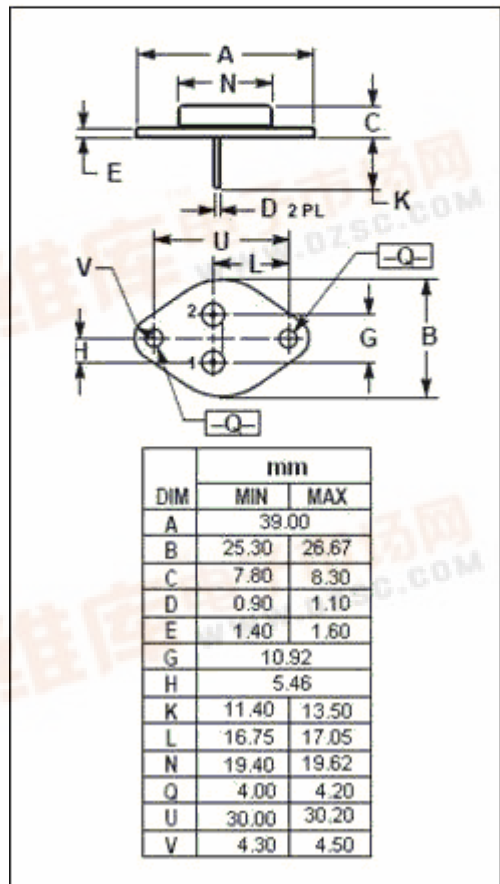
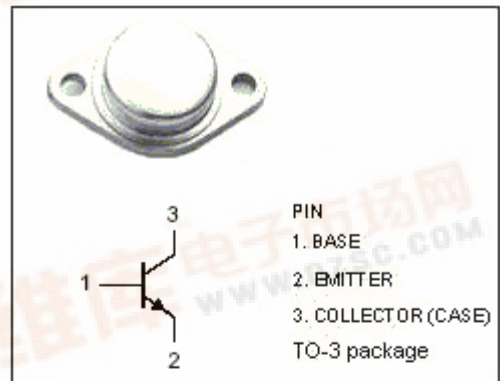
- Designed for use in converters, inverters, switching regulators and switching control amplifiers.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	120	V
$V_{CEX}$	Collector-Emitter Voltage( $V_{EB} = 0$ )	120	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	12	A
$I_{CM}$	Collector Current-Peak	15	A
$I_B$	Base Current-Continuous	2	A
$I_{BM}$	Base Current-Peak	3	A
$I_E$	Emitter Current-Continuous	-15	A
$I_{EM}$	Emitter Current-Peak	-15	A
$P_C$	Collector Power Dissipation@ $T_C=25^\circ\text{C}$	40	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-65~150	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	2.0	$^\circ\text{C}/\text{W}$



## isc Silicon NPN Power Transistor

## BDY90A

## 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	$I_C=100\text{mA}$ ; $I_B=0$	100			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	$I_C= 12\text{A}$ ; $I_B= 1.2\text{A}$			1.0	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	$I_C= 12\text{A}$ ; $I_B= 1.2\text{A}$			1.5	V
$I_{CEX}$	Collector Cutoff Current	$V_{CE}= V_{CEXmax}$ ; $V_{EB}= 1.5\text{V}$ $V_{CE}= V_{CEXmax}$ ; $V_{EB}= 1.5\text{V}$ , $T_C=150^{\circ}\text{C}$			0.1 3.0	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}= 6\text{V}$ ; $I_C=0$			0.1	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	$I_C= 12\text{A}$ ; $V_{CE}= 5\text{V}$	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	$\mu\text{s}$
$t_s$	Storage Time				1.3	$\mu\text{s}$
$t_f$	Fall Time				0.2	$\mu\text{s}$