

**Silicon NPN Power Transistor**

**BUY57**

**DESCRIPTION**

- Collector-Emitter Breakdown Voltage-  
 :  $V_{(BR)CEO} = 125V(\text{Min.})$
- Low Collector Saturation Voltage-  
 :  $V_{CE(sat)} = 1.3V @ I_C = 10A$

**APPLICATIONS**

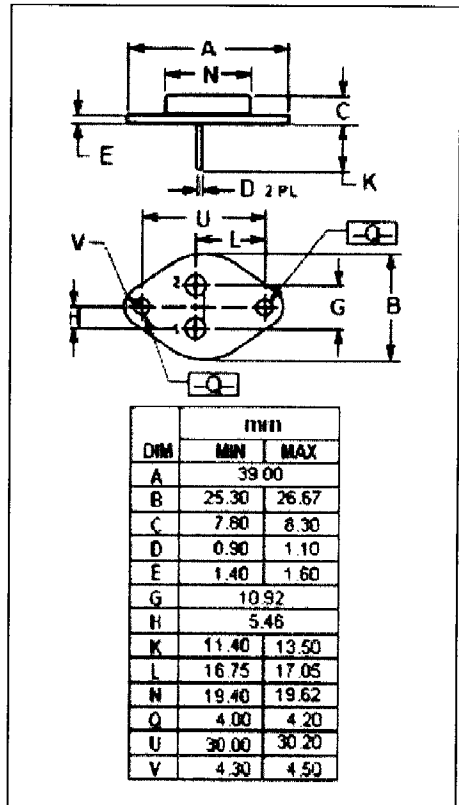
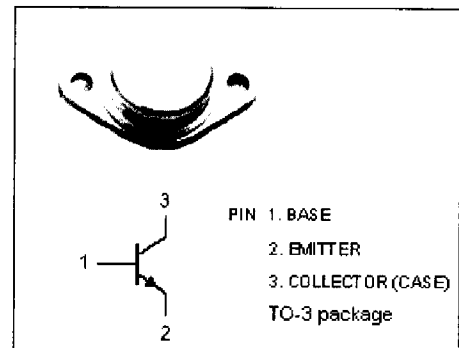
- Designed for general switching applications at higher outputs.

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

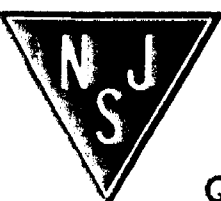
SYMBOL	PARAMETER	MAX	UNIT
$V_{CBO}$	Collector-Base Voltage	150	V
$V_{CES}$	Collector-Emitter Voltage	150	V
$V_{CEO}$	Collector-Emitter Voltage	125	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	15	A
$I_{CM}$	Collector Current-Peak	25	A
$I_B$	Base Current-Continuous	5	A
$P_C$	Collector Power Dissipation @ $T_c \leq 25^\circ C$	117	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	1.28	$^\circ C/W$



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



# Silicon NPN Power Transistor

# BUY57

## ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C=100\text{mA}; I_B=0$	125			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1.25\text{A}$			1.3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1.25\text{A}$			1.5	V
$V_{BE(on)-1}$	Base-Emitter On Voltage	$I_C=10\text{A}; V_{CE}=1.5\text{V}$			1.5	V
$V_{BE(on)-2}$	Base-Emitter On Voltage	$I_C=12\text{A}; V_{CE}=1.5\text{V}$			1.7	V
$V_{BE(on)-2}$	Base-Emitter On Voltage	$I_C=1\text{A}; V_{CE}=1.5\text{V}$			1.0	V
$I_{CES}$	Collector Cutoff Current	$V_{CE}=150\text{V}; V_{BE}=0$ $V_{CE}=150\text{V}; V_{BE}=0; T_C=125^\circ\text{C}$			1.0 10	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=6\text{V}; I_C=0$			1.0	mA
$h_{FE-1}$	DC Current Gain	$I_C=1\text{A}; V_{CE}=1.5\text{V}$	20			
$h_{FE-2}$	DC Current Gain	$I_C=10\text{A}; V_{CE}=1.5\text{V}$	12			
$h_{FE-3}$	DC Current Gain	$I_C=12\text{A}; V_{CE}=1.5\text{V}$	10			
$f_T$	Current-Gain—Bandwidth Product	$I_C=1\text{A}; V_{CE}=10\text{V}$		20		MHz
$C_{OB}$	Collector Output Capacitance	$I_E=0; V_{CB}=10\text{V}; f=1\text{MHz}$		330		pF

### Switching Times

$t_{on}$	Turn-On Time	$I_C=10\text{A}; I_{B1}=-I_{B2}=1\text{A}; V_{CC}=60\text{V}; t_p=10\mu\text{s}$			1.0	$\mu\text{s}$
$t_s$	Storage Time				1.6	$\mu\text{s}$
$t_f$	Fall Time				0.6	$\mu\text{s}$