

# isc Silicon NPN Darlington Power Transistor

# TIP101

## DESCRIPTION

- High DC Current Gain-  
:  $h_{FE} = 1000(\text{Min}) @ I_C = 3A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = 80V(\text{Min})$
- Low Collector-Emitter Saturation Voltage-  
:  $V_{CE(\text{sat})} = 2.0V(\text{Max}) @ I_C = 3A$   
=  $2.5V(\text{Max}) @ I_C = 8A$
- Complement to Type TIP106
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## APPLICATIONS

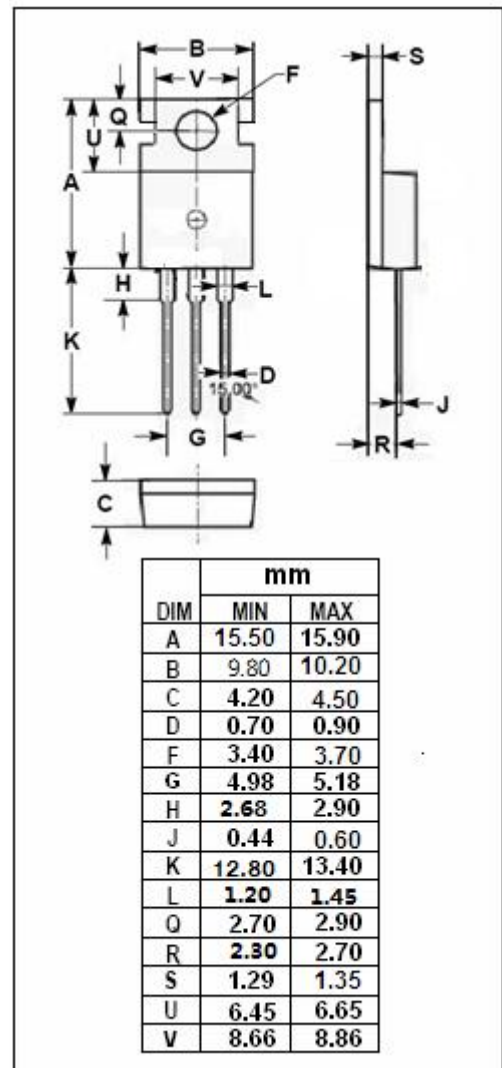
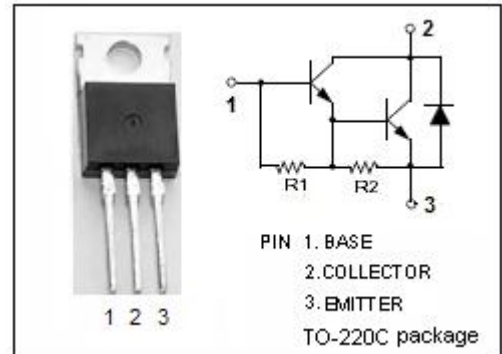
- Designed for general-purpose amplifier and low-speed switching applications

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	80	V
$V_{CEO}$	Collector-Emitter Voltage	80	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	8	A
$I_{CM}$	Collector Current-Peak	15	A
$I_B$	Base Current- Continuous	1	A
$P_C$	Collector Power Dissipation @ $T_c=25^\circ\text{C}$	80	W
	Collector Power Dissipation @ $T_a=25^\circ\text{C}$	2	
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{\text{stg}}$	Storage Temperature Range	-65~150	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{\text{th j-c}}$	Thermal Resistance, Junction to Case	1.56	$^\circ\text{C/W}$
$R_{\text{th j-a}}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C/W}$



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## ELECTRICAL CHARACTERISTICS

T<sub>c</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 30mA, I <sub>B</sub> = 0	80		V
V <sub>CE(sat)-1</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A; I <sub>B</sub> = 6mA		2.0	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 8A, I <sub>B</sub> = 80mA		2.5	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 8A; V <sub>CE</sub> = 4V		2.8	V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 80V, I <sub>E</sub> = 0		50	μA
I <sub>CEO</sub>	Collector Cutoff Current	V <sub>CE</sub> = 40V, I <sub>B</sub> = 0		50	μA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 5V; I <sub>C</sub> = 0		8	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 3A; V <sub>CE</sub> = 4V	1000	20000	
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 8A; V <sub>CE</sub> = 4V	200		
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0; V <sub>CB</sub> = 10V, f= 0.1MHz		300	pF

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