

**isc Silicon NPN Darlington Power Transistor**

**TIP122**

**DESCRIPTION**

- High DC Current Gain-  
:  $h_{FE} = 1000(\text{Min})@ I_C = 3A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = 100V(\text{Min})$
- Low Collector-Emitter Saturation Voltage-  
:  $V_{CE(\text{sat})} = 2.0V(\text{Max})@ I_C = 3A$   
=  $4.0V(\text{Max})@ I_C = 5A$
- Complement to Type TIP127

**APPLICATIONS**

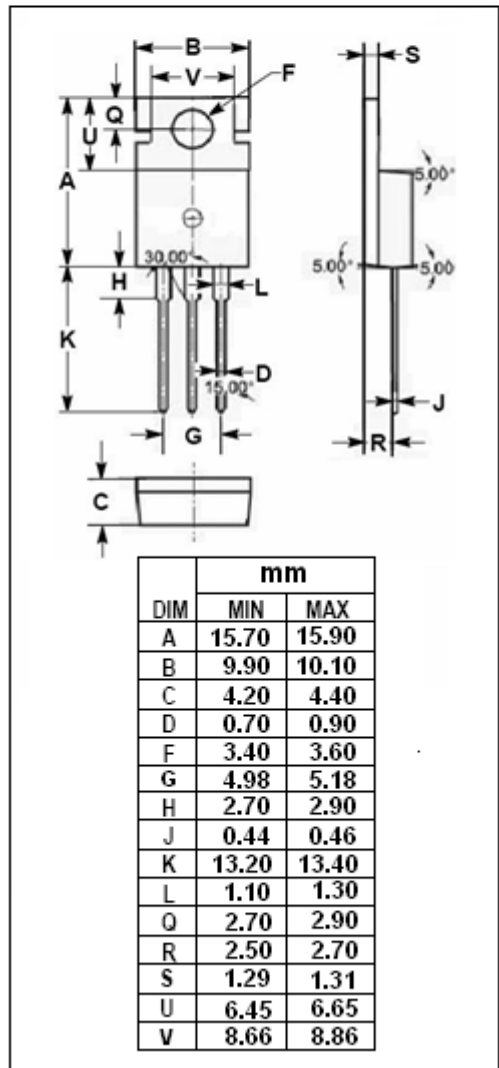
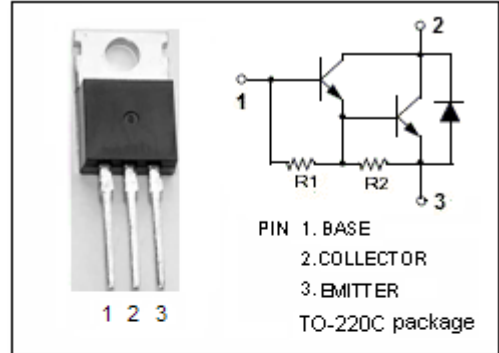
- Designed for general purpose amplifier and low speed switching applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	100	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	5	A
$I_{CM}$	Collector Current-Peak	8	A
$I_B$	Base Current	120	mA
$P_C$	Collector Power Dissipation $T_C=25^\circ\text{C}$	65	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
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.92	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C/W}$



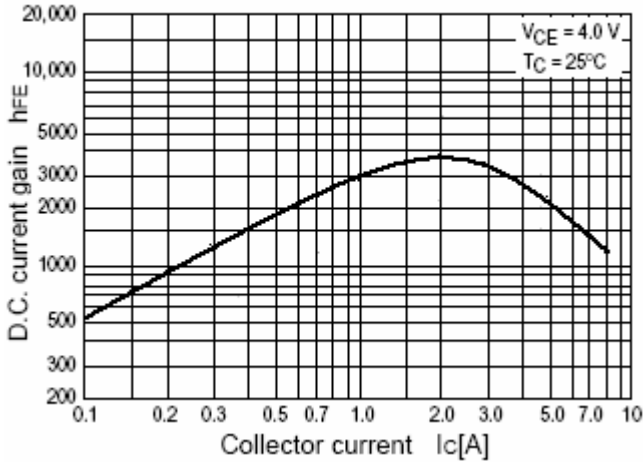
**isc Silicon NPN Darlington Power Transistor****TIP122****ELECTRICAL CHARACTERISTICS****T<sub>c</sub>=25°C unless otherwise specified**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 0.1A, I <sub>B</sub> = 0	100			V
V <sub>CE(sat)-1</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A ,I <sub>B</sub> = 12mA			2.0	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation voltage	I <sub>C</sub> = 5A ,I <sub>B</sub> = 20mA			4.0	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 3.0A ; V <sub>CE</sub> = 3V			2.5	V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 100V, I <sub>E</sub> = 0			0.2	mA
I <sub>CEO</sub>	Collector Cutoff Current	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0			0.5	mA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 5V; I <sub>C</sub> = 0			2	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 0.5A ; V <sub>CE</sub> = 3V	1000			
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 3.0A ; V <sub>CE</sub> = 3V	1000			
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0 ; V <sub>CB</sub> = 10V,f= 0.1MHz			200	pF

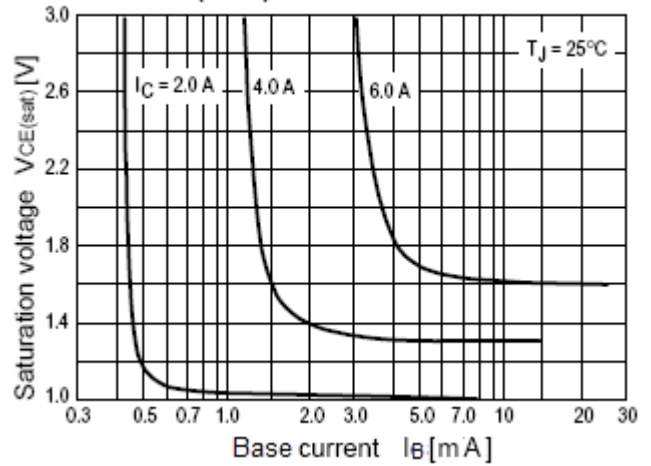
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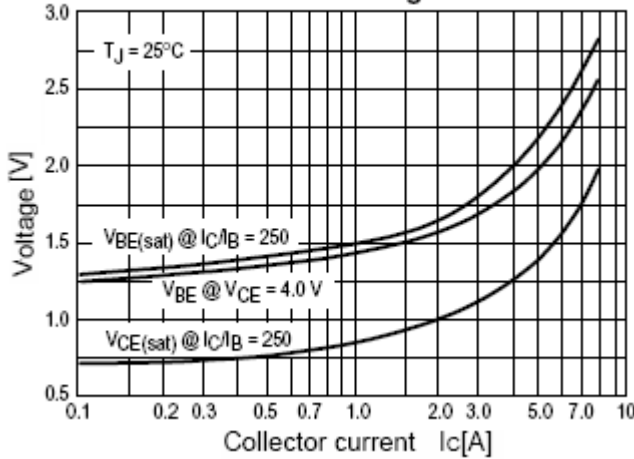
**$h_{FE}$ - $I_C$  Characteristics**



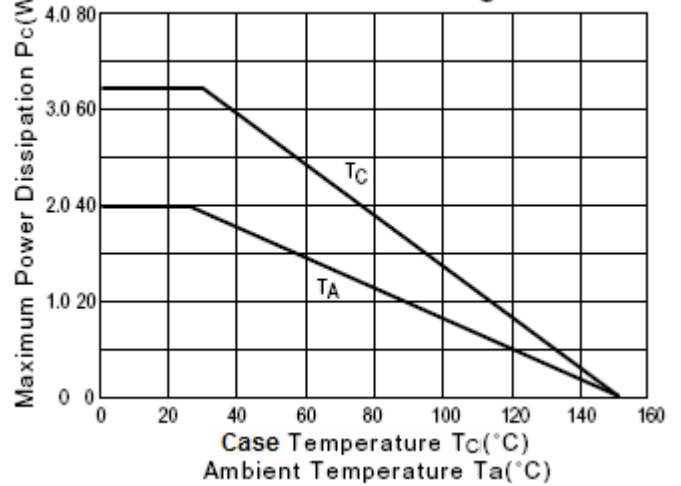
**$V_{CE(sat)}$ - $I_B$  Characteristics**



**"On" Voltages**



**Power Derating**



**Safe Operating Area**

