

**PLASTIC MEDIUM-POWER  
COMPLEMENTARY SILICON TRANSISTORS**  
...designed for general-purpose amplifier and low speed switching applications

**FEATURES:**

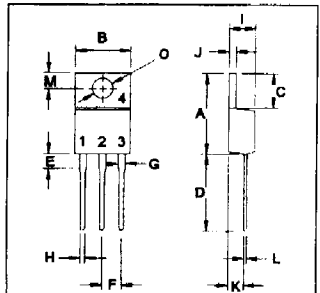
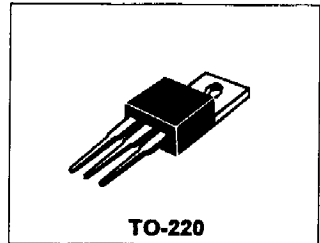
- \* Collector-Emitter Sustaining Voltage-  
 $V_{CE(sus)}$  = 60 V (Min) - TIP100, TIP105  
= 80 V (Min) - TIP101, TIP106  
= 100 V (Min) - TIP102, TIP107
- \* Collector-Emitter Saturation Voltage  
 $V_{CE(sat)}$  = 2.0 V (Max.) @  $I_C = 3.0$  A
- \* Monolithic Construction with Built-in Base-Emitter Shunt Resistor

<b>NPN</b>	<b>PNP</b>
<b>TIP100</b>	<b>TIP105</b>
<b>TIP101</b>	<b>TIP106</b>
<b>TIP102</b>	<b>TIP107</b>

**8 AMPERE  
DARLINGTON  
COMPLEMENTARY SILICON  
POWER TRANSISTORS  
60-100 VOLTS  
80 WATTS**

**MAXIMUM RATINGS**

Characteristic	Symbol	TIP100 TIP105	TIP101 TIP106	TIP102 TIP107	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	100	V
Collector-Base Voltage	$V_{CBO}$	60	80	100	V
Emitter-Base Voltage	$V_{EBO}$	5.0			V
Collector Current-Continuous -Peak	$I_C$ $I_{CM}$	8.0 15			A
Base Current	$I_B$	1.0			A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	80 0.64			W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +150			$^\circ\text{C}$

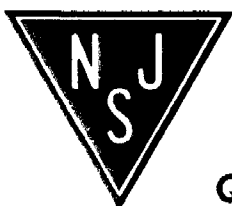
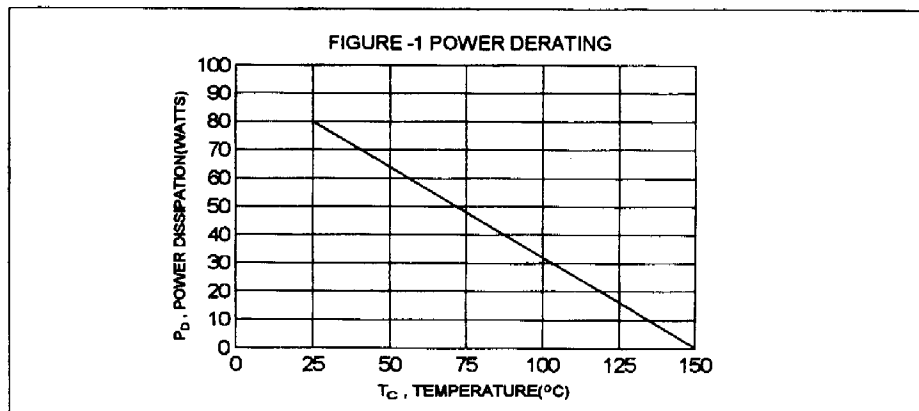


PN 1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR(CASE)

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.56	$^\circ\text{C/W}$

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90



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**Quality Semi-Conductors**

TIP100, TIP101, TIP102 NPN / TIP105, TIP106, TIP107 PNP

**ELECTRICAL CHARACTERISTICS** (  $T_c = 25^\circ\text{C}$  unless otherwise noted )

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector - Emitter Sustaining Voltage (1) ( $I_C = 30\text{ mA}, I_B = 0$ )	TIP100, TIP105 TIP101, TIP106 TIP102, TIP107	$V_{CE(sus)}$	60 80 100	V
Collector Cutoff Current ( $V_{CE} = 30\text{ V}, I_B = 0$ ) ( $V_{CE} = 40\text{ V}, I_B = 0$ ) ( $V_{CE} = 50\text{ V}, I_B = 0$ )	TIP100, TIP105 TIP101, TIP106 TIP102, TIP107	$I_{CEO}$	50 50 50	$\mu\text{A}$
Collector Cutoff Current ( $V_{CB} = 60\text{ V}, I_E = 0$ ) ( $V_{CB} = 80\text{ V}, I_E = 0$ ) ( $V_{CB} = 100\text{ V}, I_E = 0$ )	TIP100, TIP105 TIP101, TIP106 TIP102, TIP107	$I_{CBO}$	50 50 50	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5.0\text{ V}, I_C = 0$ )		$I_{EBO}$	8.0	mA

**ON CHARACTERISTICS (1)**

DC Current Gain ( $I_C = 3.0\text{ A}, V_{CE} = 4.0\text{ V}$ ) ( $I_C = 8.0\text{ A}, V_{CE} = 4.0\text{ V}$ )	$h_{FE}$	1000 200	20000	
Collector-Emitter Saturation Voltage ( $I_C = 3.0\text{ A}, I_B = 6.0\text{ mA}$ ) ( $I_C = 8.0\text{ A}, I_B = 80\text{ mA}$ )	$V_{CE(sat)}$		2.0 2.5	V
Base-Emitter On Voltage ( $I_C = 8.0\text{ A}, V_{CE} = 4.0\text{ V}$ )	$V_{BE(on)}$		2.8	V

**DYNAMIC CHARACTERISTICS**

Small-Signal Current Gain ( $I_C = 3.0\text{ A}, V_{CE} = 4.0\text{ V}, f = 1.0\text{ MHz}$ )	$h_{fe}$	4.0		
Output Capacitance ( $V_{CB} = 10\text{ V}, I_E = 0, f = 0.1\text{ MHz}$ )	TIP100, TIP101, TIP102 TIP105, TIP106, TIP107	$C_{ob}$	300 250	pF

(1) Pulse Test: Pulse width  $\approx 300\text{ us}$ , Duty Cycle  $\leq 2.0\%$

