

Boca Semiconductor Corp.

BSC

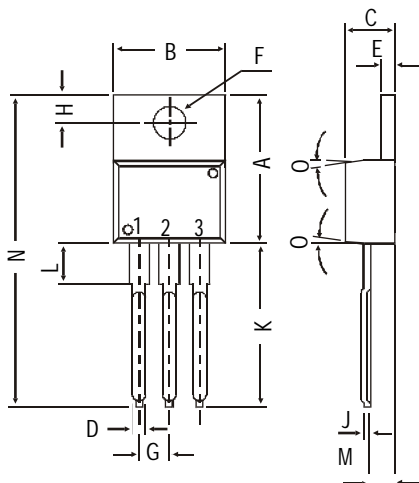
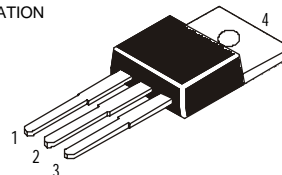
TIP100, 101, 102 NPN PLASTIC POWER TRANSISTORS

TIP105, 106, 107 PNP PLASTIC POWER TRANSISTORS

Power *Darlington* for Linear and Switching Applications

PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



DIM	MIN.	MAX.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O	DEG 7	

All dimensions in mm.

ABSOLUTE MAXIMUM RATINGS

		100	101	102	
		105	106	107	
Collector-base voltage (open emitter)	V_{CBO} max.	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO} max.	60	80	100	V
Collector current	I_C max.		8.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot} max.		80		W
Junction temperature	T_j max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage	V_{CEsat} max.		2.0		V
$I_C = 3\text{ A}; I_B = 6\text{ mA}$					
D.C. current gain	h_{FE} min.		1.0		K
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}$	h_{FE} max.		20		K

RATINGS (at $T_A=25^\circ\text{C}$ unless otherwise specified)

Limiting values		100	101	102	
		105	106	107	
Collector-base voltage (open emitter)	V_{CBO} max.	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO} max.	60	80	100	V
Emitter-base voltage (open collector)	V_{EBO} max.		5.0		V

Collector current	I_C	max.	8.0	A
Collector peak current	I_{CM}	max.	15	A
Base current	I_B	max.	1.0	A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.	80	W
Derate above 25°C		max	0.64	W°C
Total power dissipation up to $T_A = 25^\circ\text{C}$	P_{tot}	max.	2.0	W
Derate above 25°C		max	0.016	W°C
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$		62.5	$^\circ\text{C/W}$
From junction to case	$R_{th\ j-c}$		1.56	$^\circ\text{C/W}$

CHARACTERISTICS

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

			100	101	102	
			105	106	107	
Collector cutoff current						
$I_B = 0; V_{CE} = 30\text{ V}$	I_{CEO}	max.	50	-	-	μA
$I_B = 0; V_{CE} = 40\text{ V}$	I_{CEO}	max.	-	50	-	μA
$I_B = 0; V_{CE} = 50\text{ V}$	I_{CEO}	max.	-	-	50	μA
$I_E = 0; V_{CB} = 60\text{ V}$	I_{CBO}	max.	50	-	-	μA
$I_E = 0; V_{CB} = 80\text{ V}$	I_{CBO}	max.	-	50	-	μA
$I_E = 0; V_{CB} = 100\text{ V}$	I_{CBO}	max.	-	-	50	μA
Emitter cut-off current						
$I_C = 0; V_{EB} = 5\text{ V}$	I_{EBO}	max.		8		mA
Breakdown voltages						
$I_C = 30\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	60	80	100	V
$I_C = 1\text{ mA}; I_E = 0$	V_{CBO}	min.	60	80	100	V
$I_E = 1\text{ mA}; I_C = 0$	V_{EBO}	min.		5.0		V
Saturation voltages						
$I_C = 3\text{ A}; I_B = 6\text{ mA}$	V_{CEsat}^*	max.		2.0		V
$I_C = 8\text{ A}; I_B = 80\text{ mA}$	V_{CEsat}^*	max.		2.5		V
Base-emitter on voltage						
$I_C = 8\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.		2.8		V
D.C. current gain						
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}$	h_{FE}^*	min.		1.0		K
		max.		20		K
$I_C = 8\text{ A}; V_{CE} = 4\text{ V}$	h_{FE}^*	min.		200		
Small signal current gain						
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}; f = 1.0\text{ MHz}$	$ h_{fe} $	min.		4.0		
Output capacitance $f = 0.1\text{ MHz}$						
$I_E = 0; V_{CB} = 10\text{ V}$, PNP	C_o	max.		300		pF
NPN		max.		200		pF
Forward voltage of commutation diode						
$I_F = -I_C = 10\text{ A}; I_B = 0$	V_F^*	max.		2.8		V

* Pulsed: pulse duration = 300 μs ; duty cycle $\leq 2\%$.