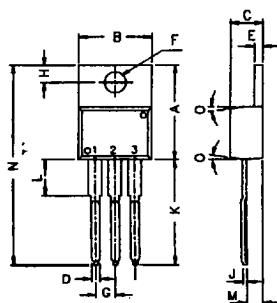
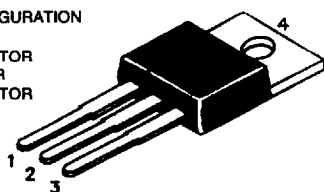


TIP 110, 111, 112 NPN PLASTIC POWER TRANSISTORS
TIP 115, 116, 117 PNP PLASTIC POWER TRANSISTORS
General Purpose Darlington Amplifier and Low Speed Switching Applications

PIN CONFIGURATION

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



ALL DIMENSIONS ARE IN M.M.

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	—	6,35
M	2,03	2,92
N	—	31,24
O	7	DEG

ABSOLUTE MAXIMUM RATINGS

		110	111	112	
		115	116	117	
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.		2.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot} max.		50		W
Junction temperature	T_j max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage					
$I_C = 2 \text{ A}; I_B = 8 \text{ mA}$	V_{CEsat} max.		2.5		V
D.C. current gain					
$I_C = 1 \text{ A}; V_{CE} = 4 \text{ V}$	h_{FE} min.		1000		

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

Limiting values		110	111	112	
		115	116	117	
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.	2.0	A
Collector current (Peak)	I_{CM}	max.	4.0	A
Base current	I_B	max.	50	mA
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.	50	W
Total power dissipation up to $T_A = 25^\circ\text{C}$	P_{tot}	max.	2.0	W
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to case	$R_{th\ j-c}$	2.5	$^\circ\text{C/W}$
From junction to ambient	$R_{th\ j-a}$	62.5	$^\circ\text{C/W}$

CHARACTERISTICS

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

			110 115	111 116	112 117	
Collector cutoff current						
$I_B = 0$; $V_{CE} = \text{half rated } V_{CEO}$	I_{CEO}	max.	2.0			mA
$I_E = 0$; $V_{CB} = \text{rated } V_{CBO}$	I_{CBO}	max.	1.0			mA
Emitter cut-off current						
$I_C = 0$; $V_{EB} = 5\text{ V}$	I_{EBO}	max.	2.0			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 voltage						
$I_C = 2\text{ A}$; $I_B = 8\text{ mA}$	V_{CEsat}^*	max.		2.5		V
Base-emitter on voltage						
$I_C = 2\text{ A}$; $V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.		2.8		V
D.C. current gain						
$I_C = 1\text{ A}$; $V_{CE} = 4\text{ V}$	h_{FE}^*	min.		1000		
$I_C = 2\text{ A}$; $V_{CE} = 4\text{ V}$	h_{FE}^*	min.		500		

* Pulse test: pulse duration = 300 μs , duty cycle $\leq 2\%$.