

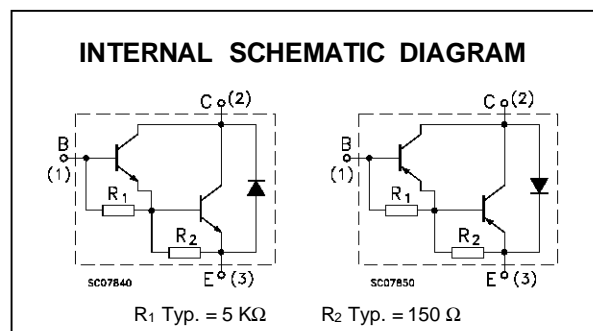
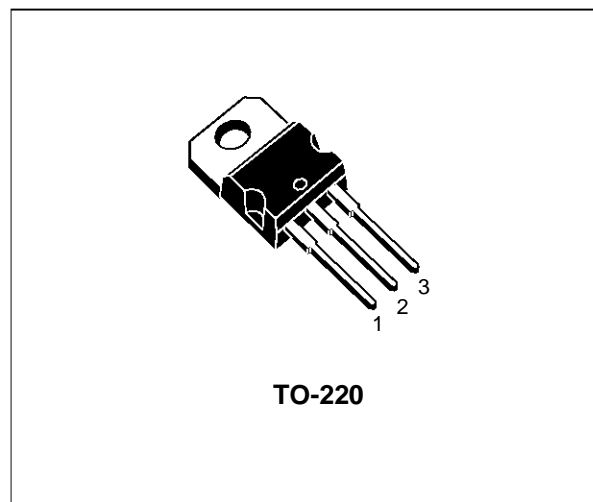
**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

■ SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The TIP110, and TIP112 are silicon epitaxial-base NPN transistors in monolithic Darlington configuration mounted in Jedec TO-220 plastic package. They are intended for use in medium power linear and switching applications.

The complementary PNP types are TIP115, and TIP117.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value			Unit
		NPN	TIP110	TIP112	
		PNP	TIP115	TIP117	
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)		60	100	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)		60	100	V
V <sub>EBO</sub>	Emitter-Base Voltage (I <sub>C</sub> = 0)		5		V
I <sub>C</sub>	Collector Current		2		A
I <sub>CM</sub>	Collector Peak Current		4		A
I <sub>B</sub>	Base Current		50		mA
P <sub>tot</sub>	Total Dissipation at T <sub>case</sub> ≤ 25 °C T <sub>amb</sub> ≤ 25 °C		50		W
			2		W
T <sub>stg</sub>	Storage Temperature		-65 to 150		°C
T <sub>j</sub>	Max. Operating Junction Temperature		150		°C

\* For PNP types voltage and current values are negative.

## TIP110/TIP112/TIP115/TIP117

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	2.5	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	62.5	$^{\circ}C/W$

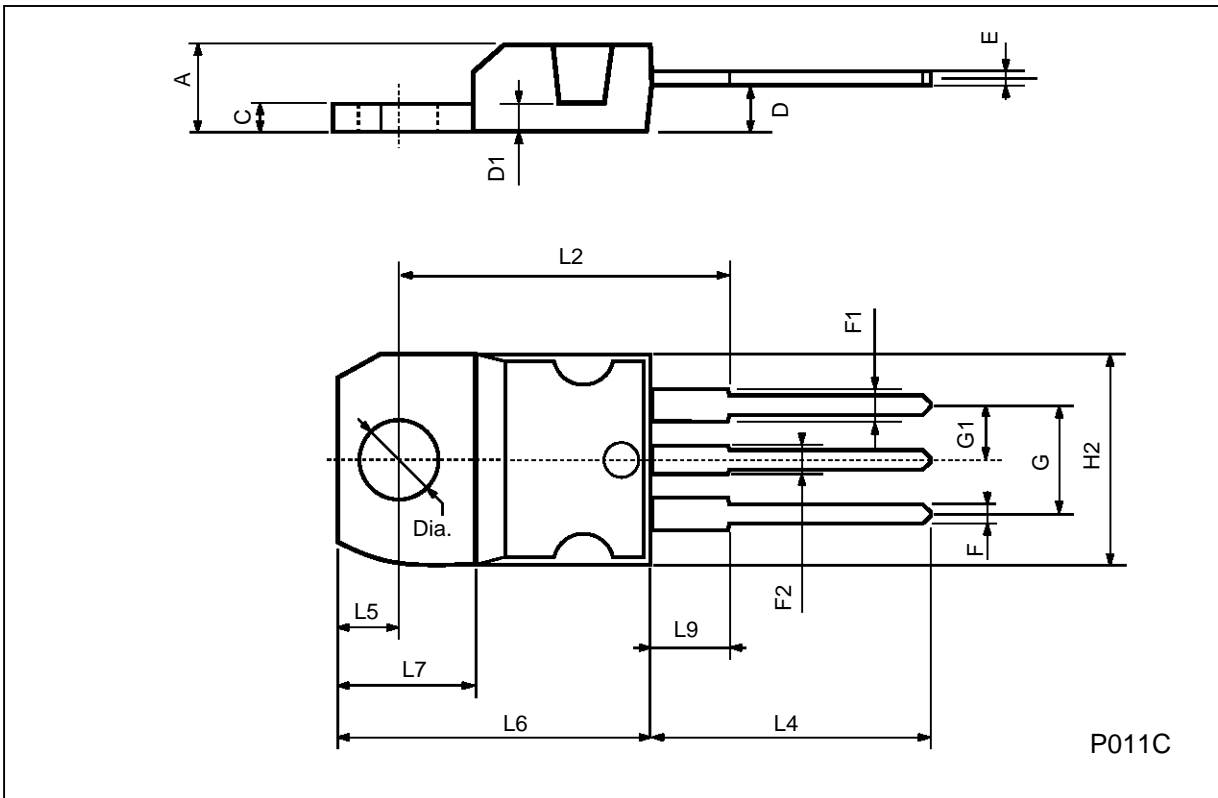
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = \text{Half Rated } V_{CEO}$			2	mA
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = \text{Half Rated } V_{CBO}$			1	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5 V$			2	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 30 \text{ mA}$ for <b>TIP110/115</b> for <b>TIP112/117</b>	60 100			V V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 2 A$ $I_B = 8 \text{ mA}$			2.5	V
$V_{BE}^*$	Base-Emitter Voltage	$I_C = 2 A$ $V_{CE} = 4 V$			2.8	V
$h_{FE}^*$	DC Current Gain	$I_C = 1 A$ $V_{CE} = 4 V$ $I_C = 2 A$ $V_{CE} = 4 V$	1000 500			

\* For PNP types voltage and current values are negative.

**TO-220 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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