

## TO-220-3L Plastic-Encapsulate Transistors

### TIP110 DARLINGTON TRANSISTOR (NPN)

#### FEATURES

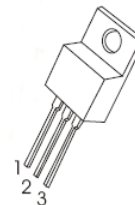
- High DC Current Gain :  $h_{FE}=1000$  @  $V_{CE}=4V, I_C=1A(\text{Min.})$
- Low Collector-Emitter Saturation Voltage
- Industrial Use

#### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	2	A
$P_C$	Collector Power Dissipation	2	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55 to +150	$^\circ\text{C}$

#### TO-220-3L

1. BASE
2. COLLECTOR
3. EMITTER



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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\text{mA}, I_E=0$	60			V
Collector-emitter sustaining voltage	$V_{CEO}^{(sus)}$	$I_C=30\text{mA}, I_B=0$	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\text{mA}, I_C=0$	5			V
Collector cut-off current	$I_{CEO}$	$V_{CE}=30V, I_B=0$			2	mA
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			1	mA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			2	mA
DC current gain	$h_{FE(1)}$	$V_{CE}=4V, I_C=1A$	1000			
	$h_{FE(2)}$	$V_{CE}=4V, I_C=2A$	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=2A, I_B=8\text{mA}$			2.5	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=4V, I_C=2A$			2.8	V
Collector output capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=0.1\text{MHz}$			100	pF