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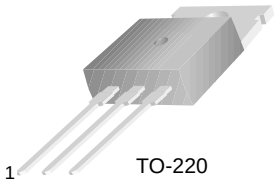
SEMICONDUCTOR®

TIP110/111/112

Monolithic Construction With Built In Base-Emitter Shunt Resistors

- Complementary to TIP115/116/117
- High DC Current Gain : h_{FE}=1000 @ V_{CE}=4V, I_C=1A(Min.)
- Low Collector-Emitter Saturation Voltage
- Industrial Use



TO-220

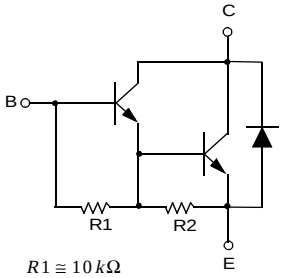
1.Base 2.Collector 3.Emitter

NPN Epitaxial Silicon Darlington Transistor

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP110	60	V
	: TIP111	80	V
	: TIP112	100	V
V_{CEO}	Collector-Emitter Voltage : TIP110	60	V
	: TIP111	80	V
	: TIP112	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	2	A
I_{CP}	Collector Current (Pulse)	4	A
I_B	Base Current (DC)	50	mA
P_C	Collector Dissipation (T_a=25°C)	2	W
	Collector Dissipation (T_C=25°C)	50	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 ~ 150	°C

Equivalent Circuit



$R1 \cong 10\,k\Omega$
$R2 \cong 0.6\,k\Omega$

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage				
	: TIP110	I_C = 30mA, I_B = 0	60		V
	: TIP111		80		V
	: TIP112		100		V
I_{CEO}	Collector Cut-off Current				
	: TIP110	V_{CE} = 30V, I_B = 0		2	mA
	: TIP111	V_{CE} = 40V, I_B = 0		2	mA
	: TIP112	V_{CE} = 50V, I_B = 0		2	mA
I_{CBO}	Collector Cut-off Current				
	: TIP110	V_{CB} = 60V, I_E = 0		1	mA
	: TIP111	V_{CB} = 80V, I_E = 0		1	mA
	: TIP112	V_{CB} = 100V, I_E = 0		1	mA
I_{EBO}	Emitter Cut-off Current	V_{BE} = 5V, I_C = 0		2	mA
h_{FE}	DC Current Gain	V_{CE} = 4V, I_C = 1A	1000		
		V_{CE} = 4V, I_C = 2A	500		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 2A, I_B = 8mA		2.5	V
V_{BE}(on)	Base-Emitter ON Voltage	V_{CE} = 4V, I_C = 2A		2.8	V
C_{ob}	Output Capacitance	V_{CB} = 10V, I_E = 0, f = 0.1MHz		100	pF

Typical Characteristics

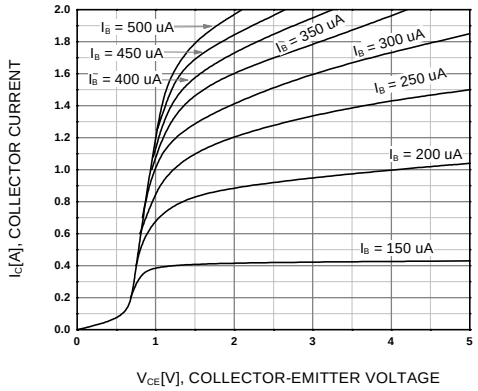


Figure 1. Static Characteristic

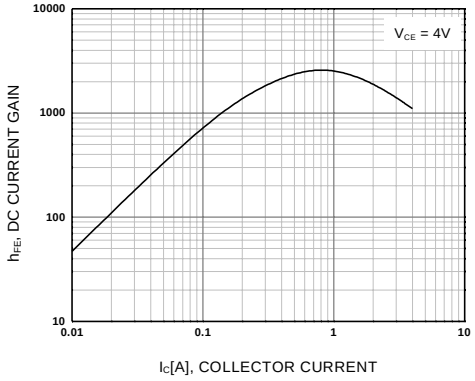


Figure 2. DC current Gain

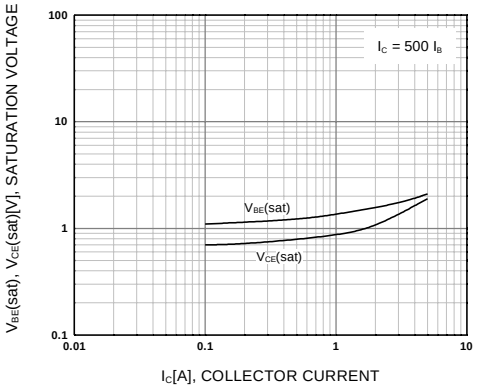


Figure 3. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

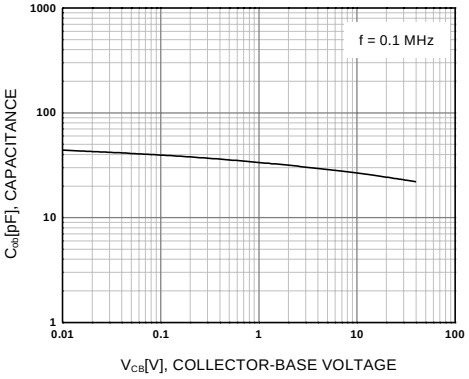


Figure 4. Collector Output Capacitance

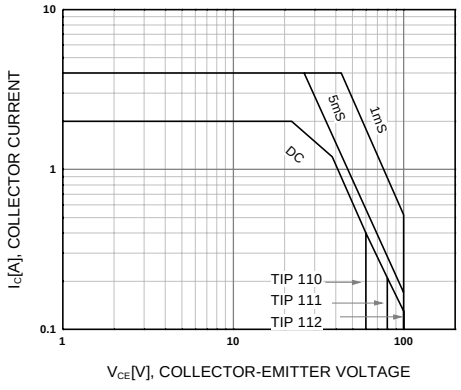


Figure 5. Safe Operating Area

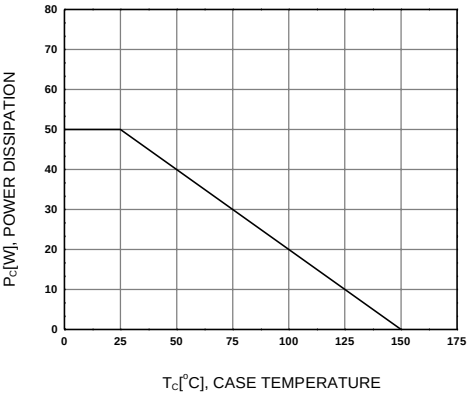


Figure 6. Power Derating

Package Demensions

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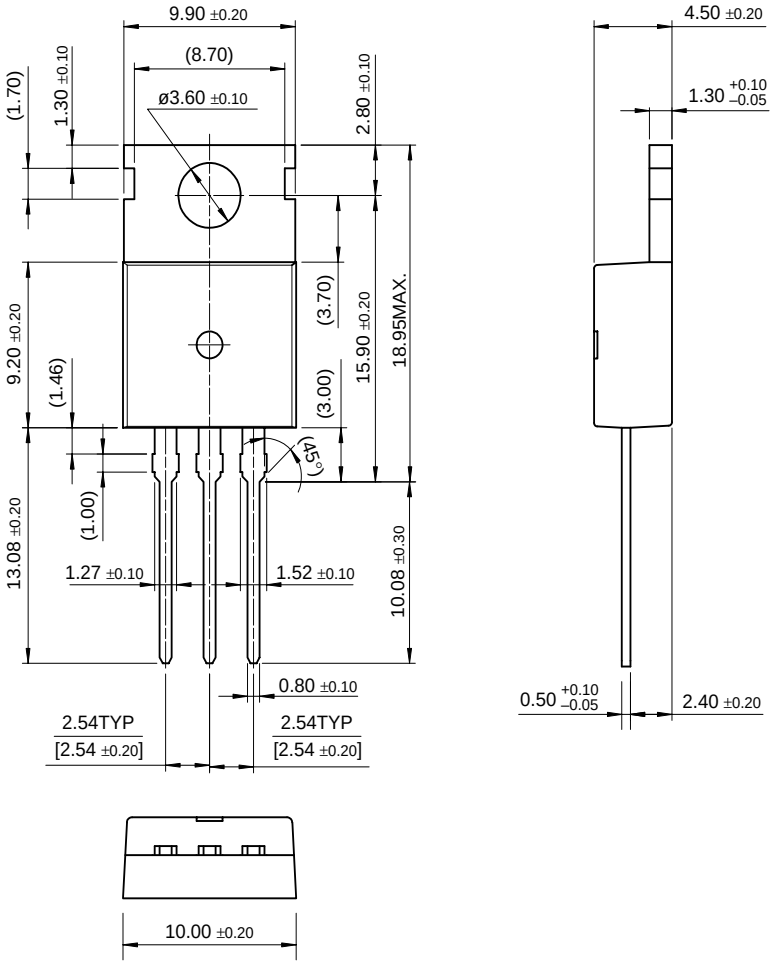

Dimensions in Millimeters

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Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

TIP111

NPN Epitaxial Silicon Darlington Transistor

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
TIP111TU	Full Production	$0.349	TO-220	3	RAIL
TIP111	Full Production	$0.349	TO-220	3	BULK

* 1,000 piece Budgetary Pricing

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Models

Package & leads	Condition	Temperature range	Software version	Revision date
PSPICE				
TO-220-3	Electrical/Thermal	-25°C to 100°C	9.2	Aug 2, 2001

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Product status/pricing/packaging

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TIP112	Full Production	$0.349	TO-220	3	BULK
TIP112TU	Full Production	$0.349	TO-220	3	RAIL

* 1,000 piece Budgetary Pricing

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Models

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PSPICE				
TO-220-3	Electrical/Thermal	-25°C to 100°C	9.2	Aug 2, 2001

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TIP110TU	Full Production	$0.349	TO-220	3	RAIL
TIP110	Full Production	$0.349	TO-220	3	BULK

* 1,000 piece Budgetary Pricing

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Package & leads	Condition	Temperature range	Software version	Revision date
PSPICE				
TO-220-3	Electrical/Thermal	-25°C to 100°C	9.2	Aug 2, 2001

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