



Micro Commercial Components

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**TIP115**  
**TIP116**  
**TIP117**

## Features

- High DC Current Gain :  $h_{FE}=1000$  @  $V_{CE}=4.0V$ ,  $I_C=1.0A$ (Min.)
- Low Collector-Emitter Saturation Voltage
- Complementary to TIP110/111/112
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1

## Maximum Ratings

Symbol	Rating	Rating	Unit
$V_{CEO}$	Collector-Emitter Voltage	TIP115	60
		TIP116	80
		TIP117	100
$V_{CBO}$	Collector-Base Voltage	TIP115	60
		TIP116	80
		TIP117	100
$V_{EBO}$	Emitter-Base Voltage	5.0	V
$I_C$	Collector Current (DC)	2.0	A
$I_{CP}$	Collector Current (Pulse)	4.0	A
$I_B$	Base Current (DC)	50	mA
$P_C$	Collector Dissipation @ $T_A=25^\circ C$	2.0	W
	Collector Dissipation @ $T_C=25^\circ C$	50	W
$T_{J,}$	Junction Temperature	-55 to +150	$^\circ C$
$T_{STG}$	Storage Temperature	-55 to +150	$^\circ C$

## Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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### OFF CHARACTERISTICS

Symbol	Parameter	Min	Max	Units
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage ( $I_C=30mA$ , $I_B=0$ )	TIP115	60	---
		TIP116	80	---
		TIP117	100	---
$I_{CEO}$	Collector Cut-off Current ( $V_{CE}=30V$ , $I_B=0$ ) ( $V_{CE}=40V$ , $I_B=0$ ) ( $V_{CE}=50V$ , $I_B=0$ )	TIP115	---	2.0
		TIP116	---	2.0
		TIP117	---	2.0
$I_{CBO}$	Collector Cut-off Current ( $V_{CB}=60V$ , $I_E=0$ ) ( $V_{CB}=80V$ , $I_E=0$ ) ( $V_{CB}=100V$ , $I_E=0$ )	TIP115	---	1.0
		TIP116	---	1.0
		TIP117	---	1.0
$I_{EBO}$	Emitter Cut-off Current ( $V_{BE}=5.0V$ , $I_C=0$ )	---	2.0	mA

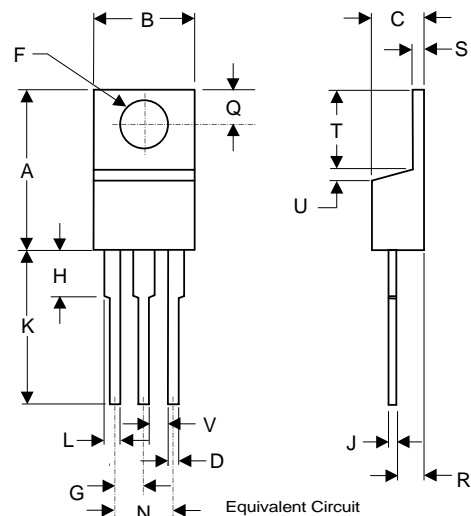
### ON CHARACTERISTICS

Symbol	Parameter	Min	Max	Units
$h_{FE(1)}$	DC Current Gain ( $I_C=1.0A$ , $V_{CE}=4.0V$ ) ( $I_B=2.0A$ , $V_{CE}=4.0V$ )	1000	---	---
		500	---	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=2.0A$ , $I_B=8.0mA$ )	---	2.5	V
$V_{BE(ON)}$	Base-Emitter On Voltage ( $I_C=2.0A$ , $V_{CE}=4.0A$ )	---	2.8	V
$C_{ob}$	Output Capacitance ( $V_{CB}=10V$ , $I_E=0$ , $f=0.1MHz$ )	---	200	pF

Notes:1.High Temperature Solder Exemption Applied, see EU Directive Annex 7.

## PNP Epitaxial Silicon Darlington Transistors

### TO-220



1.Base  
2.Collector  
3.Emitter

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

### DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.595	.620	15.11	15.75	
B	.380	.405	9.65	10.29	
C	.160	.190	4.06	4.82	
D	.025	.035	0.64	0.89	
F	.142	.147	3.61	3.73	
G	.190	.210	4.83	5.33	
H	.110	.130	2.79	3.30	
J	.018	.025	0.46	0.64	
K	.500	.562	12.70	14.27	
L	.045	.060	1.14	1.52	
Q	.100	.120	2.54	3.04	
R	.080	.110	2.04	2.79	
S	.045	.055	1.14	1.39	
T	.235	.255	5.97	6.48	
U	-----	.050	-----	1.27	