

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

**PNP Epitaxial  
Silicon Darlington  
Transistors**

**Features**

- Halogen free available upon request by adding suffix "-HF"
- 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 (Note1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Mounting Torque: 5 in-lbs Maximum

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**

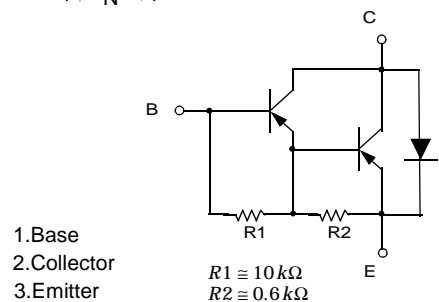
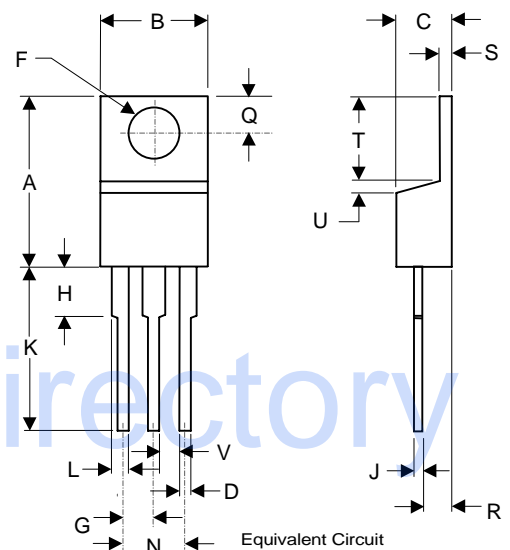
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage ( $I_C=30mA$ , $I_B=0$ )	TIP115	60	---	Vdc
		TIP116	80	---	
		TIP117	100	---	
$I_{CEO}$	Collector Cut-off Current ( $V_{CE}=30V$ , $I_B=0$ ) ( $V_{CE}=40V$ , $I_B=0$ ) ( $V_{CE}=50V$ , $I_B=0$ )	TIP115	---	2.0	mA
		TIP116	---	2.0	
		TIP117	---	2.0	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

**ON CHARACTERISTICS**

$h_{FE(1)}$	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	Vdc
$V_{BE(ON)}$	Base-Emitter On Voltage ( $I_C=2.0A$ , $V_{CE}=4.0A$ )	---	2.8	Vdc
$C_{ob}$	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.

**TO-220**



**DIMENSIONS**

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.560	.625	14.22	15.88	
B	.380	.420	9.65	10.67	
C	.140	.190	3.56	4.82	
D	.020	.045	0.51	1.14	
F	.139	.161	3.53	4.09	∅
G	.190	.110	2.29	2.79	
H	---	.250	---	6.35	
J	.012	.025	0.30	0.64	
K	.500	.580	12.70	14.73	
L	.045	.060	1.14	1.52	
N	.190	.210	4.83	5.33	
Q	.100	.135	2.54	3.43	
R	.080	.115	2.04	2.92	
S	.045	.055	1.14	1.39	
T	.230	.270	5.84	6.86	
U	----	.050	----	1.27	
V	.045	----	1.15	----	



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### Ordering Information :

Device	Packing
Part Number-BP	Bulk; 1Kpcs/Box

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

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