



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

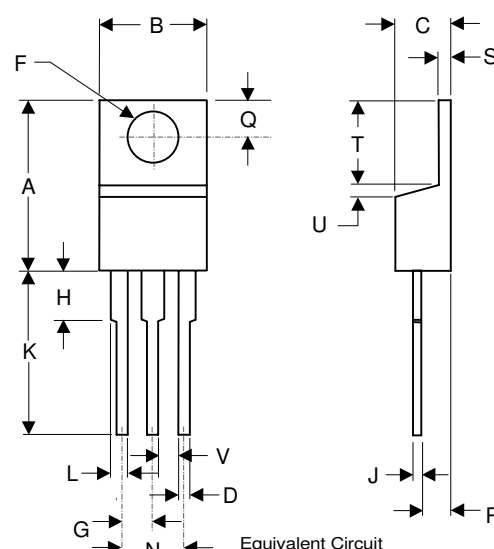
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



TIP115 TIP116 TIP117

PNP Epitaxial Silicon Darlington Transistors

TO-220



1.Base
2.Collector
3.Emitter

$R1 \cong 10\text{ k}\Omega$
 $R2 \cong 0.6\text{ k}\Omega$

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	Ø
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	---	

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
- Maximum Ratings
- Mounting Torque: 5 in-lbs Maximum

Symbol	Rating	Rating	Unit
V_{CEO}	Collector-Emitter Voltage		
	TIP115	60	V
	TIP116	80	
	TIP117	100	
V_{CBO}	Collector-Base Voltage		
	TIP115	60	V
	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 @ $T_A=25^\circ\text{C}$	2.0	W
	Collector Dissipation @ $T_C=25^\circ\text{C}$	50	W
$T_{J,}$	Junction Temperature	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to +150	$^\circ\text{C}$

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 ($I_C=30\text{mA}$, $I_B=0$)			
	TIP115	60	---	Vdc
	TIP116	80	---	
	TIP117	100	---	
I_{CEO}	Collector Cut-off Current ($V_{CE}=30\text{Vdc}$, $I_B=0$)			
	TIP115	---	2.0	mA
	TIP116	---	2.0	
	TIP117	---	2.0	
I_{CBO}	Collector Cut-off Current ($V_{CB}=60\text{Vdc}$, $I_E=0$)			
	TIP115	---	1.0	mA
	TIP116	---	1.0	
	TIP117	---	1.0	
I_{EBO}	Emitter Cut-off Current ($V_{BE}=5.0\text{Vdc}$, $I_C=0$)			
		---	2.0	mA

ON CHARACTERISTICS

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

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

Ordering Information :

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

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

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