

TIP29,A,B,C(NPN) TIP30,A,B,C(PNP)

1.0 Amp Complementary Silicon Power Transistors

Features

- Halogen free available upon request by adding suffix "-HF"
- Mounting Torque: 5 in-lbs Maximum
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Marking: Type Number
- $R_{th(jc)}$ is 4.167°C/W , $R_{th(ja)}$ is 62.5°C/W
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings

Symbol	Rating		Rating	Unit
V _{CEO}	Collector-Emitter Voltage	TIP29, TIP30	40	V
V _{CBO}	Collector-Base Voltage	TIP29A, TIP30A	60	
		TIP29B, TIP30B	80	
		TIP29C, TIP30C	100	
V _{EB}	Emitter-Base Voltage		5.0	V
I _C	Collector Current- Continuous Peak ⁽¹⁾		1.0 3.0	A
I _B	Base Current-Continuous		0.4	A
P _D	Total power dissipation @T _C =25°C Derate above 25°C		30 0.24	W W/°C
T _J ,	Junction Temperature		-55 to +150	°C
T _{STG}	Storage Temperature		-55 to +150	°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 ^(note 2) ($I_C=30\text{mA}$, $I_B=0$)	TIP29, TIP30 TIP29A, TIP30A TIP29B, TIP30B TIP29C, TIP30C	40 60 80 100	---	Vdc
I_{EBO}	Emitter-Base Cutoff Current ($V_{EB}=5.0\text{Vdc}$, $I_C=0$)		---	1.0	mA
I_{CES}	Collector Cutoff Current ($V_{CE}=40\text{V}$, $V_{EB}=0$) ($V_{CE}=60\text{V}$, $V_{EB}=0$) ($V_{CE}=80\text{V}$, $V_{EB}=0$) ($V_{CE}=100\text{V}$, $V_{EB}=0$)	TIP29, TIP30 TIP29A, TIP30A TIP29B, TIP30B TIP29C, TIP30C	---	200 200 200 200	μA
I_{CEO}	Collector Cutoff Current ($V_{CE}=30\text{Vdc}$, $I_B=0$) TIP29, TIP29A, TIP30, TIP30A ($V_{CE}=60\text{Vdc}$, $I_B=0$) TIP29B, TIP29C, TIP30B, TIP30C		---	0.3 0.3	mA

ON CHARACTERISTICS⁽²⁾

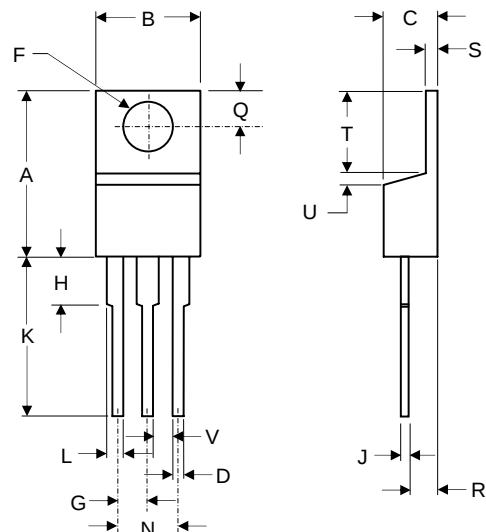
$h_{FE(1)}$	DC Current Gain ($I_C=0.2\text{A}$, $V_{CE}=4.0\text{Vdc}$) ($I_C=1.0\text{A}$, $V_{CE}=4.0\text{Vdc}$)	40 15	---	75	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=1.0\text{A}$, $I_B=125\text{mA}$)	---	0.7		Vdc
$V_{BE(ON)}$	Base-Emitter On Voltage ($I_C=1.0\text{A}$, $V_{CE}=4.0\text{Vdc}$)	---	1.3		Vdc
f_T	Current-Gain-Bandwidth Product ^(note 3) ($I_C=200\text{mA}$, $V_{CE}=10\text{Vdc}$, $f=1.0\text{MHz}$)	3.0	---		MHz
h_{fe}	Small-Signal Current Gain ($I_C=0.2\text{A}$, $V_{CE}=10\text{Vdc}$, $f=1.0\text{kHz}$)	20	---		---

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

2. Pulse Test: Pulse Width=300us, Duty Cycle <2.0%

3. $f_T = |h_{fe}| \times f_{test}$

TO-220



PIN 1. BASE
PIN 2. COLLECTOR
PIN 3. EMITTER

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	---	

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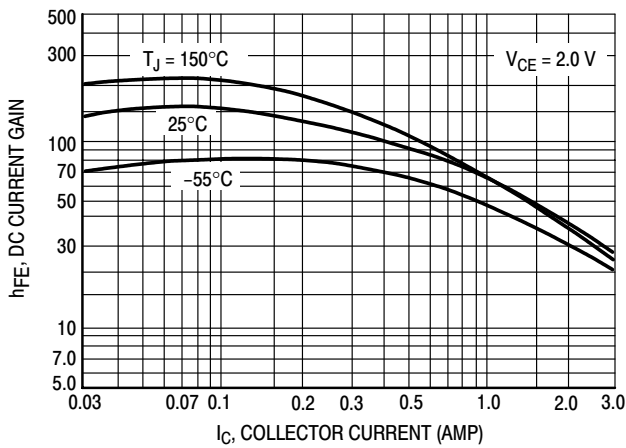


Figure 1. DC Current Gain

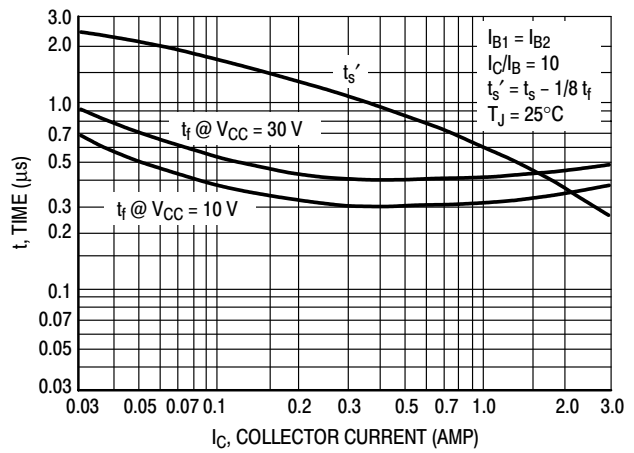


Figure 2. Turn-Off Time

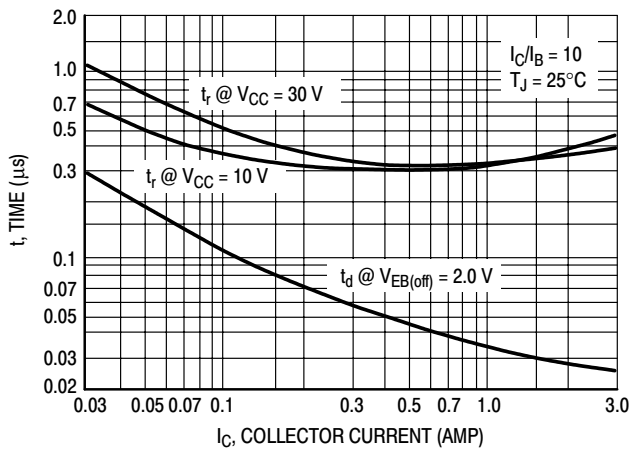


Figure 3. Turn-On Time

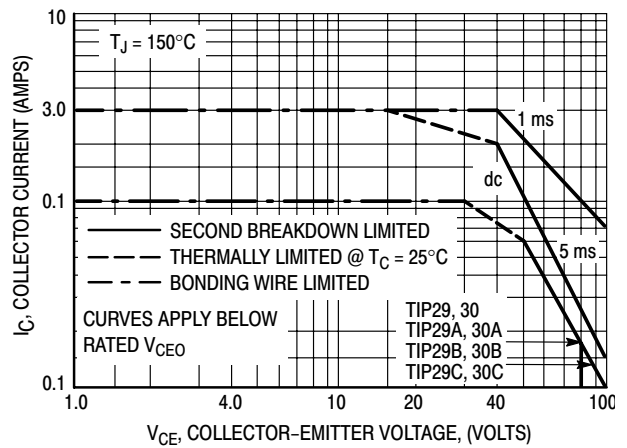


Figure 4. Active Region Safe Operating Area

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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