



Micro Commercial Components

Micro Commercial Components  
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# TIP29,A,B,C(NPN) TIP30,A,B,C(PNP)

## Features

- 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
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0

## Maximum Ratings

Symbol	Rating	Rating	Unit
$V_{CEO}$	Collector-Emitter Voltage	TIP29, TIP30	40
		TIP29A, TIP30A	60
		TIP29B, TIP30B	80
$V_{CBO}$	Collector-Base Voltage	TIP29C, TIP30C	100
$V_{EB}$	Emitter-Base Voltage		5.0 V
$I_C$	Collector Current- Continuous		1.0
		Peak <sup>(1)</sup>	3.0
$I_B$	Base Current-Continuous		0.4 A
$P_D$	Total power dissipation @ $T_C=25^\circ C$		30 W
		Derate above 25°C	0.24 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 <sup>(note 2)</sup> ( $I_C=30mA$ , $I_B=0$ )	TIP29, TIP30	40	---	Vdc
		TIP29A, TIP30A	60	---	
		TIP29B, TIP30B	80	---	
		TIP29C, TIP30C	100	---	
$I_{EBO}$	Emitter-Base Cutoff Current ( $V_{EB}=5.0Vdc$ , $I_C=0$ )	---	1.0	mAdc	
$I_{CES}$	Collector Cutoff Current ( $V_{CE}=40V$ , $V_{EB}=0$ )	TIP29, TIP30	---	200	uAdc
		TIP29A, TIP30A	---	200	
		TIP29B, TIP30B	---	200	
		TIP29C, TIP30C	---	200	
$I_{CEO}$	Collector Cutoff Current ( $V_{CE}=30Vdc$ , $I_B=0$ )	TIP29, TIP29A, TIP30, TIP30A	---	0.3	mAdc
		TIP29B, TIP29C, TIP30B, TIP30C	---	0.3	

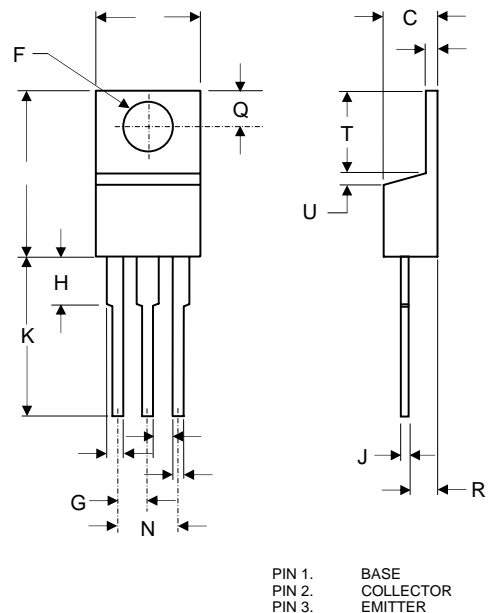
### ON CHARACTERISTICS<sup>(2)</sup>

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

- Notes: 1. High Temperature Solder Exemption Applied, see EU Directive Annex 7.  
2. Pulse Test: Pulse Width=300us, Duty Cycle <2.0%  
3.  $f_T = |h_{fe}| \times f_{test}$

## 1.0 Amp Complementary Silicon Power Transistors

### TO-220



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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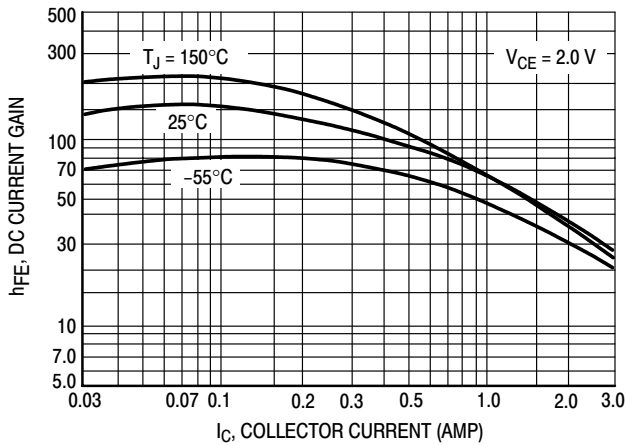


Figure 1. DC Current Gain

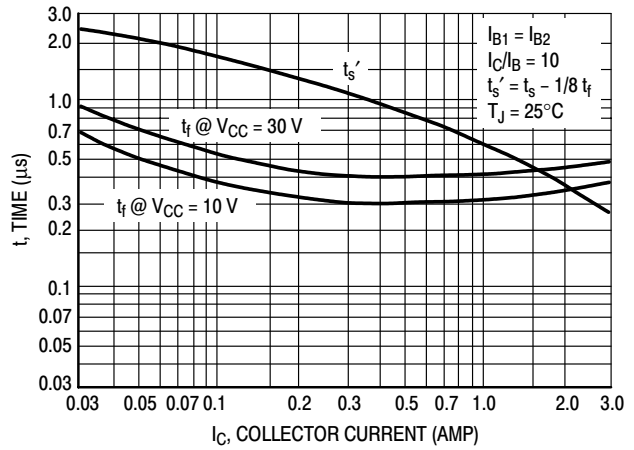


Figure 2. Turn-Off Time

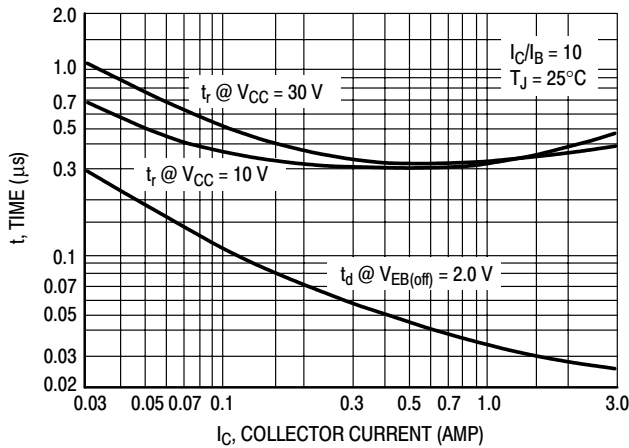


Figure 3. Turn-On Time

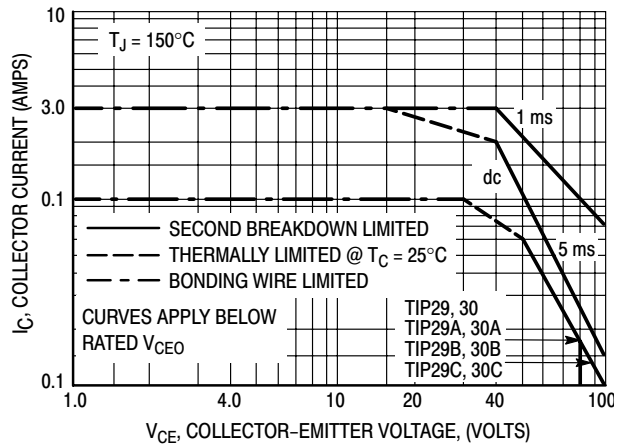


Figure 4. Active Region Safe Operating Area



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## Ordering Information

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

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