

TIP100 TIP101 TIP102

NPN Plastic Medium-Power Silicon Transistors

Features

- Mounting Torque: 5 in-lbs Maximum
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- High DC Current Gain : $h_{FE}=2500$ (Typ) @ $I_C=4.0\text{Adc}$
- Halogen free available upon request by adding suffix "-HF"
- Low Collector-Emitter Saturation Voltage
- Monolithic Construction with Built-in Base-Emitter Shunt Resistors
- TO-220 Compact package
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{CEO}	Collector-Emitter Voltage TIP100 TIP101 TIP102	60 80 100	V
V_{CBO}	Collector-Base Voltage TIP100 TIP101 TIP102	60 80 100	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current-continuous	8.0	A
I_{CP}	Collector Current-peak	15	A
I_B	Base Current	1.0	A
P_D	Collector Dissipation @ $T_C=25^\circ\text{C}$ Derate above 25°C	80 0.64	W W/ $^\circ\text{C}$
T_{Jr}	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 ($I_C=30\text{mAdc}$, $I_B=0$) TIP100 TIP101 TIP102	60 80 100	---	Vdc
I_{CEO}	Collector Cut-off Current ($V_{CE}=30\text{Vdc}$, $I_B=0$) ($V_{CE}=40\text{Vdc}$, $I_B=0$) ($V_{CE}=50\text{Vdc}$, $I_B=0$) TIP100 TIP101 TIP102	---	50 50 50	μAdc
I_{CBO}	Collector Cut-off Current ($V_{CB}=60\text{Vdc}$, $I_E=0$) ($V_{CB}=80\text{Vdc}$, $I_E=0$) ($V_{CB}=100\text{Vdc}$, $I_E=0$) TIP100 TIP101 TIP102	---	50 50 50	μAdc
I_{EBO}	Emitter Cut-off Current ($V_{BE}=5.0\text{Vdc}$, $I_C=0$)	---	8.0	mAdc

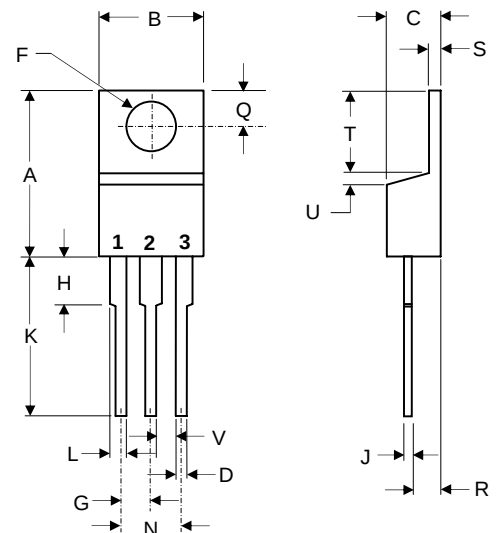
ON CHARACTERISTICS (1)

$h_{FE(1)}$	DC Current Gain ($I_C=3.0\text{Adc}$, $V_{CE}=4.0\text{Vdc}$) ($I_C=8.0\text{Adc}$, $V_{CE}=4.0\text{Vdc}$)	1000 200	20000 ---	----
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=3.0\text{Adc}$, $I_B=6.0\text{mAdc}$) ($I_C=8.0\text{Adc}$, $I_B=80\text{mAdc}$)	---	2.0 2.5	Vdc
$V_{BE(ON)}$	Base-Emitter On Voltage ($I_C=8.0\text{Adc}$, $V_{CE}=4.0\text{Adc}$)	---	2.8	Vdc
h_{fe}	Small-Signal Current Gain ($I_C=3.0\text{Adc}$, $V_{CE}=4.0\text{Vdc}$, $f=1.0\text{MHz}$)	4.0	---	---
C_{ob}	Output Capacitance ($V_{CB}=10\text{V}$, $I_E=0$, $f=0.1\text{MHz}$)	---	200	pF

(1) Pulse Test: Pulse Width<300us, Duty Cycle<2%

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

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	---	

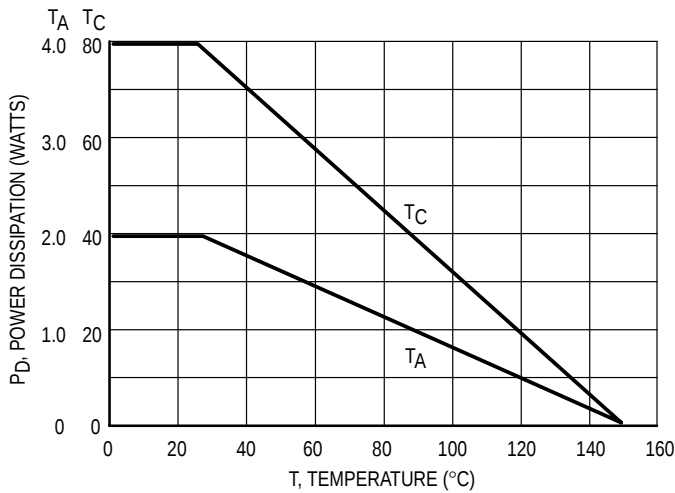


Figure 1. Power Derating

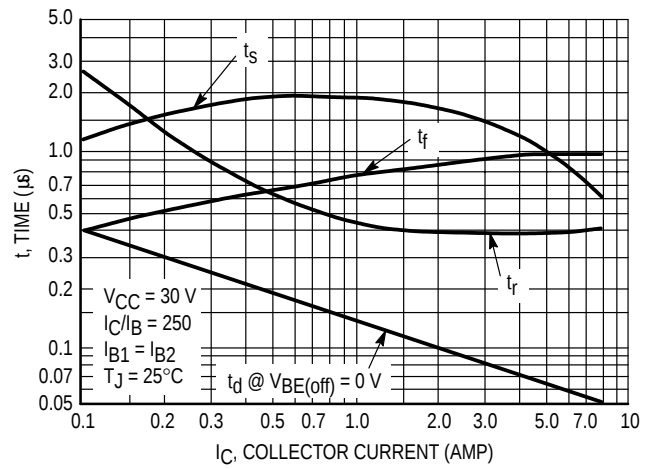


Figure 2. Switching Times

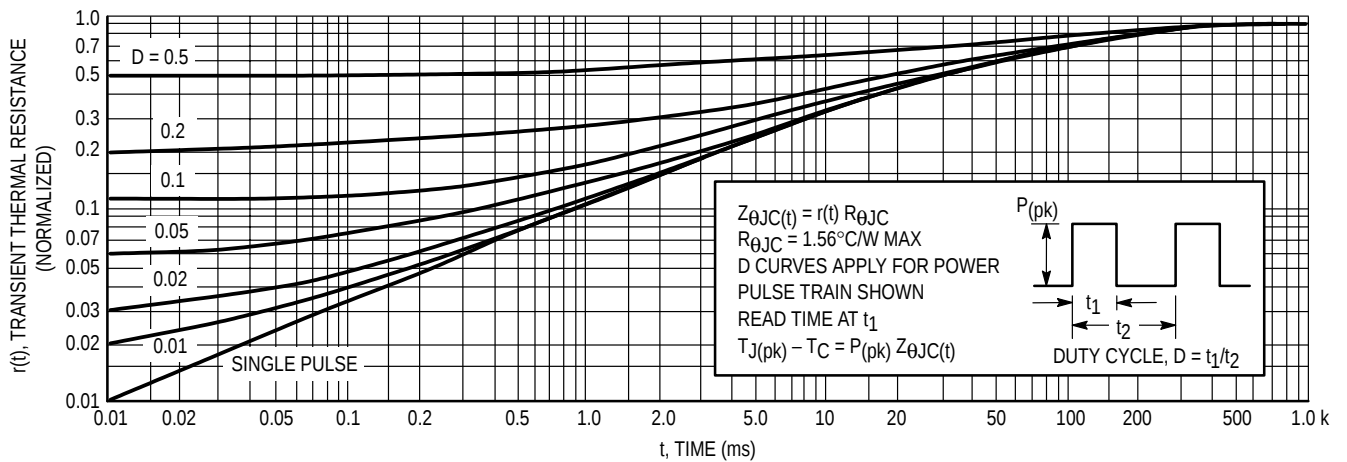


Figure 3. Thermal Response

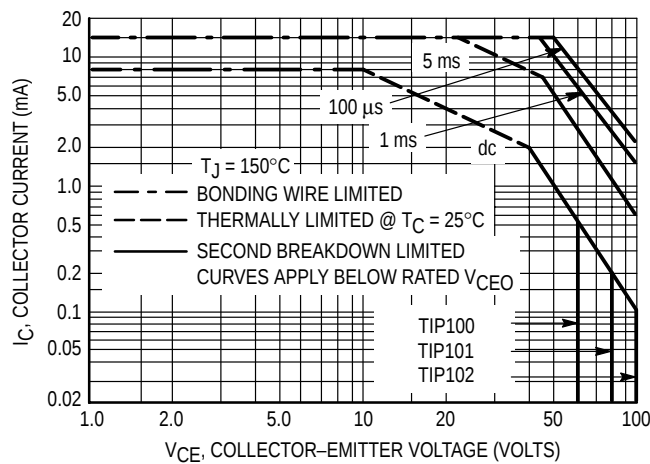


Figure 4. Active-Region Safe Operating Area

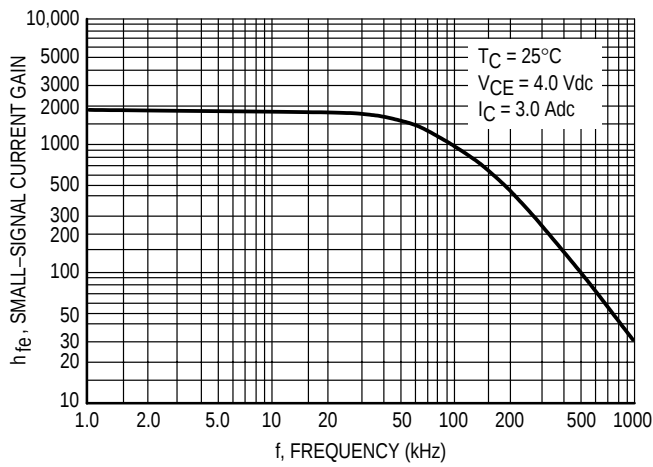


Figure 5. Small-Signal Current Gain

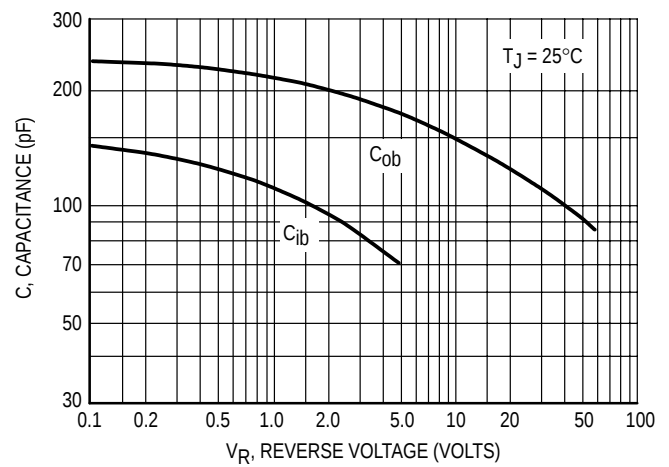


Figure 6. Capacitance

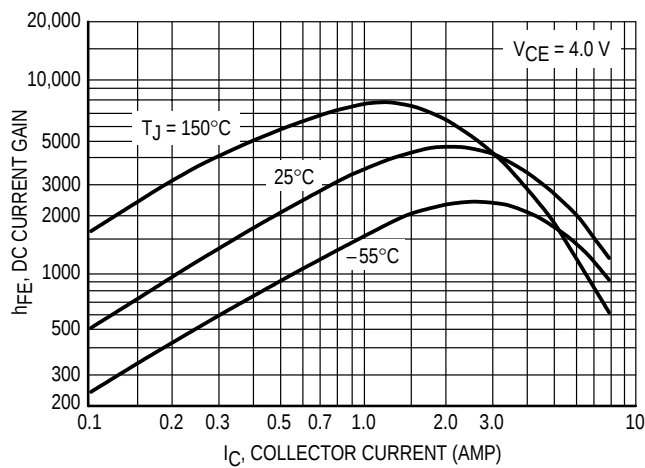


Figure 7. DC Current Gain

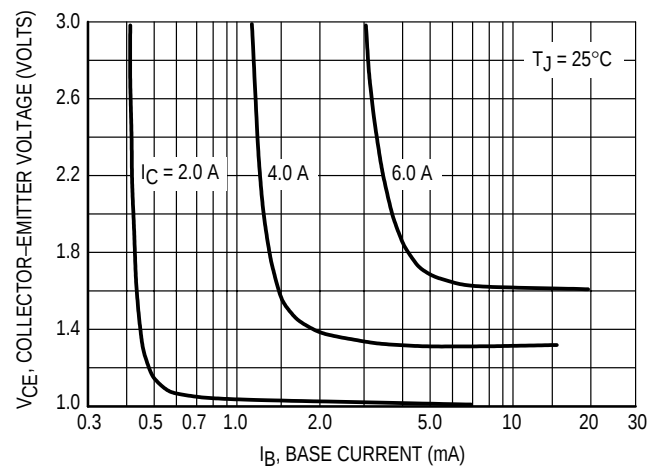


Figure 8. Collector Saturation Region

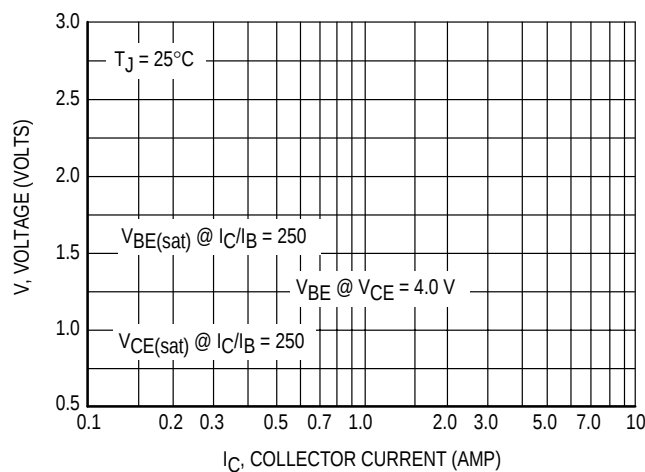


Figure 9. "On" Voltages

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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