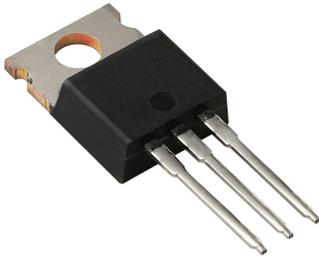


Complementary Silicon Plastic Power Transistors

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PNP
TIP30A
TIP30C



TO-220

Features

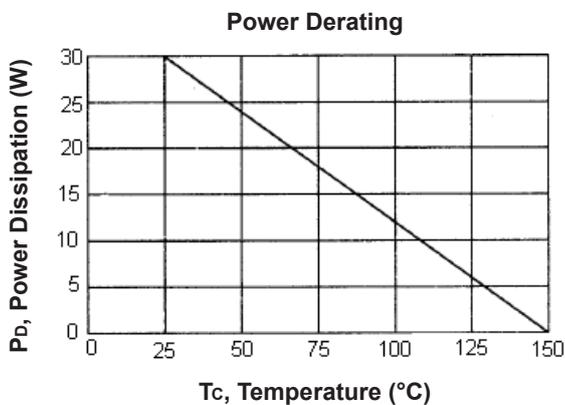
- Collector-Emitter sustaining voltage - $V_{CEO} (sust) = 60V$ (Minimum) - TIP30A
= 100V (Minimum) - TIP30C
- Collector-Emitter saturation voltage - $V_{CE} (sat) = 0.7V$ (Maximum) at $I_C = 1A$
- Current gain-bandwidth product $f_T = 3MHz$ (Minimum) at $I_C = 200 mA$

Maximum Ratings

Characteristic	Symbol	TIP30A	TIP30C	Unit
Collector-Emitter Voltage	V_{CEO}	60	100	V
Collector-Base Voltage	V_{CBO}			
Emitter-Base Voltage	V_{EBO}	5		
Collector Current - Continuous - Peak	I_C	1 3		A
Base Current	I_B	0.4		
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	30 0.24		W W / $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150		$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	4.167	V



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Electrical Characteristics (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Max.	Unit
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OFF Characteristics

Collector - Emitter Breakdown Voltage (Note 1) (I _C = 30mA, I _B = 0) TIP30A TIP30C	V _{(BR)CEO}	60 100	-	V
Collector Cut-off Current V _{CE} = 30V, I _B = 0 TIP30A V _{CE} = 60V, I _B = 0 TIP30C	I _{CEO}	-	0.3 0.3	mA
Collector Cut-off Current V _{CE} = 60V, V _{EB} = 0 TIP30A V _{CE} = 100V, V _{EB} = 0 TIP30C	I _{CES}	-	0.2 0.2	mA
Emitter Cut-off Current (V _{EB} = 5V, I _C = 0)	I _{EBO}	-	1	mA

ON Characteristics (Note 1)

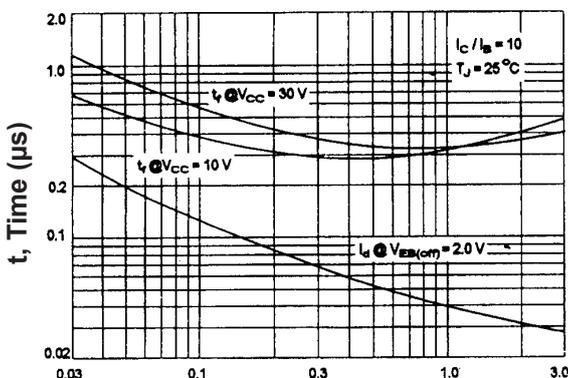
DC Current Gain (V _{CE} = 4V, I _C = 0.2A) (V _{CE} = 4V, I _C = 1A)	h _{FE}	40 15	75	-
Collector - Emitter Saturation Voltage (I _C = 1A, I _B = 125mA)	V _{CE(sat)}	-	0.7	V
Base - Emitter On Voltage (I _C = 1A, V _{CE} = 4V)	V _{BE(on)}	-	1.3	

Dynamic Characteristics

Current Gain-Bandwidth Product (Note 2) (V _{CE} = 10V, I _C = 200mA, f = 1MHz)	f _T	3	-	MHz
Small-Signal Current Gain (V _{CE} = 10V, I _C = 200mA, f = 1kHz)	h _{fe}	20	-	-

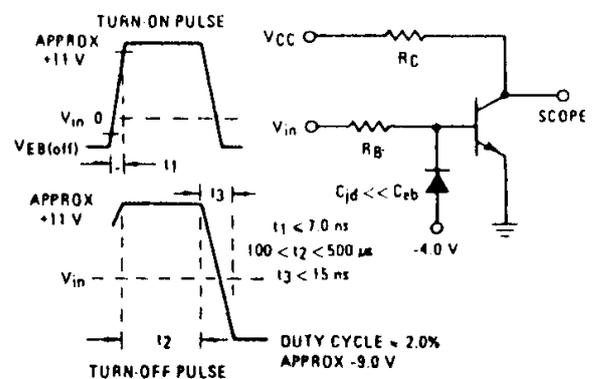
- (1) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 (2) f_T = |h_{FE}| ° f_{Test}

Turn - On Time



I_C, Collector Current (A)

Switching Time Equivalent Circuit



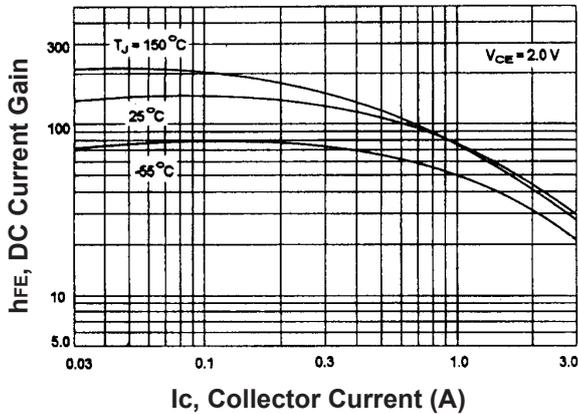
R_B and R_C Varied to Obtain Desired Current Levels



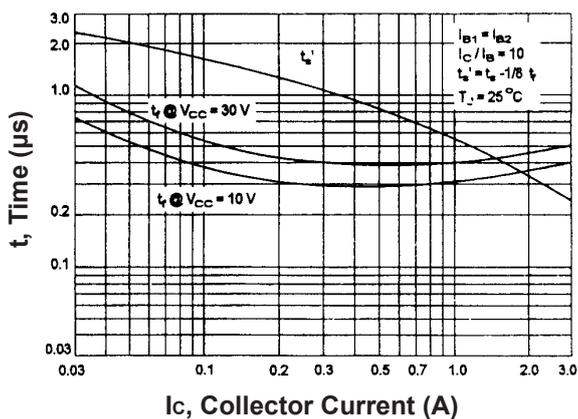
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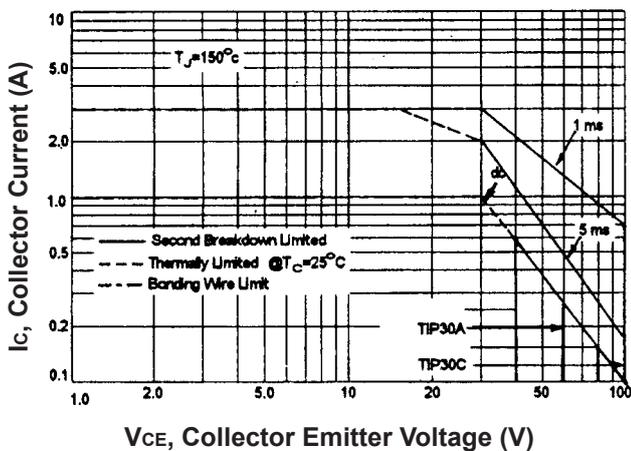
DC Current Gain



Turn-Off Time



Active Region Safe Operating Area



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate

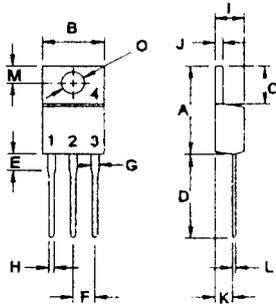
The data of beside curve is based on $T_{J(PK)} = 150^\circ\text{C}$; T_C is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} = 150^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown

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Diagram



Dim.	Min.	Max.
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36

Dim.	Min.	Max.
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

Pin Configuration:

1. Base
2. Collector
3. Emitter
4. Collector (Case)

Part Number Table

Description	Part Number
Power Transistor, PNP, 60V, TO-220	TIP30A
Power Transistor, PNP, 100V, TO-220	TIP30C

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