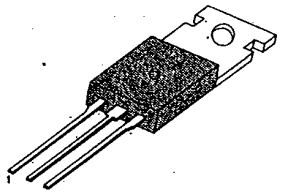
TIP42 SERIES
(TIP42/42A/42B/42C) PNP EXITAXIAL SILICON TRANSISTOR

T-33-21

MEDIUM POWER LINEAR SWITCHING APPLICATIONS

- Complement to TIP41/41A/41B/41C

TO-220



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic		Symbol	Rating	Unit
Collector-Base Voltage	: TIP42	V_{CBO}	−40	V
	: TIP42A		−60	V
	: TIP42B		−80	V
	: TIP42C		−100	V
Collector-Emitter Voltage	: TIP42	V_{CEO}	−40	V
	: TIP42A		−60	V
	: TIP42B		−80	V
	: TIP42C		−100	V
Emitter-Base Voltage		V_{EBO}	−5	V
Collector Current (DC)		I_C	−6	A
Collector Current (Pulse)		I_C	−10	A
Base Current		I_B	−2	A
Collector Dissipation (T_c=25°C)		P_C	65	W
Collector Dissipation (T_a=25°C)		P_C	2	W
Junction Temperature		Tj	150	°C
Storage Temperature		Tstg	−65~150	°C

ELECTRICAL CHARACTERISTICS (T_c=25°C)

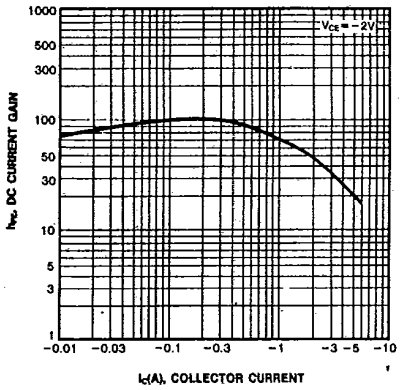
Characteristic		Symbol	Test Condition	Min	Max	Unit
*Collector Emitter Sustaining Voltage	: TIP42	BV_{CEO}(sus)	I_C= −30mA, I_B=0	−40		V
	: TIP42A			−60		V
	: TIP42B			−80		V
	: TIP42C			−100		V
Collector Cutoff Current	: TIP42/42A	I_{CEO}	V_{CE}=−30V, I_B=0		−0.7	mA
	: TIP42B/42C		V_{CE}=−60V, I_B=0		−0.7	mA
Collector Cutoff Current	: TIP42	I_{CES}	V_{CE}=−40V, V_{EB}=0		−400	μA
	: TIP42A		V_{CE}=−60V, V_{EB}=0		−400	μA
	: TIP42B		V_{CE}=−80V, V_{EB}=0		−400	μA
	: TIP42C		V_{CE}=−100V, V_{EB}=0		−400	μA
Emitter Cutoff Current		I_{EBO}	V_{BE}=−5V, I_C=0		−1	mA
*DC Current Gain		h_{FE}	V_{CE}=−4V, I_C=−0.3A	30		
			V_{CE}=−4V, I_C=−3A	15	75	
*Collector-Emitter Saturation Voltage		V_{CE} (sat)	I_C=−6A, I_B=−600mA		−1.5	V
*Base-Emitter On Voltage		V_{BE} (on)	V_{CE}=−4V, I_C=−6A		−2.0	V
Current Gain Bandwidth Product		f_T	V_{CE}=−10V, I_C=−500mA f=1MHz	3.0		MHz

* Pulse Test: PW≤300μs, Duty Cycle≤2%

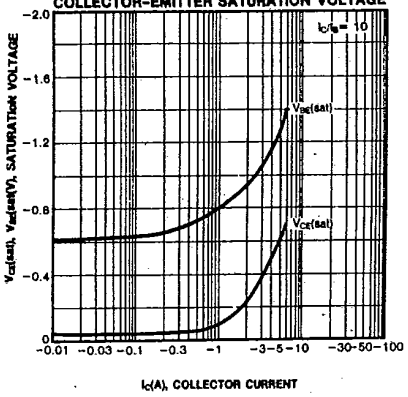
TIP42 SERIES
(TIP42/42A/42B/42C) PNP EXITAXIAL SILICON TRANSISTOR

T-33-21

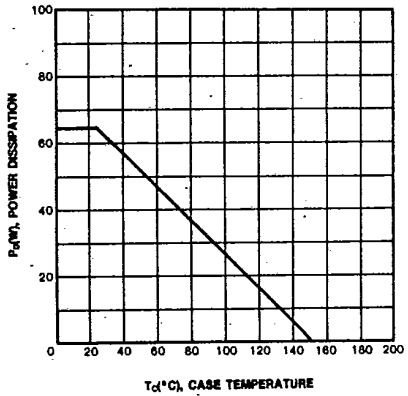
DC CURRENT GAIN



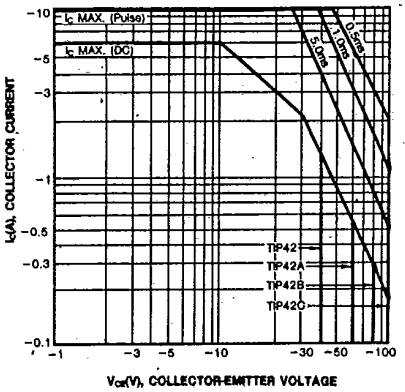
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



POWER DERATING



SAFE OPERATING AREA

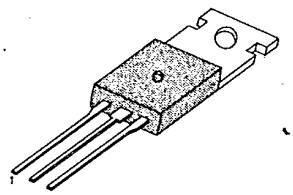


TIP47/48/49/50 NPN SILICON TRANSISTOR

T-33-11

HIGH VOLTAGE AND SWITCHING APPLICATIONS
HIGH SUSTAINING VOLTAGE
(Vceo(sus): 250 to 400V)
1A RETED COLLECTOR CURRENT

TO-220



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage : TIP47	V_{CBO}	350	V
: TIP48		400	V
: TIP49		450	V
: TIP50		500	V
Collector-Emitter Voltage : TIP47	V_{CEO}	250	V
: TIP48		300	V
: TIP49		350	V
: TIP50		400	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	1	A
Collector Current (Pulse)	I_C	2	A
Base Current	I_B	0.6	A
Collector Dissipation (T_C=25°C)	P_C	40	W
Collector Dissipation (T_a=25°C)	P_C	2	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−65~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

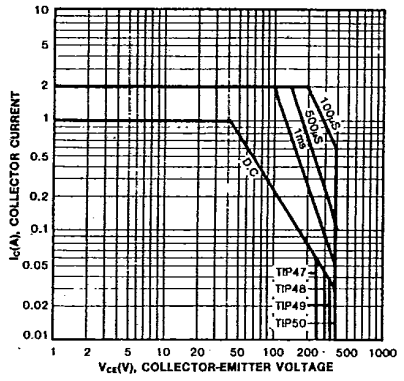
Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Sustaining Voltage	V_{CEX}(sus)				
: TIP47		I_C=30mA, I_B=0	250		V
: TIP48			300		V
: TIP49			350		V
: TIP50			400		V
Collector Cutoff Current : TIP47	I_{CEO}	V_{CE}=150V, I_B=0		1	mA
: TIP48		V_{CE}=200V, I_B=0		1	mA
: TIP49		V_{CE}=250V, I_B=0		1	mA
: TIP50		V_{CE}=300V, I_B=0		1	mA
Collector Cutoff Current : TIP47	I_{CEX}	V_{CE}=350V, V_{BE}=0		1	mA
: TIP48		V_{CE}=400, V_{BE}=0		1	mA
: TIP49		V_{CE}=450V, V_{BE}=0		1	mA
: TIP50		V_{CE}=500V, V_{BE}=0		1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0		1	mA
*DC Current Gain	h_{FE}	V_{CE}=10V, I_C=0.3A	30	150	
		V_{CE}=10V, I_C=1A	10		
*Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=1A, I_B=0.2A		1	V
*Base Emitter On Voltage	V_{BE}(on)	V_{CE}=10V, I_C=1A		1.5	V
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.2A, f=1KHz	10		MHz
Turn On Time	ton	V_{CC}=400V		0.5	μS
Storage Time	ts	$5I_{B1}$=−$2.5I_{B2}$=I_C=6A		3	μS
Fall Time	tf	RL=66.7Ω		0.3	μS

* Pulse test: PW≤300μs, duty cycle ≤ 2% Pulse

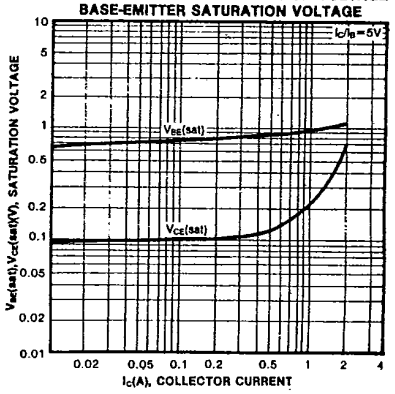
TIP47/48/49/50 NPN SILICON TRANSISTOR

T-33-11

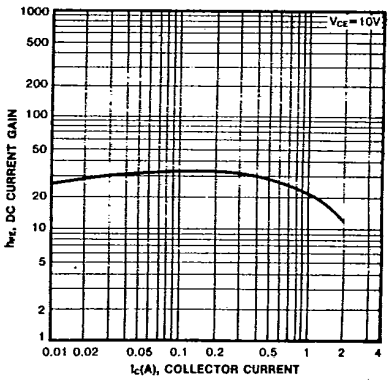
SAFE OPERATING AREA



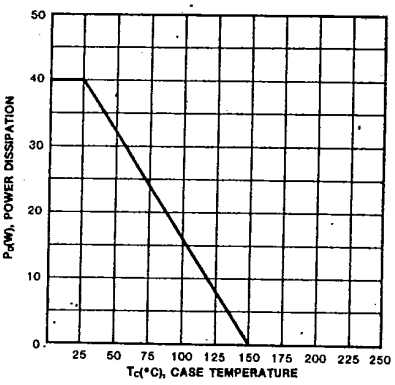
COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE



DC CURRENT GAIN



POWER DERATING



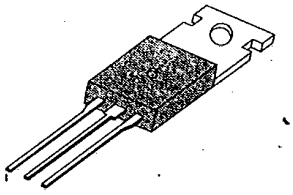
TIP100/101/102 NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-29

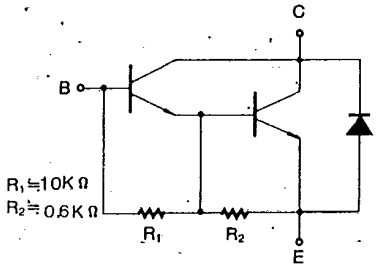
- HIGH DC CURRENT GAIN
  MIN h_{FE}=1000 @ V_{CE}=4V, I_C=3A
- COLLECTOR-EMITTER SUSTAINING VOLTAGE
- LOW COLLECTOR-EMITTER SATURATION VOLTAGE
- MONOLITHIC CONSTRUCTION WITH BUILT IN BASE-EMITTER SHUNT RESISTORS
- INDUSTRIAL USE

Complementary to TIP105/106/107

TO-220



1. Base 2. Collector 3. Emitter



ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage : TIP100	V_{CBO}	60	V
: TIP101		80	V
: TIP102		100	V
Collector-Emitter Voltage	V_{CEO}		
: TIP100		60	V
: TIP101		80	V
: TIP102		100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	8	A
Collector Current (Pulse)	I_C	15	A
Base Current (DC)	I_B	1	A
Collector Dissipation (T_a=25°C)	P_C	2	W
Collector Dissipation (T_C=25°C)	P_C	80	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−65~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$				
: TIP100		I_C=30mA, I_B=0	60		V
: TIP101			80		V
: TIP102			100		V
Collector Cutoff Current : TIP100	I_{CEO}	V_{CE}=30V, I_B=0		50	μA
: TIP101		V_{CE}=40V, I_B=0		50	μA
: TIP102		V_{CE}=50V, I_B=0		50	μA
Collector Cutoff Current : TIP100	I_{CBO}	V_{CB}=60V, I_E=0		50	μA
: TIP101		V_{CB}=80V, I_E=0		50	μA
: TIP102		V_{CB}=100V, I_E=0		50	μA
Emitter Cutoff Current	I_{EBO}	V_{BE}=5V, I_C=0		2	mA
DC Current Gain	h_{FE}	V_{CE}=4V, I_C=3A	1000	20000	
		V_{CE}=4V, I_C=8A	200		
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=3A, I_B=6mA		2	V
		I_C=8A, I_B=80mA		2.5	V
Base Emitter On Voltage	$V_{BE(on)}$	V_{CE}=4V, I_C=8A		2.8	V
Output Capacitance	Cob	V_{CB}=10V, I_E=0, f=0.1MHz		200	pF