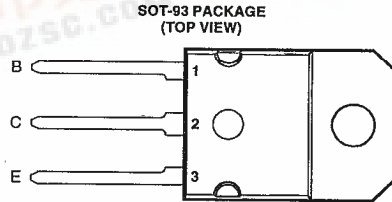


TIP33, TIP33A, TIP33B, TIP33C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

- Designed for Complementary Use with the TIP34 Series
- 80 W at 25°C Case Temperature
- 10 A Continuous Collector Current
- 15 A Peak Collector Current
- Customer-Specified Selections Available



Pin 2 is in electrical contact with the mounting base.

MDTRA

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIP33	V_{CBO}	80	V
	TIP33A		100	
	TIP33B		120	
	TIP33C		140	
Collector-emitter voltage ($I_B = 0$)	TIP33	V_{CEO}	40	V
	TIP33A		60	
	TIP33B		80	
	TIP33C		100	
	Emitter-base voltage		V_{EBO}	
Continuous collector current	I_C	10	A	
Peak collector current (see Note 1)	I_{CM}	15	A	
Continuous base current	I_B	3	A	
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	P_{tot}	80	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)	P_{tot}	3.5	W	
Unclamped inductive load energy (see Note 4)	$\frac{1}{2}LI_C^2$	62.5	mJ	
Operating junction temperature range	T_J	-65 to +150	°C	
Storage temperature range	T_{stg}	-65 to +150	°C	
Lead temperature 3.2 mm from case for 10 seconds	T_L	250	°C	

- NOTES: 1. This value applies for $t_p \leq 0.3$ ms, duty cycle $\leq 10\%$.
 2. Derate linearly to 150°C case temperature at the rate of 0.64 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = 0.4$ A, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_B = 0.1 \Omega$, $V_{CC} = 20$ V.

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TIP33, TIP33A, TIP33B, TIP33C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 30 \text{ mA}$ $I_B = 0$ (see Note 5)	TIP33 40 TIP33A 60 TIP33B 80 TIP33C 100			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 80 \text{ V}$ $V_{CE} = 100 \text{ V}$ $V_{CE} = 120 \text{ V}$ $V_{CE} = 140 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIP33 TIP33A TIP33B TIP33C	0.4 0.4 0.4 0.4	mA
I_{CEO} Collector cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 60 \text{ V}$	$I_B = 0$ $I_B = 0$	TIP33/33A TIP33B/33C	0.7 0.7	mA
I_{EBO} Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$		1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 1 \text{ A}$ $I_C = 3 \text{ A}$	(see Notes 5 and 6)	40 20	100
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 0.3 \text{ A}$ $I_B = 2.5 \text{ A}$	$I_C = 3 \text{ A}$ $I_C = 10 \text{ A}$	(see Notes 5 and 6)	1 4	V
V_{BE} Base-emitter voltage	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 3 \text{ A}$ $I_C = 10 \text{ A}$	(see Notes 5 and 6)	1.6 3	V
h_{fe} Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ kHz}$	20	
$ h_{fe} $ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ MHz}$	3	

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.
 6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1.56	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = 6 \text{ A}$ $I_{B(on)} = 0.6 \text{ A}$ $I_{B(off)} = -0.6 \text{ A}$		0.6		μs
t_{off} Turn-off time	$V_{BE(off)} = -4 \text{ V}$ $R_L = 5 \Omega$ $t_p = 20 \mu\text{s}$, dc $\leq 2\%$		1		μs

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

TIP33, TIP33A, TIP33B, TIP33C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

TYPICAL CHARACTERISTICS

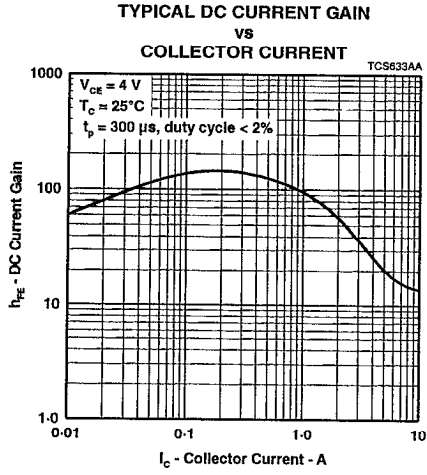


Figure 1.

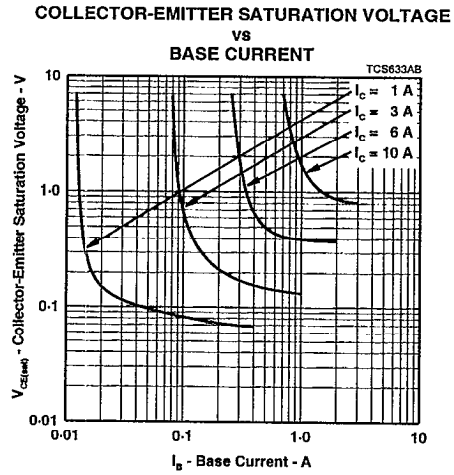


Figure 2.

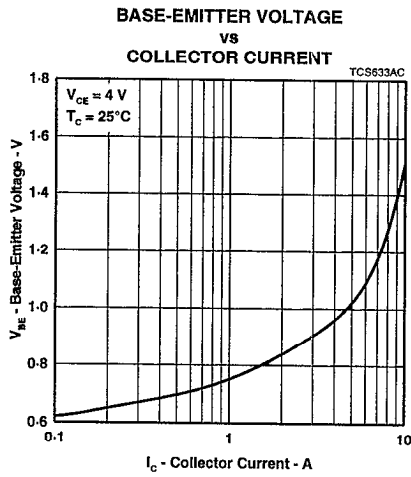


Figure 3.

TIP33, TIP33A, TIP33B, TIP33C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

MAXIMUM SAFE OPERATING REGIONS

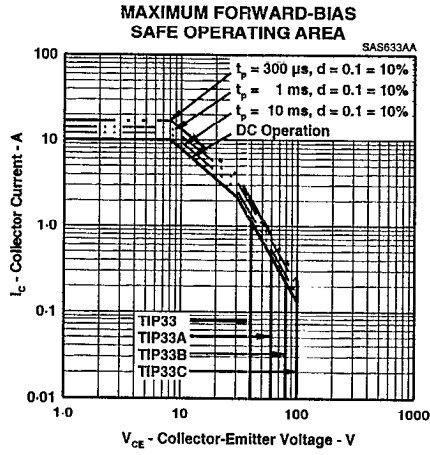


Figure 4.

THERMAL INFORMATION

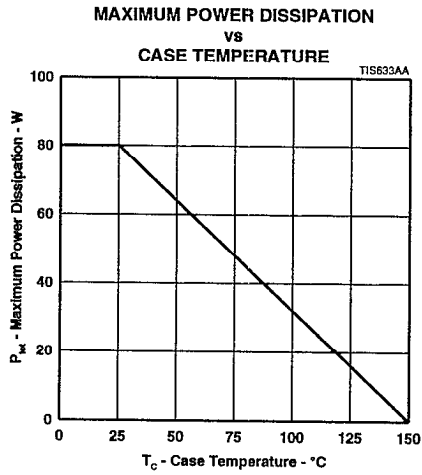
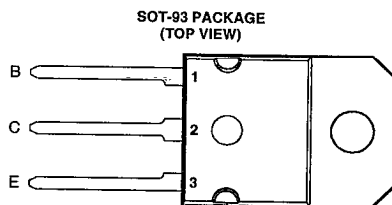


Figure 5.

TIP34, TIP34A, TIP34B, TIP34C PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

- Designed for Complementary Use with the TIP33 Series
- 80 W at 25°C Case Temperature
- 10 A Continuous Collector Current
- 15 A Peak Collector Current
- Customer-Specified Selections Available



Pin 2 is in electrical contact with the mounting base.

MDTRAA

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIP34	V_{CBO}	-80	V
	TIP34A		-100	
	TIP34B		-120	
	TIP34C		-140	
Collector-emitter voltage ($I_B = 0$)	TIP34	V_{CEO}	-40	V
	TIP34A		-60	
	TIP34B		-80	
	TIP34C		-100	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-10	A
Peak collector current (see Note 1)		I_{CM}	-15	A
Continuous base current		I_B	-3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	80	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P_{tot}	3.5	W
Unclamped inductive load energy (see Note 4)		$\frac{1}{2}LI_C^2$	62.5	mJ
Operating junction temperature range		T_J	-65 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		T_L	250	°C

- NOTES: 1. This value applies for $t_p \leq 0.3$ ms, duty cycle $\leq 10\%$.
 2. Derate linearly to 150°C case temperature at the rate of 0.64 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = -0.4$ A, $R_{BE} = 100 \Omega$, $V_{BE(on)} = 0$, $R_S = 0.1 \Omega$, $V_{CC} = -20$ V.

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TIP34, TIP34A, TIP34B, TIP34C
PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -30 \text{ mA}$ $I_B = 0$ (see Note 5) TIP34 TIP34A TIP34B TIP34C	-40 -60 -80 -100			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = -80 \text{ V}$ $V_{CE} = -100 \text{ V}$ $V_{CE} = -120 \text{ V}$ $V_{CE} = -140 \text{ V}$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ TIP34 TIP34A TIP34B TIP34C			-0.4 -0.4 -0.4 -0.4	mA
I_{CEO} Collector cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -60 \text{ V}$ $I_B = 0$ $I_B = 0$ TIP34/34A TIP34B/34C			-0.7 -0.7	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$ $I_C = 0$			-1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$ $I_C = -1 \text{ A}$ $I_C = -3 \text{ A}$ (see Notes 5 and 6)	40 20		100	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -0.3 \text{ A}$ $I_B = -2.5 \text{ A}$ $I_C = -3 \text{ A}$ $I_C = -10 \text{ A}$ (see Notes 5 and 6)			-1 -4	V
V_{BE} Base-emitter voltage	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$ $I_C = -3 \text{ A}$ $I_C = -10 \text{ A}$ (see Notes 5 and 6)			-1.6 -3	V
h_{fe} Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$ $I_C = -0.5 \text{ A}$ $f = 1 \text{ kHz}$	20			
$ h_{fe} $ Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$ $I_C = -0.5 \text{ A}$ $f = 1 \text{ MHz}$	3			

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.
 6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1.56	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -6 \text{ A}$ $I_{B(on)} = -0.6 \text{ A}$ $I_{B(off)} = 0.6 \text{ A}$		0.4		μs
t_{off} Turn-off time	$V_{BE(off)} = 4 \text{ V}$ $R_L = 5 \Omega$ $t_p = 20 \mu\text{s}$, dc $\leq 2\%$		0.7		μs

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

TIP34, TIP34A, TIP34B, TIP34C
PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN
vs
COLLECTOR CURRENT

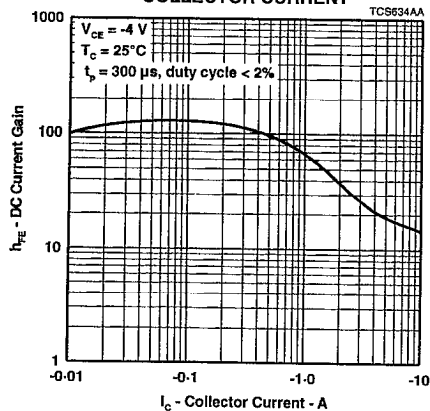


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE
vs
BASE CURRENT

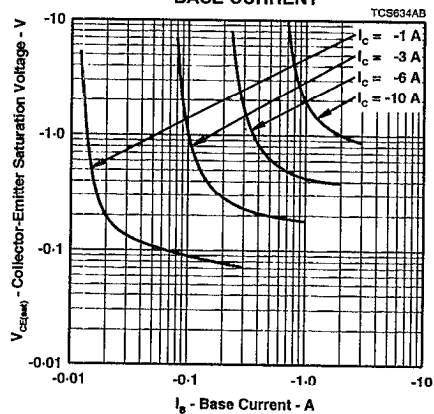


Figure 2.

BASE-EMITTER VOLTAGE
vs
COLLECTOR CURRENT

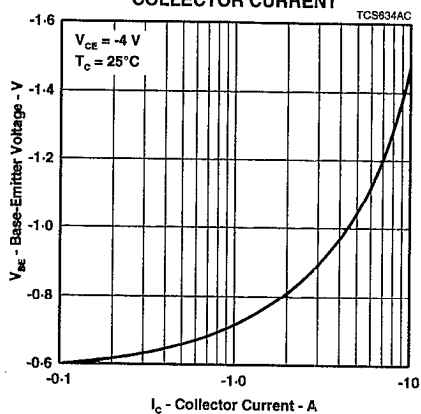


Figure 3.

TIP34, TIP34A, TIP34B, TIP34C
PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

MAXIMUM SAFE OPERATING REGIONS

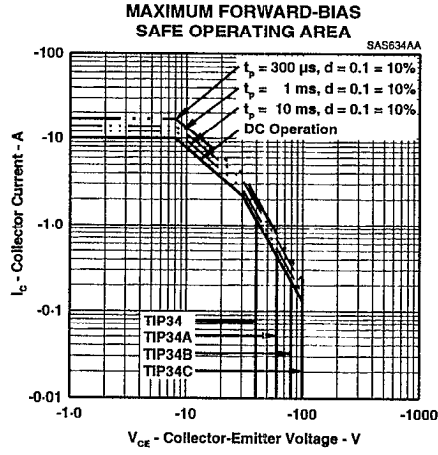


Figure 4.

THERMAL INFORMATION

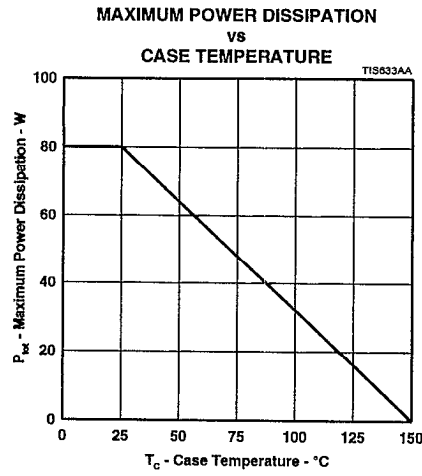
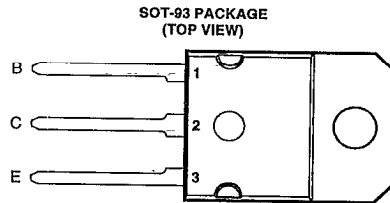


Figure 5.

TIP35, TIP35A, TIP35B, TIP35C NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

- Designed for Complementary Use with the TIP36 Series
- 125 W at 25°C Case Temperature
- 25 A Continuous Collector Current
- 40 A Peak Collector Current
- Customer-Specified Selections Available



Pin 2 is in electrical contact with the mounting base.

MDTRAA

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIP35	V_{CBO}	80	V
	TIP35A		100	
	TIP35B		120	
	TIP35C		140	
Collector-emitter voltage ($I_B = 0$)	TIP35	V_{CEO}	40	V
	TIP35A		60	
	TIP35B		80	
	TIP35C		100	
	Emitter-base voltage		V_{EBO}	
Continuous collector current	I_C	25	A	
Peak collector current (see Note 1)	I_{CM}	40	A	
Continuous base current	I_B	5	A	
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	P_{tot}	125	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)	P_{tot}	3.5	W	
Unclamped inductive load energy (see Note 4)	$\frac{1}{2}LI_C^2$	90	mJ	
Operating junction temperature range	T_J	-65 to +150	°C	
Storage temperature range	T_{stg}	-65 to +150	°C	
Lead temperature 3.2 mm from case for 10 seconds	T_L	250	°C	

- NOTES: 1. This value applies for $t_p \leq 0.3$ ms, duty cycle $\leq 10\%$.
 2. Derate linearly to 150°C case temperature at the rate of 1 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = 0.4$ A, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_B = 0.1 \Omega$, $V_{CC} = 20$ V.

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TIP35, TIP35A, TIP35B, TIP35C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 30 \text{ mA}$ (see Note 5)	$I_B = 0$	TIP35	40			V
			TIP35A	60			
			TIP35B	80			
			TIP35C	100			
I_{CES} Collector-emitter cut-off current	$V_{CE} = 80 \text{ V}$	$V_{BE} = 0$	TIP35			0.7	mA
	$V_{CE} = 100 \text{ V}$	$V_{BE} = 0$	TIP35A			0.7	
	$V_{CE} = 120 \text{ V}$	$V_{BE} = 0$	TIP35B			0.7	
	$V_{CE} = 140 \text{ V}$	$V_{BE} = 0$	TIP35C			0.7	
I_{CEO} Collector cut-off current	$V_{CE} = 30 \text{ V}$	$I_B = 0$	TIP35/35A			1	mA
	$V_{CE} = 60 \text{ V}$	$I_B = 0$	TIP35B/35C			1	
I_{EBO} Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$				1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 4 \text{ V}$	$I_C = 1.5 \text{ A}$	(see Notes 5 and 6)	25			
	$V_{CE} = 4 \text{ V}$	$I_C = 15 \text{ A}$		10		50	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 1.5 \text{ A}$ $I_B = 5 \text{ A}$	$I_C = 15 \text{ A}$	(see Notes 5 and 6)			1.8	V
		$I_C = 25 \text{ A}$				4	
V_{BE} Base-emitter voltage	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 15 \text{ A}$	(see Notes 5 and 6)			2	V
		$I_C = 25 \text{ A}$				4	
h_{ie} Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 1 \text{ A}$	$f = 1 \text{ kHz}$	25			
$ h_{ie} $ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 1 \text{ A}$	$f = 1 \text{ MHz}$	3			

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.
6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = 15 \text{ A}$ $V_{BE(off)} = -4.15 \text{ V}$	$I_{B(on)} = 1.5 \text{ A}$	$I_{B(off)} = -1.5 \text{ A}$		1.2		μs
t_{off} Turn-off time		$R_L = 2 \Omega$	$t_p = 20 \mu\text{s}$, dc $\leq 2\%$		0.9		μs

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

TIP35, TIP35A, TIP35B, TIP35C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

TYPICAL CHARACTERISTICS

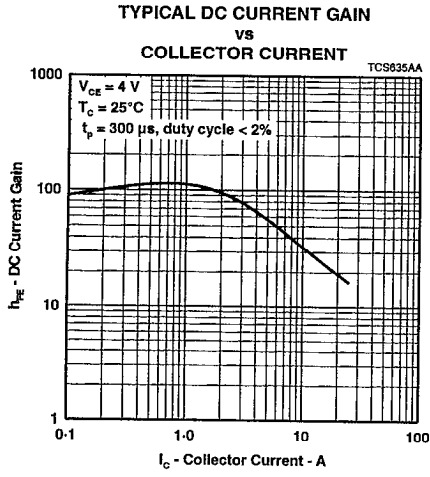


Figure 1.

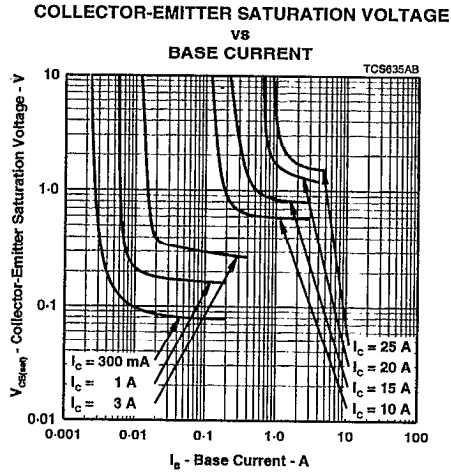


Figure 2.

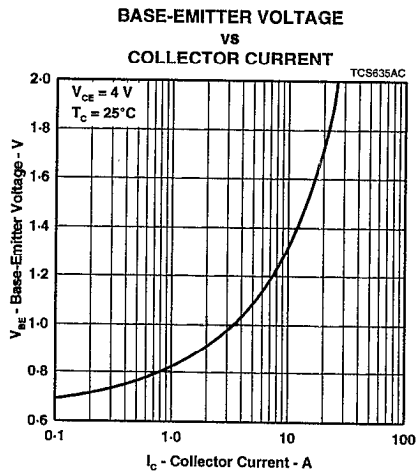


Figure 3.

TIP35, TIP35A, TIP35B, TIP35C
NPN SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

MAXIMUM SAFE OPERATING REGIONS

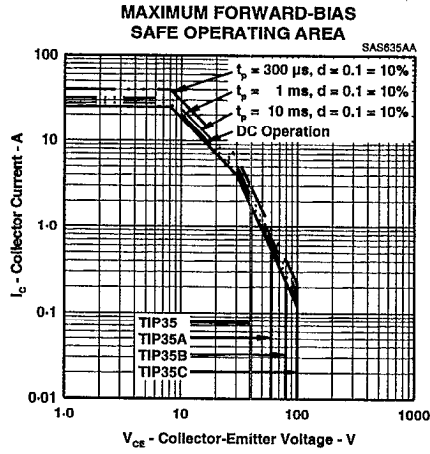


Figure 4.

THERMAL INFORMATION

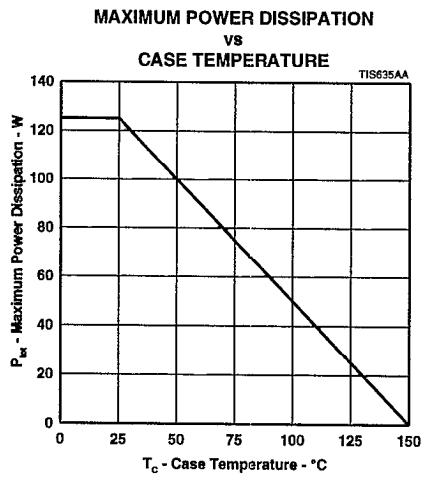
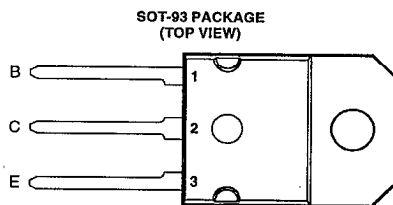


Figure 5.

TIP36, TIP36A, TIP36B, TIP36C PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

- Designed for Complementary Use with the TIP35 Series
- 125 W at 25°C Case Temperature
- 25 A Continuous Collector Current
- 40 A Peak Collector Current
- Customer-Specified Selections Available



Pin 2 is in electrical contact with the mounting base.

MDTRAA

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIP36	V_{CBO}	-80	V
	TIP36A		-100	
	TIP36B		-120	
	TIP36C		-140	
Collector-emitter voltage ($I_B = 0$)	TIP36	V_{CEO}	-40	V
	TIP36A		-60	
	TIP36B		-80	
	TIP36C		-100	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-25	A
Peak collector current (see Note 1)		I_{CM}	-40	A
Continuous base current		I_B	-5	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	125	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P_{tot}	3.5	W
Unclamped inductive load energy (see Note 4)		$\frac{1}{2}L I_C^2$	90	mJ
Operating junction temperature range		T_J	-65 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		T_L	250	°C

- NOTES: 1. This value applies for $I_p \leq 0.3$ ms, duty cycle $\leq 10\%$.
 2. Derate linearly to 150°C case temperature at the rate of 1 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = -0.4$ A, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_S = 0.1 \Omega$, $V_{CC} = -20$ V.

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TIP36, TIP36A, TIP36B, TIP36C

PNP SILICON POWER TRANSISTORS

JULY 1968 - REVISED MAY 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -30$ mA (see Note 5)	$I_B = 0$	TIP36 TIP36A TIP36B TIP36C	-40 -60 -80 -100			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = -80$ V $V_{CE} = -100$ V $V_{CE} = -120$ V $V_{CE} = -140$ V	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIP36 TIP36A TIP36B TIP36C			-0.7 -0.7 -0.7 -0.7	mA
I_{CEO} Collector cut-off current	$V_{CE} = -30$ V $V_{CE} = -60$ V	$I_B = 0$ $I_B = 0$	TIP36/36A TIP36B/36C			-1 -1	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5$ V	$I_C = 0$				-1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -4$ V $V_{CE} = -4$ V	$I_C = -1.5$ A $I_C = -15$ A	(see Notes 5 and 6)	25 10		50	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -1.5$ A $I_B = -5$ A	$I_C = -15$ A $I_C = -25$ A	(see Notes 5 and 6)			-1.8 -4	V
V_{BE} Base-emitter voltage	$V_{CE} = -4$ V $V_{CE} = -4$ V	$I_C = -15$ A $I_C = -25$ A	(see Notes 5 and 6)			-2 -4	V
h_{fe} Small signal forward current transfer ratio	$V_{CE} = -10$ V	$I_C = -1$ A	$f = 1$ kHz	25			
h_{fe1} Small signal forward current transfer ratio	$V_{CE} = -10$ V	$I_C = -1$ A	$f = 1$ MHz	3			

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300$ μ s, duty cycle $\leq 2\%$.

6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -15$ A	$I_{B(on)} = -1.5$ A	$I_{B(off)} = 1.5$ A		1.1		μ s
t_{off} Turn-off time	$V_{BE(off)} = 4.15$ V	$R_L = 2$ Ω	$t_p = 20$ μ s, dc $\leq 2\%$		0.8		μ s

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

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TYPICAL CHARACTERISTICS

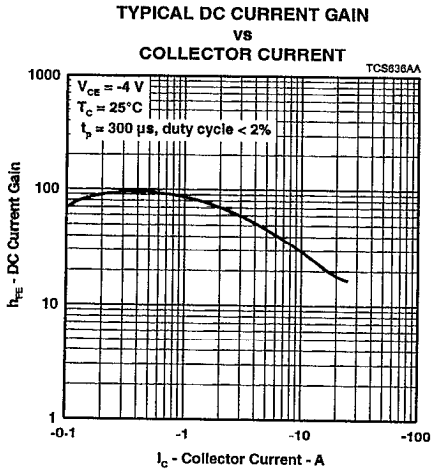


Figure 1.

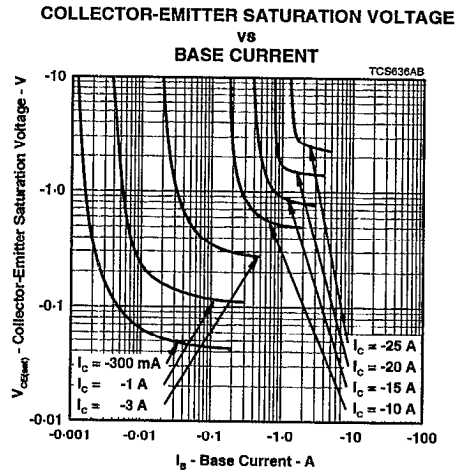


Figure 2.

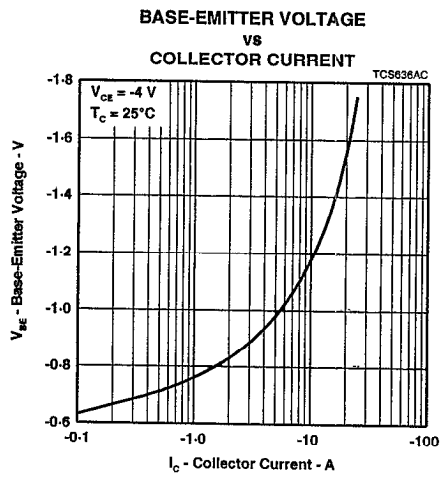
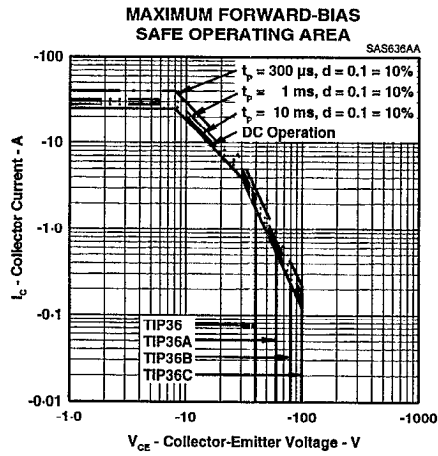


Figure 3.

TIP36, TIP36A, TIP36B, TIP36C
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MAXIMUM SAFE OPERATING REGIONS



THERMAL INFORMATION

