

TIP41, TIP41A, TIP41B, TIP41C

NPN SILICON POWER TRANSISTORS

BOURNS®

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)	$I_B = 0$	TIP41 TIP41A TIP41B TIP41C	40 60 80 100			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 80 \text{ V}$ $V_{CE} = 100 \text{ V}$ $V_{CE} = 120 \text{ V}$ $V_{CE} = 140 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIP41 TIP41A TIP41B TIP41C			0.4 0.4 0.4 0.4	mA
I_{CEO} Collector cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 60 \text{ V}$	$I_B = 0$ $I_B = 0$	TIP41/41A TIP41B/41C			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	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 0.3 \text{ A}$ $I_C = 3 \text{ A}$	(see Notes 5 and 6)	30 15		75	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 0.6 \text{ A}$	$I_C = 6 \text{ A}$	(see Notes 5 and 6)			1.5	V
V_{BE} Base-emitter voltage	$V_{CE} = 4 \text{ V}$	$I_C = 6 \text{ A}$	(see Notes 5 and 6)			2	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			1.92	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			62.5	°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.

PRODUCT INFORMATION

DECEMBER 1970 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.

TYPICAL CHARACTERISTICS

**TYPICAL DC CURRENT GAIN
vs
COLLECTOR CURRENT**

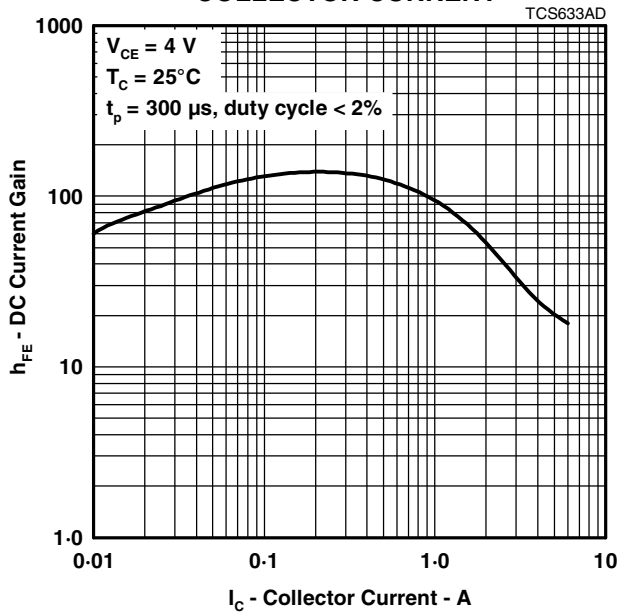


Figure 1.

**COLLECTOR-EMITTER SATURATION VOLTAGE
vs
BASE CURRENT**

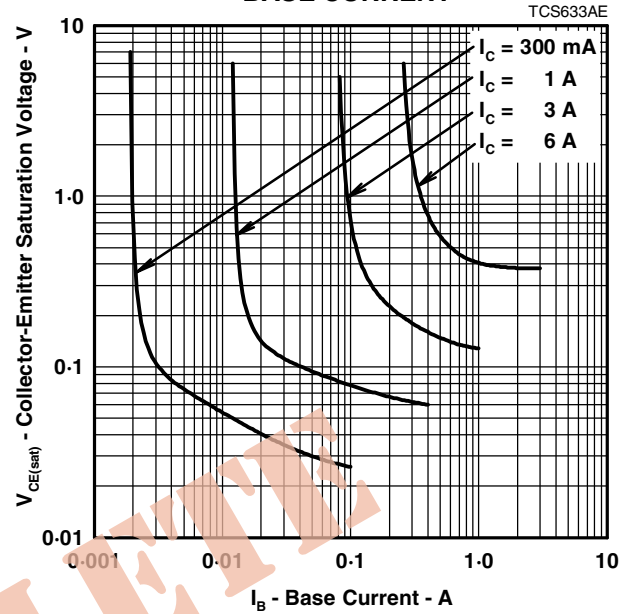


Figure 2.

**BASE-EMITTER VOLTAGE
vs
COLLECTOR CURRENT**

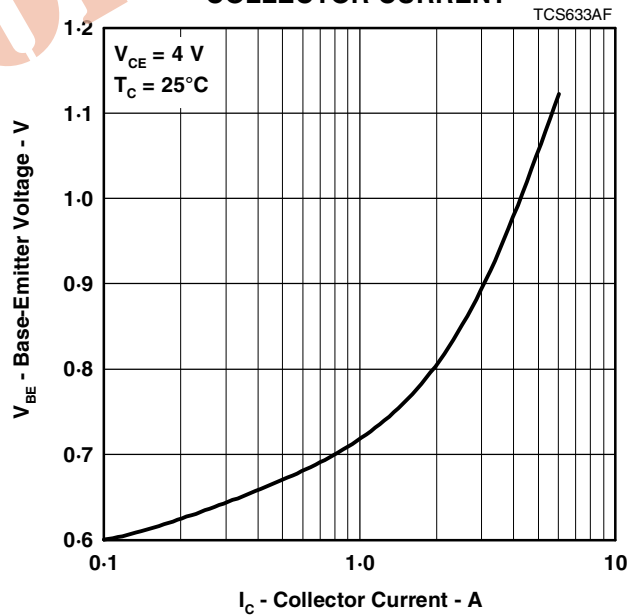


Figure 3.

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MAXIMUM SAFE OPERATING REGIONS

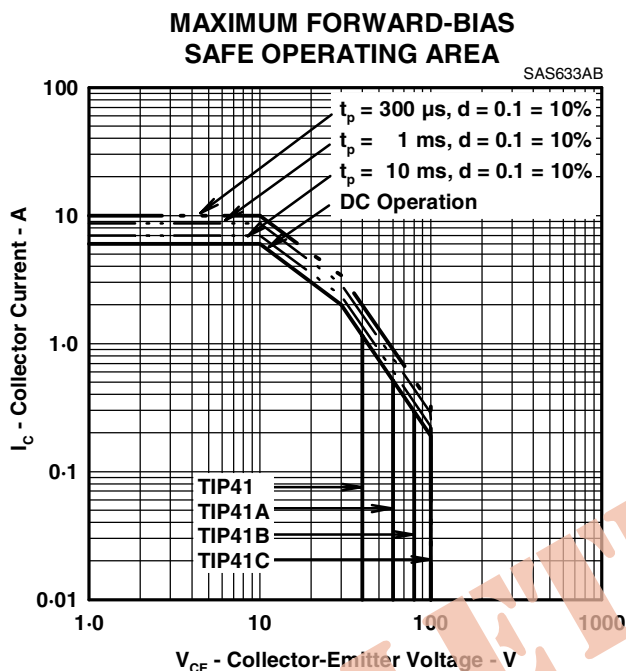


Figure 4.

THERMAL INFORMATION

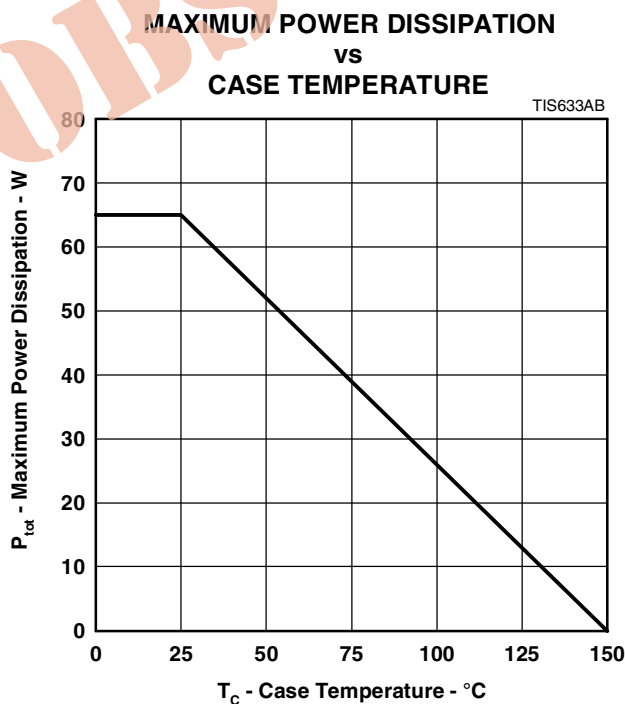


Figure 5.

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