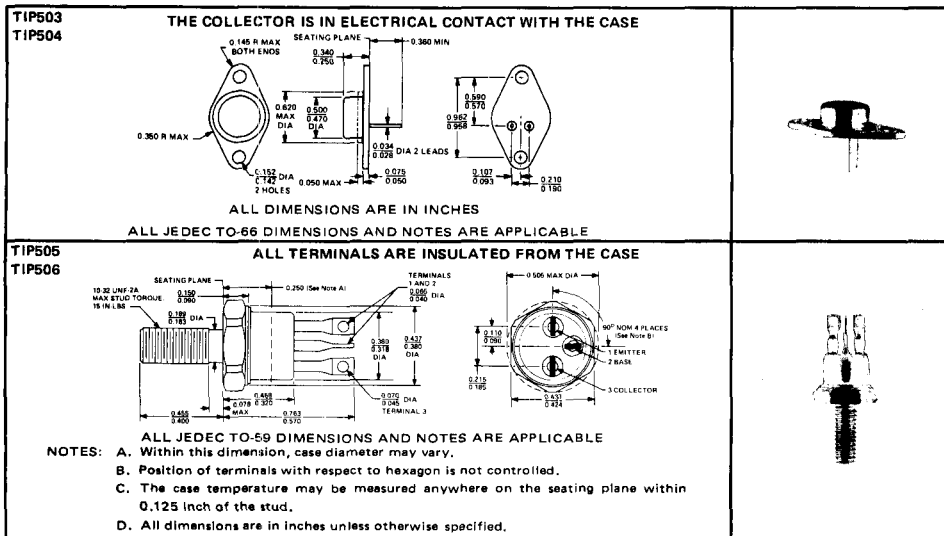


FOR POWER-AMPLIFIER AND HIGH-SPEED-SWITCHING APPLICATIONS

- mechanical data**



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

	TIP503	TIP504
	TIP505	TIP506
Collector-Base Voltage	130 V	160 V
Collector-Emitter Voltage (See Note 1)	120 V	150 V
Emitter-Base Voltage	6 V	6 V
Continuous Collector Current	← 2 A →	
Peak Collector Current (See Note 2)	← 5 A →	
Continuous Base Current	← 1 A →	
Continuous Device Dissipation at (or below) 100°C Case Temperature (See Note 3)	← 20 W →	
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 4)	← 2 W →	
Operating Collector Junction Temperature Range	−65°C to 200°C	
Storage Temperature Range	−65°C to 200°C	
Lead or Terminal Temperature 1/16 Inch from Case for 10 Seconds	← 300°C →	

TEXAS INSTRUMENTS

TYPES TIP503 THRU TIP506

N-P-N SILICON POWER TRANSISTORS

electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	TIP503 TIP505	TIP504 TIP506	UNIT
		MIN MAX	MIN MAX	
$V_{(BR)CEO}$ Collector-Emitter Breakdown Voltage	$I_C = 30 \text{ mA}$, $I_B = 0$, See Note 5	120	150	V
I_{CEO} Collector Cutoff Current	$V_{CE} = 60 \text{ V}$, $I_B = 0$	50		μA
	$V_{CE} = 75 \text{ V}$, $I_B = 0$		50	
I_{CES} Collector Cutoff Current	$V_{CE} = 120 \text{ V}$, $V_{BE} = 0$	400		μA
	$V_{CE} = 150 \text{ V}$, $V_{BE} = 0$		400	
	$V_{CE} = 60 \text{ V}$, $V_{BE} = 0$, $T_C = 150^\circ\text{C}$	500		
	$V_{CE} = 75 \text{ V}$, $V_{BE} = 0$, $T_C = 150^\circ\text{C}$		500	
I_{EBO} Emitter Cutoff Current	$V_{EB} = 3 \text{ V}$, $I_C = 0$	20	20	μA
	$V_{EB} = 6 \text{ V}$, $I_C = 0$	200	200	
h_{FE} Static Forward Current Transfer Ratio	$V_{CE} = 4 \text{ V}$, $I_C = 1 \text{ A}$, See Notes 5 and 6	40 200	40 200	
	$V_{CE} = 4 \text{ V}$, $I_C = 2 \text{ A}$, See Notes 5 and 6	20	20	
V_{BE} Base-Emitter Voltage	$V_{CE} = 4 \text{ V}$, $I_C = 2 \text{ A}$, See Notes 5 and 6	1.4	1.4	V
$V_{CE(sat)}$ Collector-Emitter Saturation Voltage	$I_B = 0.1 \text{ A}$, $I_C = 1 \text{ A}$, See Notes 5 and 6	0.6	0.6	V
	$I_B = 0.2 \text{ A}$, $I_C = 2 \text{ A}$, See Notes 5 and 6	1.2	1.2	
h_{fe} Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = 5 \text{ V}$, $I_C = 250 \text{ mA}$, $f = 1 \text{ kHz}$	40	40	
$ h_{fe} $ Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = 5 \text{ V}$, $I_C = 250 \text{ mA}$, $f = 10 \text{ MHz}$	7	7	

NOTES: 5. These parameters must be measured using pulse techniques. $t_w = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

6. These parameters are measured with voltage-sensing contacts separate from the current-carrying contacts and located within 0.125 inch from the device body.

thermal characteristics

PARAMETER	MAX	UNIT
$R_{\theta JC}$ Junction-to-Case Thermal Resistance	5	$^\circ\text{C/W}$
$R_{\theta JA}$ Junction-to-Free-Air Thermal Resistance	87.5	