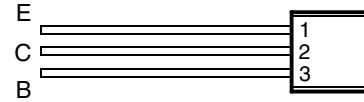




- 20 W Pulsed Power Dissipation
- 100 V Capability
- 2 A Continuous Collector Current
- 4 A Peak Collector Current
- Customer-Specified Selections Available

LP PACKAGE  
(TOP VIEW)



MDTRAB

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	TIPP31	$V_{CBO}$	40	V
	TIPP31A		60	
	TIPP31B		80	
	TIPP31C		100	
Collector-emitter voltage ( $I_B = 0$ )	TIPP31	$V_{CEO}$	40	V
	TIPP31A		60	
	TIPP31B		80	
	TIPP31C		100	
Emitter-base voltage		$V_{EBO}$	5	V
Continuous collector current		$I_C$	2	A
Peak collector current (see Note 1)		$I_{CM}$	4	A
Continuous base current		$I_B$	1	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		$P_{tot}$	0.8	W
Pulsed power dissipation (see Note 3)		$P_T$	20	W
Operating junction temperature range		$T_j$	-55 to +150	°C
Storage temperature range		$T_{stg}$	-55 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		$T_L$	260	°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 6.4 mW/°C.  
3.  $V_{CE} = 20$  V,  $I_C = 1$  A,  $t_p = 10$  ms, duty cycle  $\leq 2\%$ .

**PRODUCT INFORMATION**

MAY 1989 - REVISED SEPTEMBER 2002  
Specifications are subject to change without notice.

**electrical characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 5 \text{ mA}$ (see Note 4)	$I_B = 0$	TIPP31 TIPP31A TIPP31B TIPP31C	40 60 80 100			V
$I_{CES}$ Collector-emitter cut-off current	$V_{CE} = 40 \text{ V}$ $V_{CE} = 60 \text{ V}$ $V_{CE} = 80 \text{ V}$ $V_{CE} = 100 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIPP31 TIPP31A TIPP31B TIPP31C			0.2 0.2 0.2 0.2	mA
$I_{CEO}$ Collector cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 60 \text{ V}$	$I_B = 0$ $I_B = 0$	TIPP31/31A TIPP31B/31C			0.3 0.3	mA
$I_{EBO}$ Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$				1	mA
$h_{FE}$ Forward current transfer ratio	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 1 \text{ A}$ $I_C = 2 \text{ A}$	(see Notes 4 and 5)	20 10			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 375 \text{ mA}$	$I_C = 2 \text{ A}$	(see Notes 4 and 5)			1	V
$V_{BE}$ Base-emitter voltage	$V_{CE} = 4 \text{ V}$	$I_C = 2 \text{ A}$	(see Notes 4 and 5)			1.5	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: 4. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

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