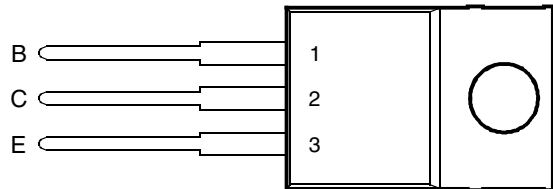


- **Designed for Complementary Use with TIP130, TIP131 and TIP132**
- **70 W at 25°C Case Temperature**
- **8 A Continuous Collector Current**
- **Minimum h_{FE} of 1000 at 4 V, 4 A**



This series is obsolete and not recommended for new designs.

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIP135	V_{CBO}	-60	V
	TIP136		-80	
	TIP137		-100	
Collector-emitter voltage ($I_B = 0$)	TIP135	V_{CEO}	-60	V
	TIP136		-80	
	TIP137		-100	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-8	A
Peak collector current (see Note 1)		I_{CM}	-12	A
Continuous base current		I_B	-0.3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	70	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P_{tot}	2	W
Unclamped inductive load energy (see Note 4)		$\frac{1}{2}LI_C^2$	75	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	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 0.56 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = -5$ mA, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_S = 0.1 \Omega$, $V_{CC} = -20$ V.

PRODUCT INFORMATION

JUNE 1973 - 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	$I_C = -30 \text{ mA}$	$I_B = 0$	(see Note 5)	TIP135 TIP136 TIP137	-60 -80 -100		V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -40 \text{ V}$ $V_{CE} = -50 \text{ V}$	$I_B = 0$ $I_B = 0$ $I_B = 0$		TIP135 TIP136 TIP137		-0.5 -0.5 -0.5	mA
I_{CBO} Collector cut-off current	$V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -100 \text{ V}$ $V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -100 \text{ V}$	$I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$	$T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$	TIP135 TIP136 TIP137 TIP135 TIP136 TIP137		-0.2 -0.2 -0.2 -1 -1 -1	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-5	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$	$I_C = -1 \text{ A}$ $I_C = -4 \text{ A}$	(see Notes 5 and 6)		500 1000		15000
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -16 \text{ mA}$ $I_B = -30 \text{ mA}$	$I_C = -4 \text{ A}$ $I_C = -6 \text{ A}$	(see Notes 5 and 6)			-2 -3	V
V_{BE} Base-emitter voltage	$V_{CE} = -4 \text{ V}$	$I_C = -4 \text{ A}$	(see Notes 5 and 6)			-2.5	V
C_{obo} Output capacitance	$V_{CB} = -10 \text{ V}$	$I_E = 0$				200	pF
V_{EC} Parallel diode forward voltage	$I_E = -8 \text{ A}$	$I_B = 0$	(see Notes 5 and 6)			-3.5	V

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			1.78	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			62.5	°C/W

PRODUCT INFORMATION

JUNE 1973 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.

TYPICAL CHARACTERISTICS

**TYPICAL DC CURRENT GAIN
VS
COLLECTOR CURRENT**

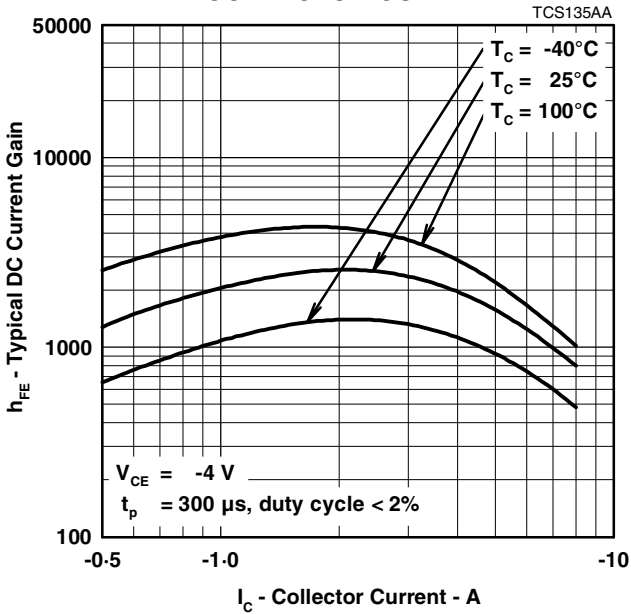


Figure 1.

**COLLECTOR-EMITTER SATURATION VOLTAGE
VS
COLLECTOR CURRENT**

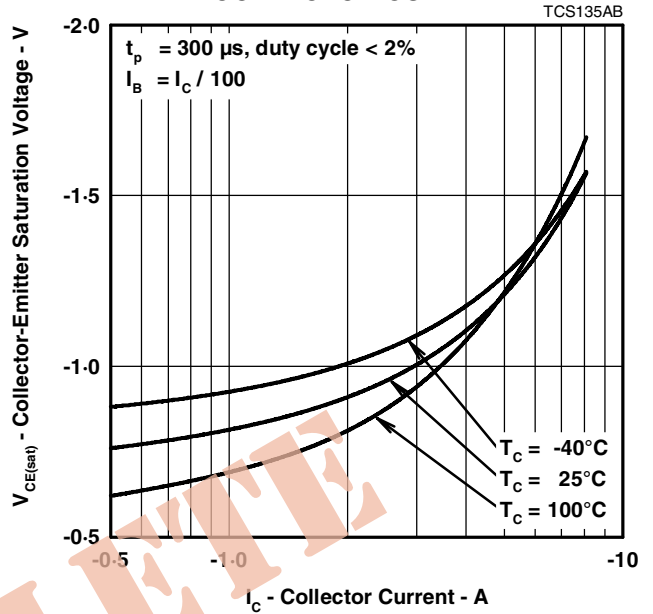


Figure 2.

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

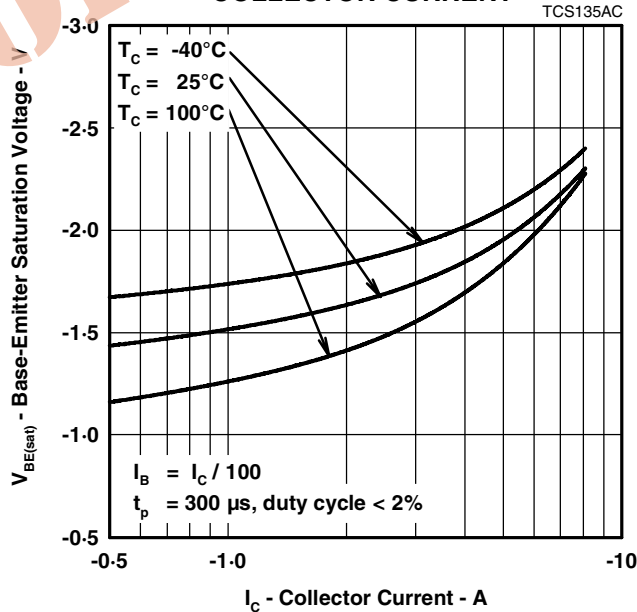


Figure 3.

PRODUCT INFORMATION

JUNE 1973 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.

MAXIMUM SAFE OPERATING REGIONS

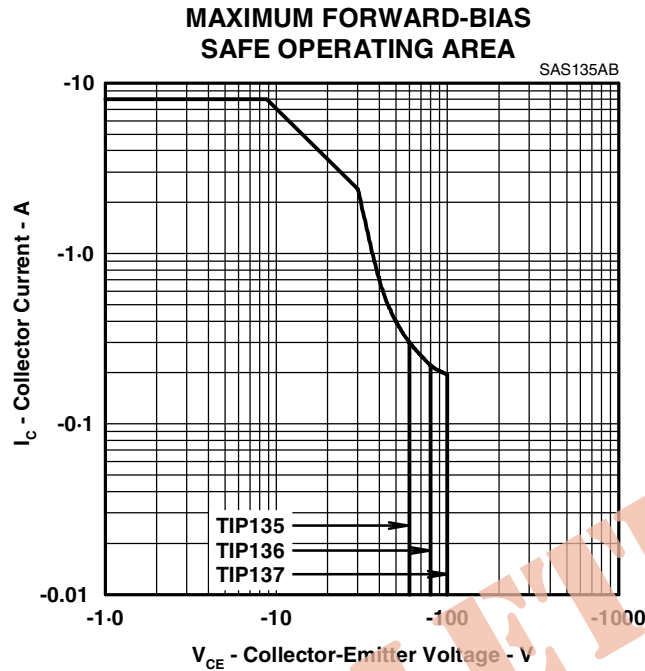


Figure 4.

THERMAL INFORMATION

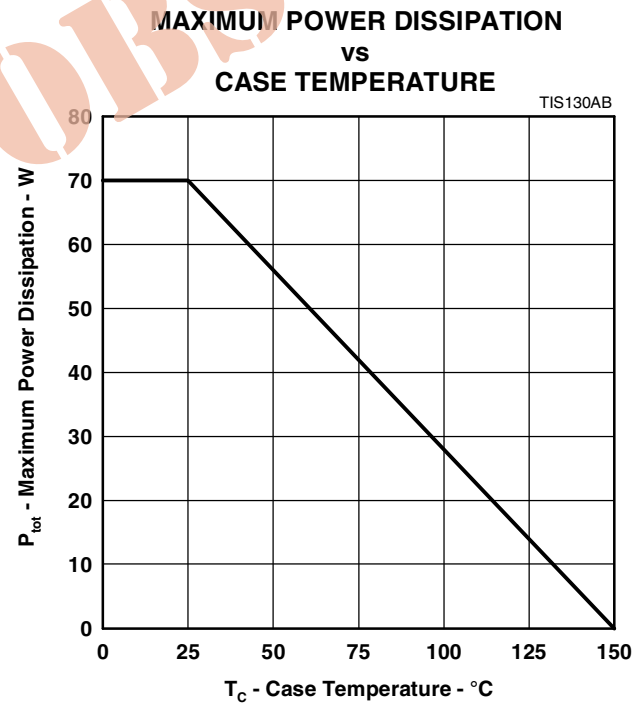


Figure 5.

PRODUCT INFORMATION

JUNE 1973 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.