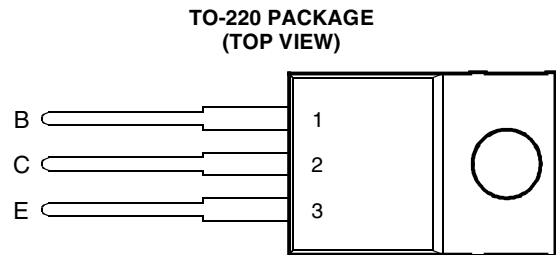


- Designed for Complementary Use with TIP110, TIP111 and TIP112
- 50 W at 25°C Case Temperature
- 4 A Continuous Collector Current
- Minimum h_{FE} of 500 at 4V, 2 A



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 ($I_E = 0$)	TIP115	V_{CBO}	-60	V
	TIP116		-80	
	TIP117		-100	
Collector-emitter voltage ($I_B = 0$)	TIP115	V_{CEO}	-60	V
	TIP116		-80	
	TIP117		-100	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-4	A
Peak collector current (see Note 1)		I_{CM}	-6	A
Continuous base current		I_B	-50	mA
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	50	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)		$\frac{1}{2}LI_C^2$	25	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 0.4 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

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)	TIP115 -60 TIP116 -80 TIP117 -100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -40 \text{ V}$ $V_{CE} = -50 \text{ V}$ $I_B = 0$ $I_B = 0$ $I_B = 0$	TIP115 TIP116 TIP117		-2 -2 -2	mA
I_{CBO} Collector cut-off current	$V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -100 \text{ V}$ $I_E = 0$ $I_E = 0$ $I_E = 0$	TIP115 TIP116 TIP117		-1 -1 -1	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$ $I_C = 0$			-2	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 5 and 6) 1000 500			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$ $I_C = -2 \text{ A}$	(see Notes 5 and 6)		-2.5	V
V_{BE} Base-emitter voltage	$V_{CE} = -4 \text{ V}$ $I_C = -2 \text{ A}$	(see Notes 5 and 6)		-2.8	V
V_{EC} Parallel diode forward voltage	$I_E = -5 \text{ A}$ $I_B = 0$	(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.

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

PARAMETER	TEST CONDITIONS [†]	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -2 \text{ A}$ $I_{B(on)} = -8 \text{ mA}$ $I_{B(off)} = 8 \text{ mA}$		2.6		μs
t_{off} Turn-off time	$V_{BE(off)} = 5 \text{ V}$ $R_L = 15 \Omega$ $t_p = 20 \mu\text{s}$, dc $\leq 2\%$		4.5		μs

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

TYPICAL CHARACTERISTICS

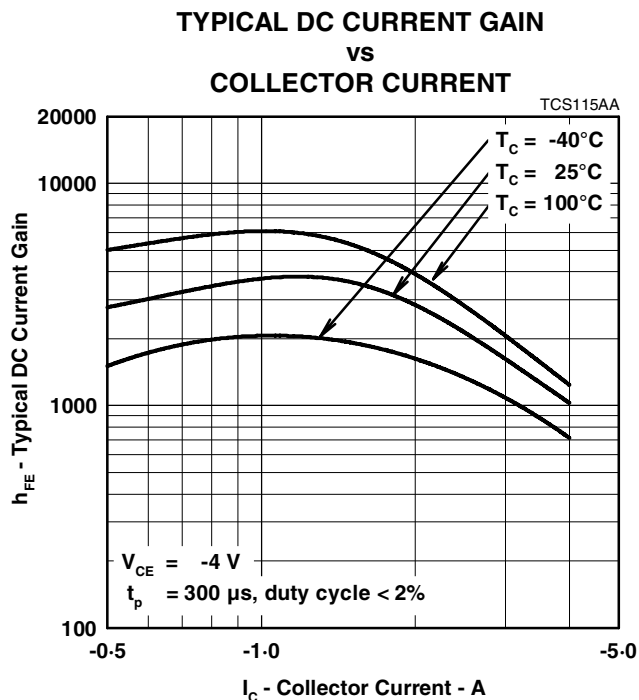


Figure 1.

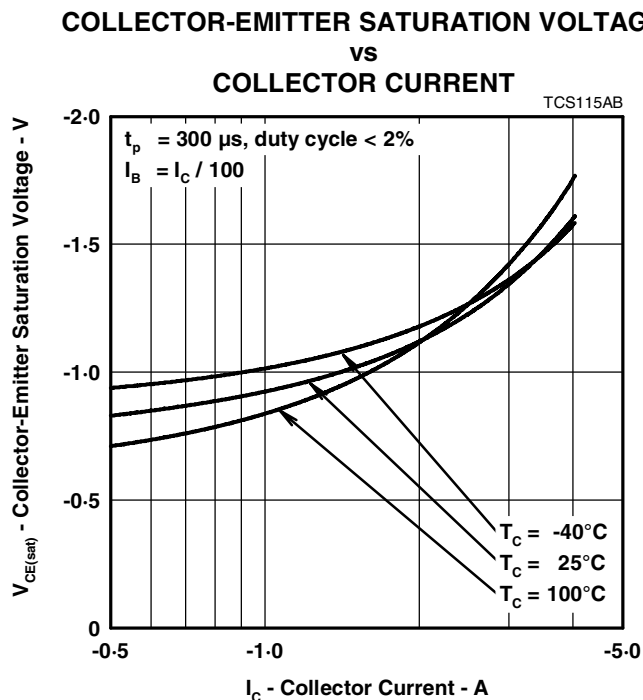


Figure 2.

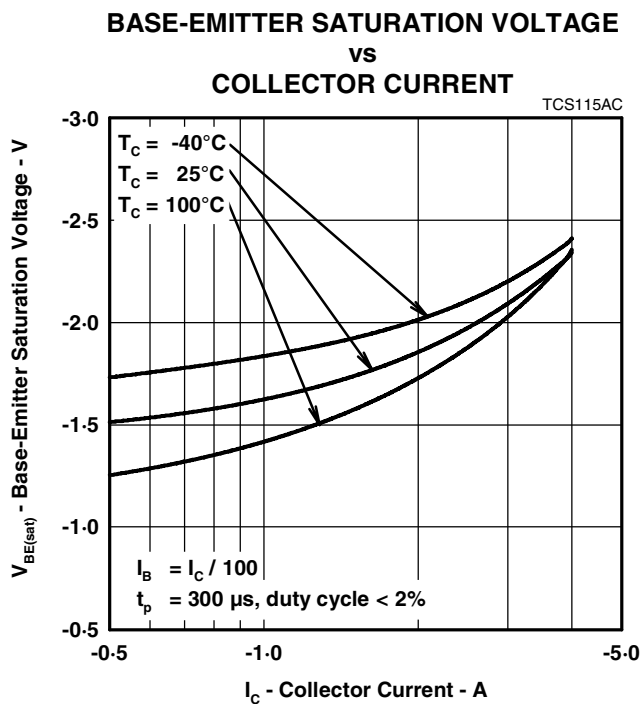


Figure 3.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

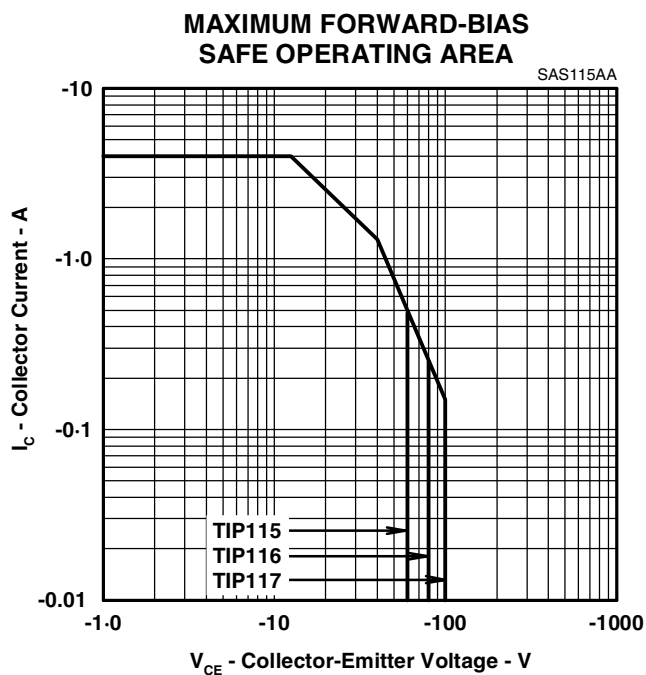


Figure 4.

THERMAL INFORMATION

MAXIMUM POWER DISSIPATION vs CASE TEMPERATURE

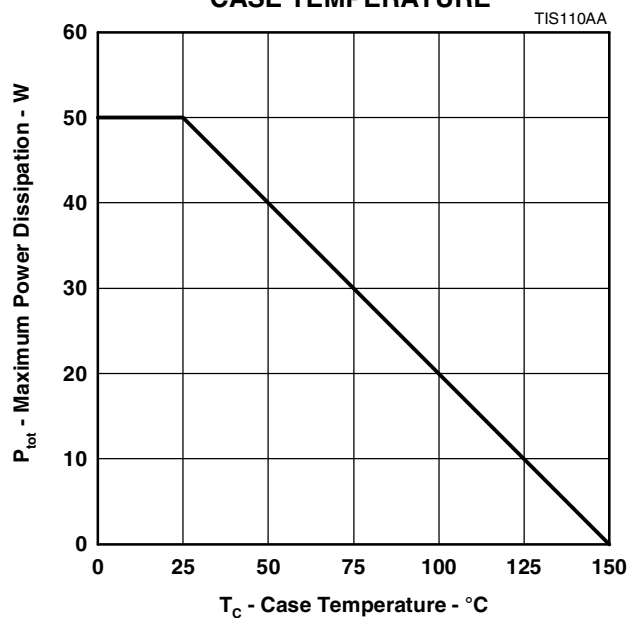


Figure 5.

PRODUCT INFORMATION

DECEMBER 1971 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.