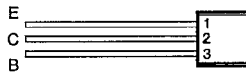


TIPP110, TIPP111, TIPP112 NPN SILICON POWER DARLINGTONS

MAY 1989 - REVISED APRIL 1995

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

LP PACKAGE
(TOP VIEW)



MDTRAB

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIPP110	V_{CBO}	60	V
	TIPP111		80	
	TIPP112		100	
Collector-emitter voltage ($I_B = 0$)	TIPP110	V_{CEO}	60	V
	TIPP111		80	
	TIPP112		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	50	mA
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 0.32 W/°C.
 3. $V_{CE} = 20$ V, $I_C = 1$ A, $P_W = 10$ ms, duty cycle $\leq 2\%$.

PRODUCTION DATA Information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all the parameters.



Copyright © 1995 Texas Instruments Limited

5-151

TIPP110, TIPP111, TIPP112
NPN SILICON POWER DARLINGTONS

MAY 1989 - REVISED APRIL 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 10 \text{ mA}$ (see Note 4)	$I_B = 0$	TIPP110 TIPP111 TIPP112	80 80 100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 40 \text{ V}$ $V_{CE} = 50 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIPP110 TIPP111 TIPP112			2 2 2	mA
I_{CBO} Collector-base cut-off current	$V_{CE} = 60 \text{ V}$ $V_{CE} = 80 \text{ V}$ $V_{CE} = 100 \text{ V}$	$I_B = 0$ $I_B = 0$ $I_B = 0$	TIPP110 TIPP111 TIPP112			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 4 and 5)	1000 500			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 8 \text{ mA}$	$I_C = 2 \text{ A}$	(see Notes 4 and 5)			2.5	V
V_{BE} Base-emitter voltage	$V_{CE} = 4 \text{ V}$	$I_C = 2 \text{ A}$	(see Notes 4 and 5)			2.8	V
V_{EC} Parallel diode forward voltage	$I_E = 4 \text{ A}$	$I_B = 0$	(see Notes 4 and 5)			3.5	V

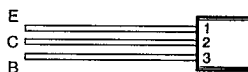
NOTES: 4. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.
 5. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts and located within 3.2 mm from device body.

TIPP115, TIPP116, TIPP117 PNP SILICON POWER DARLINGTONS

MAY 1989 - REVISED APRIL 1995

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

LP PACKAGE
(TOP VIEW)



MDTRAB

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIPP115	V_{CBO}	-60	V
	TIPP116		-80	
	TIPP117		-100	
Collector-emitter voltage ($I_B = 0$)	TIPP115	V_{CEO}	-60	V
	TIPP116		-80	
	TIPP117		-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	-50	mA
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 0.32 W/°C.
 3. $V_{CE} = 20$ V, $I_C = 1$ A, $P_W = 10$ ms, duty cycle $\leq 2\%$.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all the parameters.



Copyright © 1995 Texas Instruments Limited

5-153

TIPP115, TIPP116, TIPP117
PNP SILICON POWER DARLINGTONS

MAY 1989 - REVISED APRIL 1995

electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -10 \text{ mA}$ (see Note 4)	$I_B = 0$	TIPP115 TIPP116 TIPP117	-60 -80 -100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -40 \text{ V}$ $V_{CE} = -50 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIPP115 TIPP116 TIPP117			-2 -2 -2	mA
I_{CBO} Collector-base cut-off current	$V_{CE} = -60 \text{ V}$ $V_{CE} = -80 \text{ V}$ $V_{CE} = -100 \text{ V}$	$I_B = 0$ $I_B = 0$ $I_B = 0$	TIPP115 TIPP116 TIPP117			-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 4 and 5)	1000 500			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$	$I_C = -2 \text{ A}$	(see Notes 4 and 5)			-2.5	V
V_{BE} Base-emitter voltage	$V_{CE} = -4 \text{ V}$	$I_C = -2 \text{ A}$	(see Notes 4 and 5)			-2.8	V
V_{EC} Parallel diode forward voltage	$I_E = -4 \text{ A}$	$I_B = 0$	(see Notes 4 and 5)			-3.5	V

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.