



SANYO SEMICONDUCTOR

NPN

TIP640

TIP641

TIP642

PNP

TIP645

TIP646

TIP647

DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

60-80-100 VOLTS, 10 AMPERE

HIGH CURRENT GAIN $h_{FE} = 4000$ typ. @ 3V, 5A
LOW SATURATION VOLTAGE $V_{CE(SAT)} = 1.0V$ typ. @ 5A
MONOLITHIC CONSTRUCTION WITH BUILT-IN

- (1) BASE-EMITTER RESISTORS AND
- (2) COLLECTOR-EMITTER DIODE

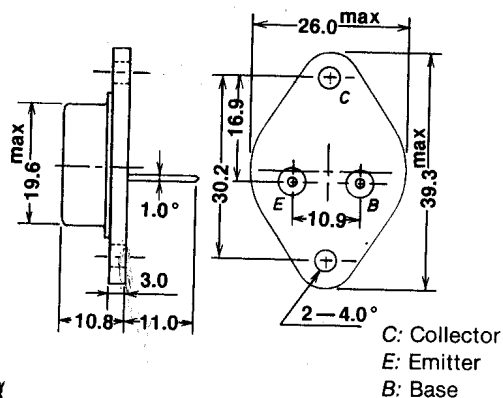
ABSOLUTE MAXIMUM RATINGS @ $T_a = 25^\circ C$

RATING	SYMBOL	TIP640, TIP645	TIP641, TIP646	TIP642, TIP647	UNIT
COLLECTOR-EMITTER VOLTAGE	V_{CEO}	60	80	100	Vdc
COLLECTOR-BASE VOLTAGE	V_{CB}	60	80	100	Vdc
EMITTER-BASE VOLTAGE	V_{EB}	← 5.0 →			Vdc
COLLECTOR CURRENT- CONTINUOUS PEAK	I_C	← 10 → ← 15 →			Adc
TOTAL POWER DISSIPATION @ $T_C = 25^\circ C$	P_D	← 175 →			W
TOTAL POWER DISSIPATION @ $T_A = 25^\circ C$	P_D	← 5 →			W
OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE	T_J, T_{stg}	← - 55 to + 150 →			$^\circ C$

OUTLINE DIMENSION

JEDEC: TO-3

UNIT: MM



TEN FOUR LTD.

1535 Alps Road

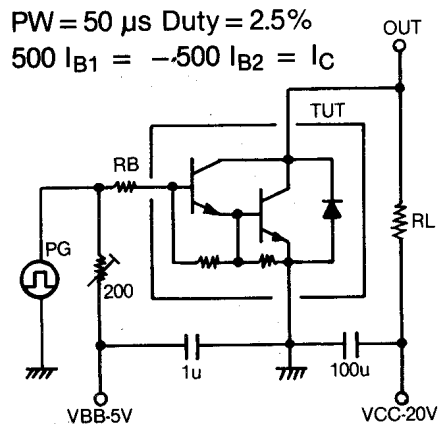
WAYNE, NEW JERSEY 07470

(201) 696-3987 TWX 710-988-0703

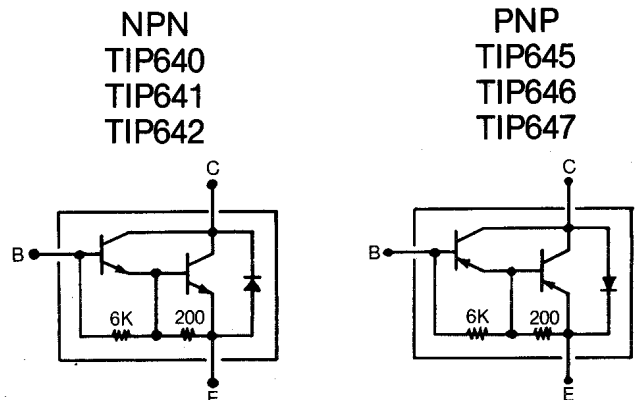
ELECTRICAL CHARACTERISTICS @ Ta = 25°C

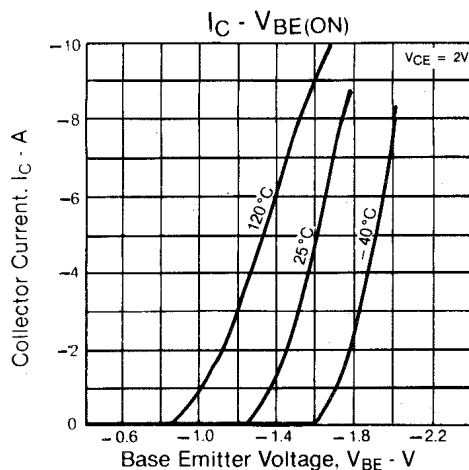
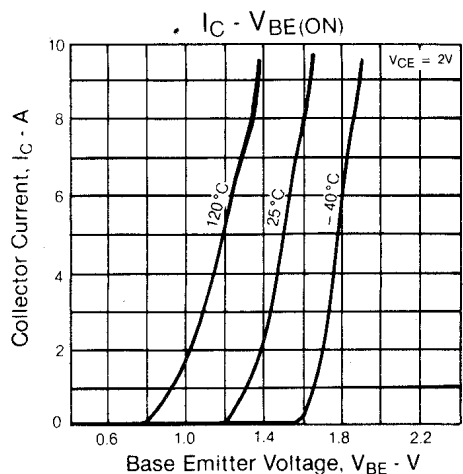
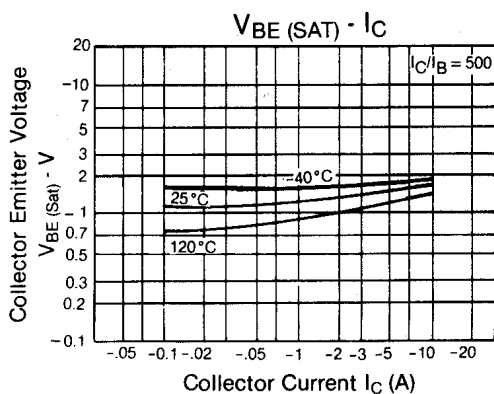
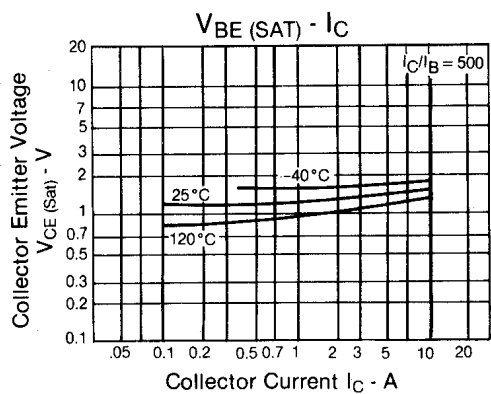
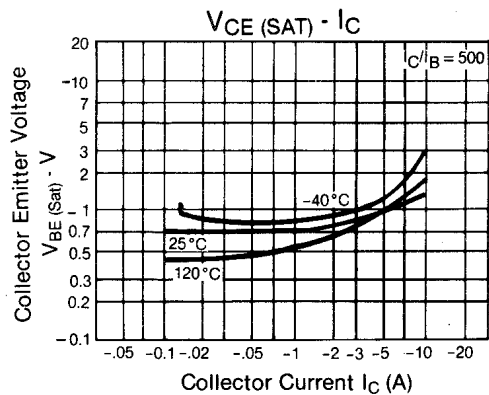
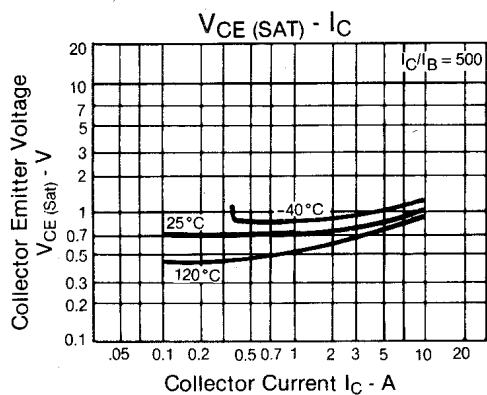
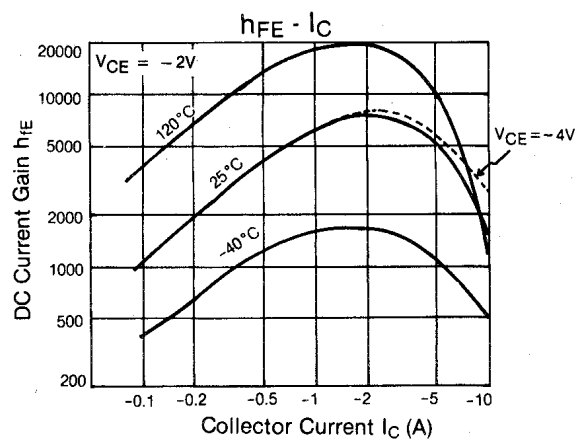
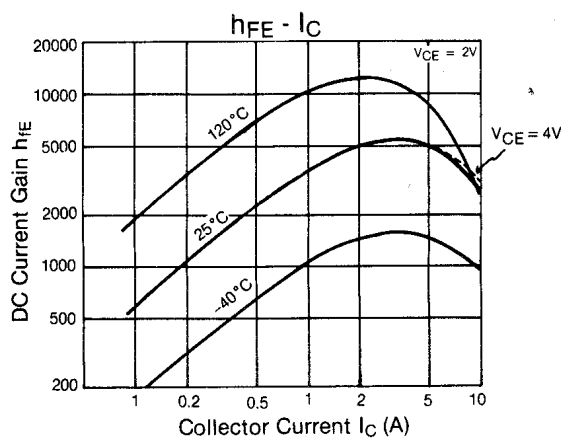
CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE ($I_C = 30 \text{ mAdc}$, $I_B = 0$) TIP640, TIP645 TIP641, TIP646 TIP642, TIP647	$V_{CE(SUS)}$	60 80 100	—	Vdc
COLLECTOR CUTOFF CURRENT ($V_{CE} = 30 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 40 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 50 \text{ Vdc}$, $I_B = 0$) TIP640, TIP645 TIP641, TIP646 TIP642, TIP647	I_{CEO}	— — —	2.0 2.0 2.0	mAdc
COLLECTOR CUTOFF CURRENT ($V_{CB} = 60 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 80 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 100 \text{ Vdc}$, $I_E = 0$) TIP640, TIP645 TIP641, TIP646 TIP642, TIP647	I_{CBO}	— — —	1.0 1.0 1.0	mAdc
EMITTER CUTOFF CURRENT ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	2.0	mAdc mAdc
DC CURRENT GAIN ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 4.0 \text{ Vdc}$) ($I_C = 10.0 \text{ Adc}$, $V_{CE} = 4.0 \text{ Vdc}$)	h_{FE}	1000 500	— —	—
COLLECTOR-EMITTER SATURATION VOLTAGE ($I_C = 5.0 \text{ Adc}$, $I_B = 10 \text{ mAdc}$) ($I_C = 10.0 \text{ Adc}$, $I_B = 40 \text{ mAdc}$)	$V_{CE(SAT)}$	— —	2.0 3.0	Vdc
BASE-EMITTER ON VOLTAGE ($I_C = 10.0 \text{ Adc}$, $V_{CE} = 4.0 \text{ Vdc}$)	$V_{BE(ON)}$	—	3.0	Vdc
GAIN BANDWIDTH PRODUCT ($I_C = 5.0 \text{ A}$, $V_{CE} = 5.0 \text{ V}$)	f_T	20 typ.		mHz

SWITCHING TIME TEST CIRCUIT

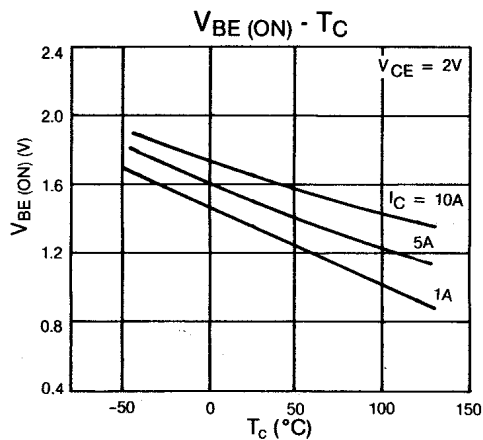
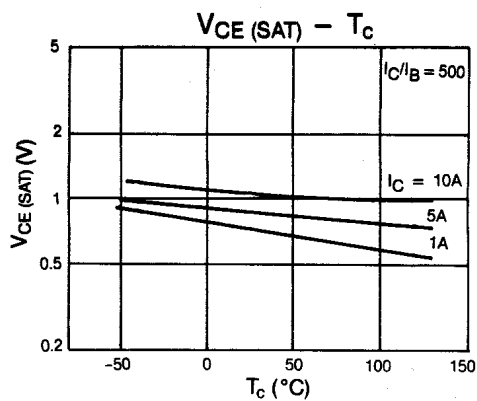
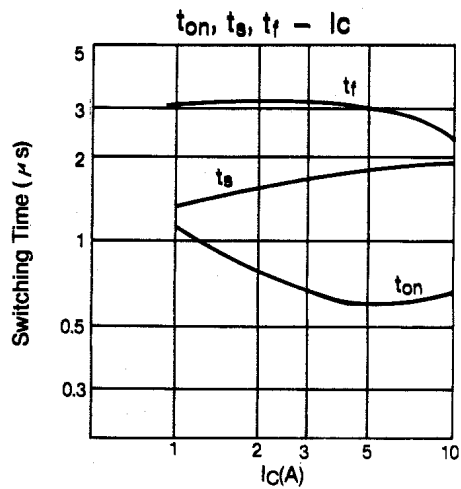


DARLINGTON SCHEMATIC

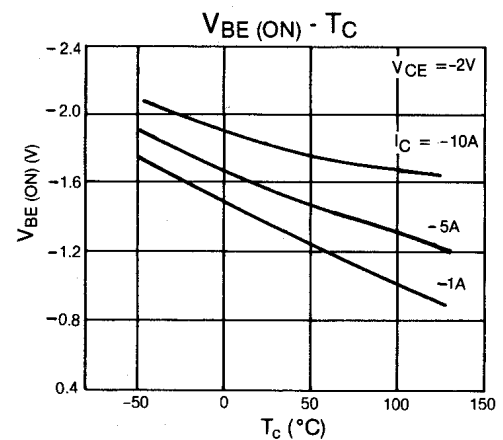
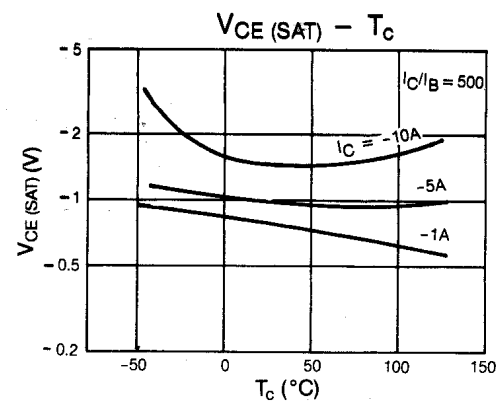
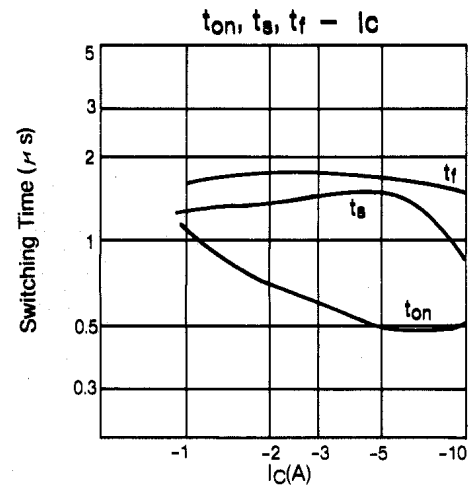




NPN
TIP 640, TIP 641, TIP 642



PNP
TIP 645, TIP 646, TIP 647



TEN FOUR LTD.
1535 Alps Road
WAYNE, NEW JERSEY 07470
(201) 606-3987 TWX 710-988-0703