SANYO SEMICONDUCTOR

NPN	PNP
TIP100	TIP105
TIP101	TIP106
TIP102	TIP107

60-80-100 VOLTS, 8 AMPERE

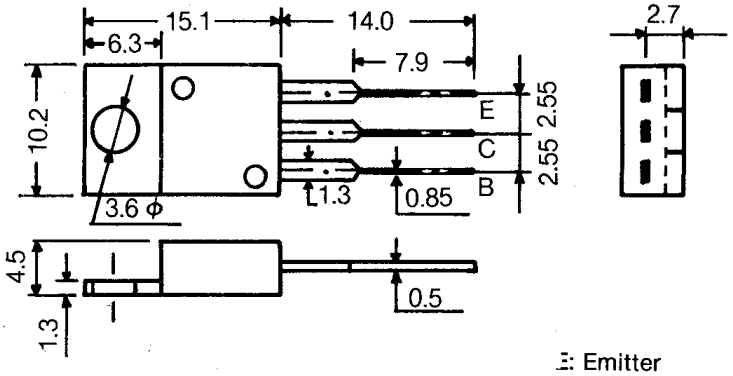
DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

HIGH CURRENT GAIN h_{FE} = 4000 typ. @3V, 4A
LOW SATURATION VOLTAGE $V_{CE(SAT)}$ = 1.0V typ. @4A
MONOLITHIC CONSTRUCTION WITH BUILT-IN
(1) BASE-EMITTER RESISTORS AND
(2) COLLECTOR-EMITTER DIODE

ABSOLUTE MAXIMUM RATINGS @ Ta = 25°C

RATING	SYMBOL	TIP100, TIP105	TIP101, TIP106	TIP102, TIP107	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	8.0 15			Adc
TOTAL POWER DISSIPATION @ T_C = 25°C	P_D	80			W
TOTAL POWER DISSIPATION @ T_A = 25°C	P_D	2.0			W
OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE	T_J, T_{stg}	− 55 to + 150			°C

OUTLINE DIMENSION
JEDEC: TO-220
UNIT: mm



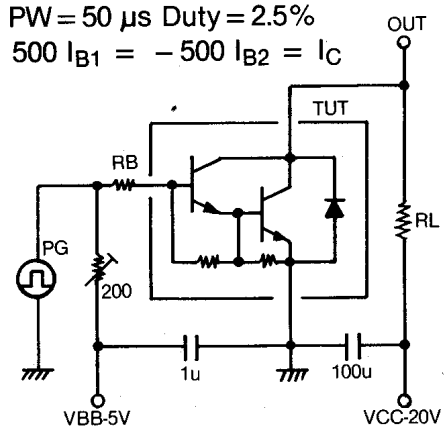
JEDEC: TO-220AB
EIAJ: SC-46

E: Emitter
C: Collector
B: Base

ELECTRICAL CHARACTERISTICS @ Ta = 25°C

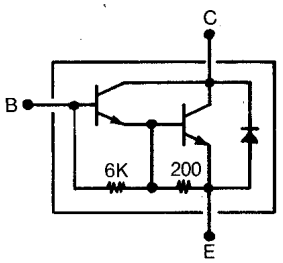
CHARACTERISTIC		SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE		$V_{CEO(SUS)}$			Vdc
(I_C = 30 mAdc, I_B = 0)	TIP100, TIP105		60	—	
	TIP101, TIP106		80	—	
	TIP102, TIP107		100	—	
COLLECTOR CUTOFF CURRENT		I_{CEO}			μAdc
(V_{CE} = 30 Vdc, I_B = 0)	TIP100, TIP105		—	50	
(V_{CE} = 40 Vdc, I_B = 0)	TIP101, TIP106		—	50	
(V_{CE} = 50 Vdc, I_B = 0)	TIP102, TIP107		—	50	
COLLECTOR CUTOFF CURRENT		I_{CBO}			μAdc
(V_{CB} = 60 Vdc, I_E = 0)	TIP100, TIP105		—	50	
(V_{CB} = 80 Vdc, I_E = 0)	TIP101, TIP106		—	50	
(V_{CB} = 100 Vdc, I_E = 0)	TIP102, TIP107		—	50	
EMITTER CUTOFF CURRENT		I_{EBO}			mAdc
(V_{BE} = 5.0 Vdc, I_C = 0)			—	8.0	
DC CURRENT GAIN		h_{FE}			—
(I_C = 3.0 Adc, V_{CE} = 4.0 Vdc)			1000	20,000	
(I_C = 8.0 Adc, V_{CE} = 4.0 Vdc)			200	—	
COLLECTOR-EMITTER SATURATION VOLTAGE		$V_{CE(SAT)}$			Vdc
(I_C = 3.0 Adc, I_B = 6.0 mAdc)			—	2.0	
(I_C = 8.0 Adc, I_B = 80 mAdc)			—	2.5	
BASE-EMITTER ON VOLTAGE		$V_{BE(ON)}$			Vdc
(I_C = 8.0 Adc, V_{CE} = 4.0 Vdc)			—	2.8	
GAIN BANDWIDTH PRODUCT		f_T	20 typ.		mHz
(I_C = 4.0 A, V_{CE} = 5V)					
OUTPUT CAPACITANCE		C_{ob}			
(V_{CB} = 10V, I_E = 0, f = 1mHz	TIP100, 101, 102			200	pF
	TIP105, 106, 107			300	pF

SWITCHING TIME TEST CIRCUIT

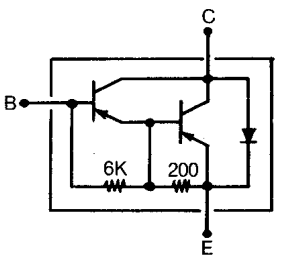


DARLINGTON SCHEMATIC

NPN
TIP100
TIP101
TIP102



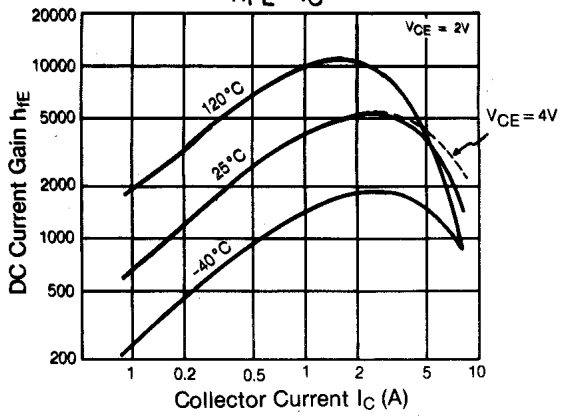
PNP
TIP105
TIP106
TIP107



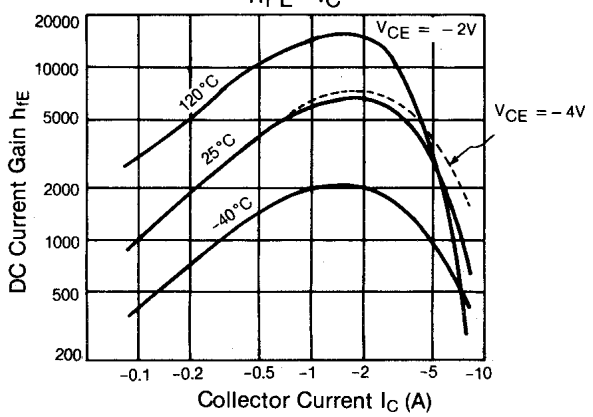
NPN
TIP100, TIP101, T102

PNP
TIP105, TIP106, T107

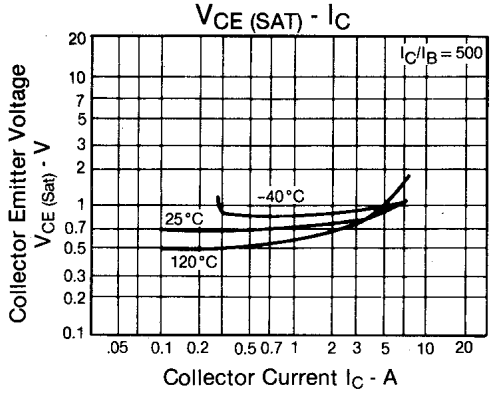
h_{FE} - I_C



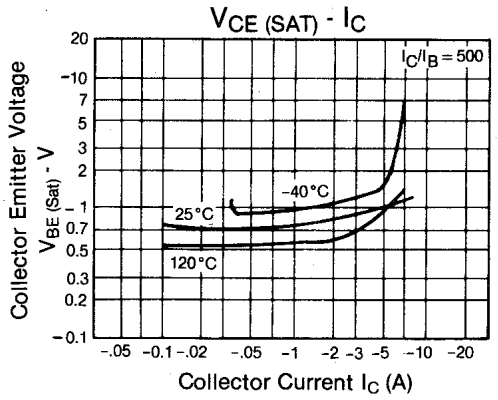
h_{FE} - I_C



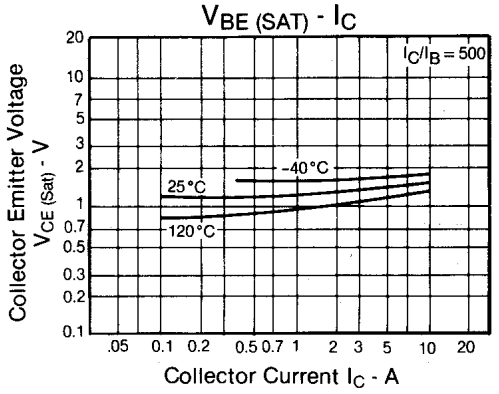
$V_{CE\ (SAT)}$ - I_C



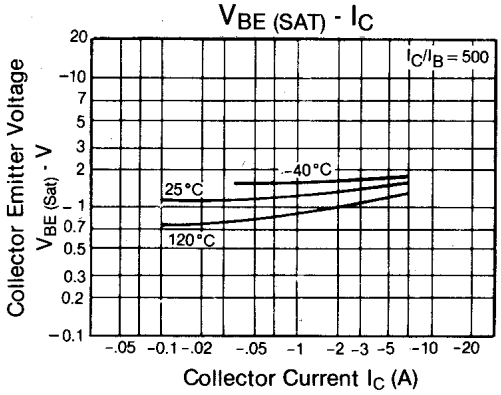
$V_{CE\ (SAT)}$ - I_C



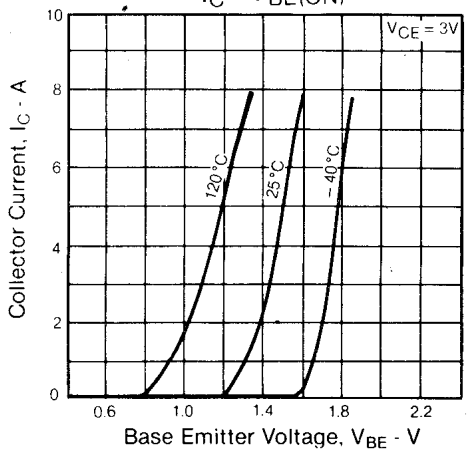
$V_{BE\ (SAT)}$ - I_C



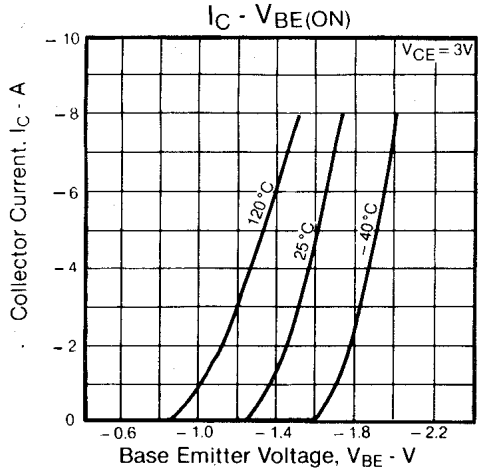
$V_{BE\ (SAT)}$ - I_C



I_C - $V_{BE(ON)}$



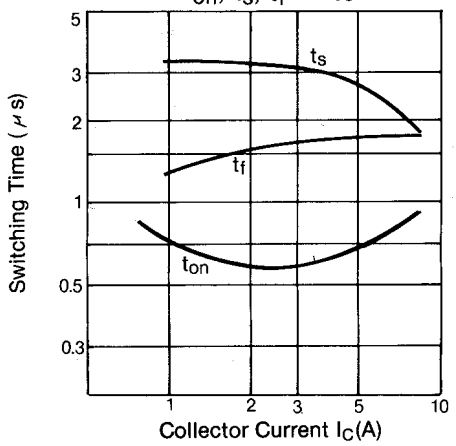
I_C - $V_{BE(ON)}$

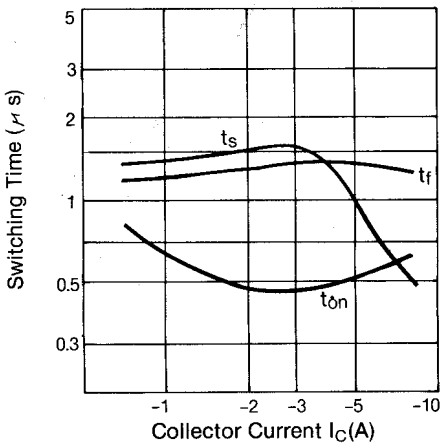


NPN
TIP100, TIP101, T102

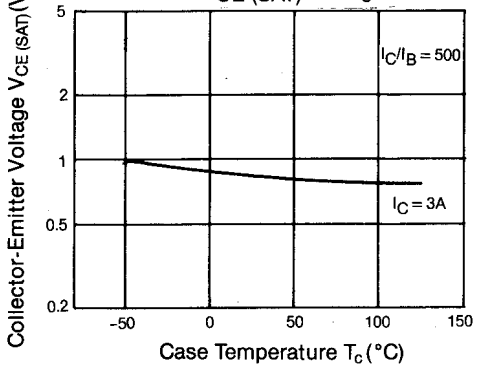
PNP
TIP105, TIP106, T107

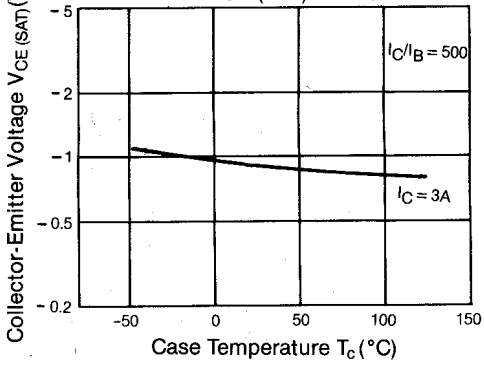
t_{on}, t_s, t_f – Ic



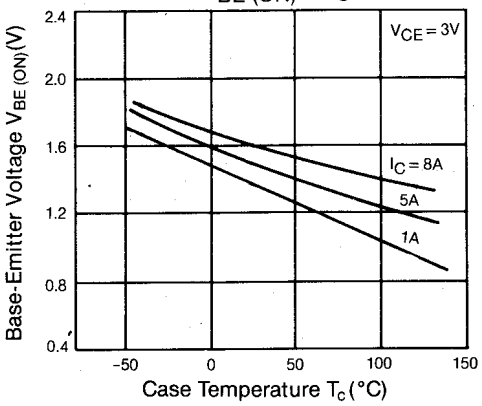


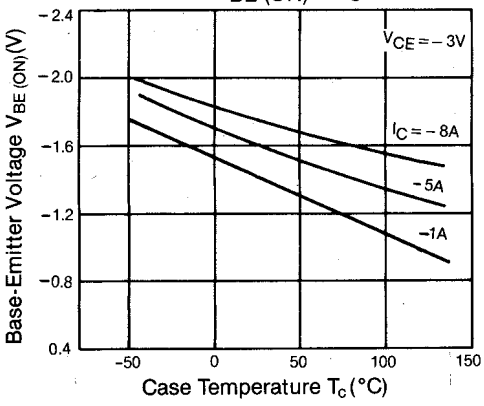
$V_{CE\ (SAT)}$ – T_C



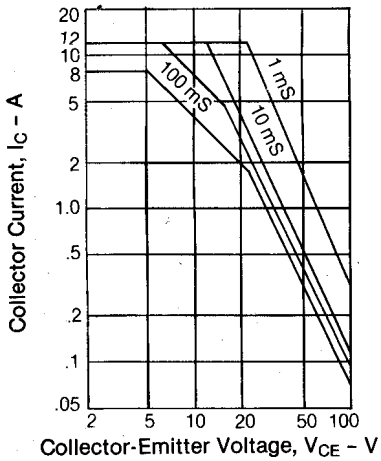
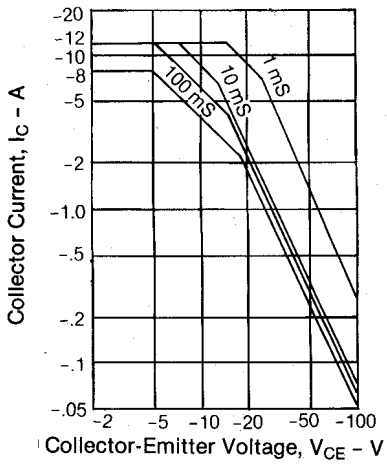


$V_{BE\ (ON)}$ - T_C





A.S.O.



A.S.O.