

NEC

NPN SILICON DARLINGTON POWER TRANSISTORS

2SD985, 2SD986

DESCRIPTION The 2SD985, 2SD986 are darlington transistors built-in dumper diodes at E-C. They are suitable for use to operate from IC without predriver, such as hammer driver.

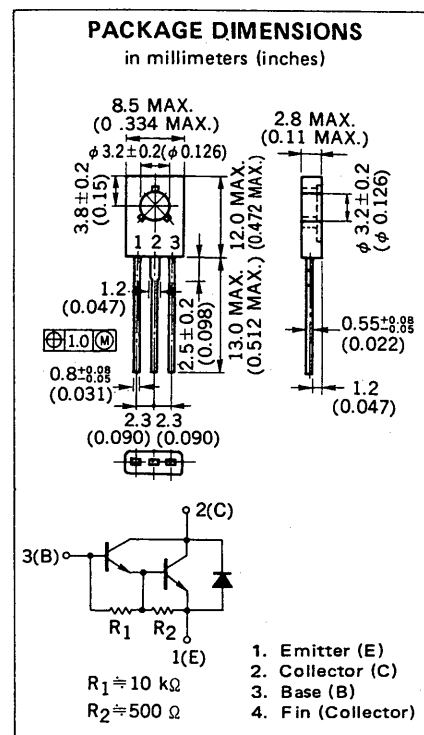
- FEATURES**
- High DC Current Gain.
 - Low Collector Saturation Voltage.
 - Built-in a dumper diode at E-C.
 - Complementary to the NEC 2SB794, 2SB795 PNP Transistors.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures
 Storage Temperature -55 to +150 °C
 Junction Temperature +150 °C Maximum
 Maximum Power Dissipations
 Total Power Dissipation ($T_a = 25^\circ\text{C}$) 1.0 W
 Total Power Dissipation ($T_c = 25^\circ\text{C}$) 10 W
 Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

		2SD985	2SD986	
V_{CBO}	Collector to Base Voltage. . .	150	150	V
V_{CEO}	Collector to Emitter Voltage. .	60	80	V
V_{EBO}	Emitter to Base Voltage. . . .	8.0		V
$I_{C(DC)}$	Collector Current.	± 1.5		A
$I_{C(pulse)}$	Collector Current.	± 3.0		A
$I_{B(DC)}$	Base Current.	0.15		A

* $PW \leq 10$ ms, Duty Cycle $\leq 50\%$



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1} **	DC Current Gain	1000			—	$V_{CE} = 2.0$ V, $I_C = 0.5$ A
h_{FE2} **	DC Current Gain	2000		30000	—	$V_{CE} = 2.0$ V, $I_C = 1.0$ A
t_{on}	Turn On Time		0.5		μs	$I_C = 1.0$ A, $R_L = 50 \Omega$
t_{stg}	Storage Time		1.0		μs	$I_{B1} = -I_{B2} = 1.0$ mA, $V_{CC} = 50$ V
t_f	Fall Time		1.0		μs	See Test Circuit
I_{CBO}	Collector Cutoff Current			10	μA	$V_{CB} = 60/80$ V, $I_E = 0$
I_{EBO}	Emitter Cutoff Current			1.0	mA	$V_{EB} = 5.0$ V, $I_C = 0$
$V_{CE(sat)}$ **	Collector Saturation Voltage			1.5	V	$I_C = 1.0$ A, $I_B = 1.0$ mA
$V_{BE(sat)}$ **	Base Saturation Voltage			2.0	V	$I_C = 1.0$ A, $I_B = 1.0$ mA

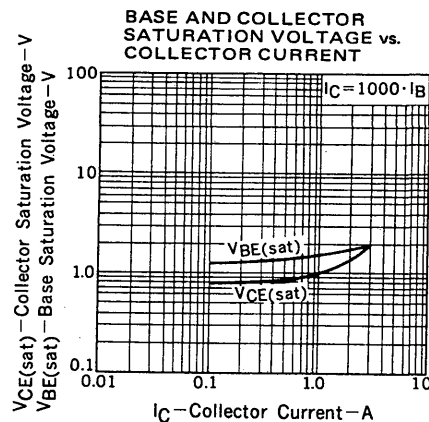
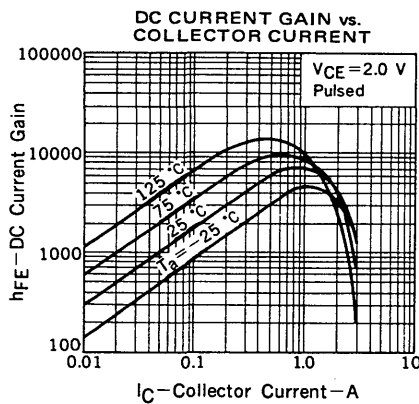
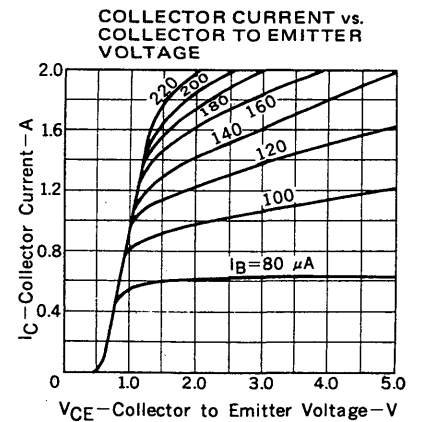
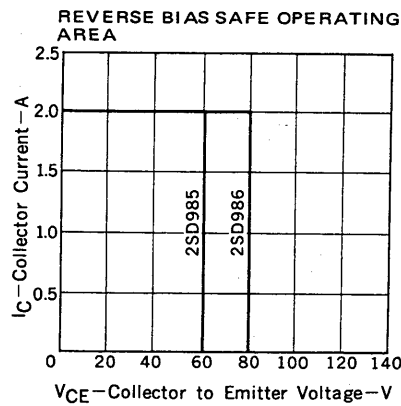
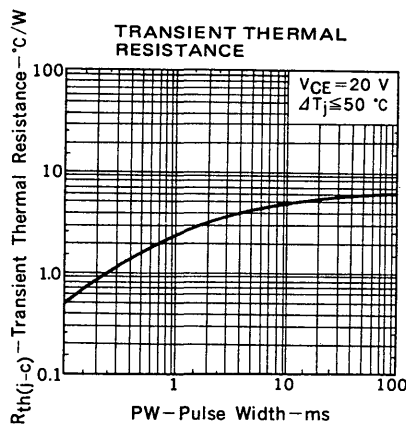
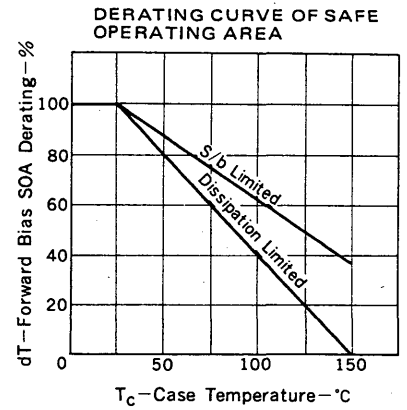
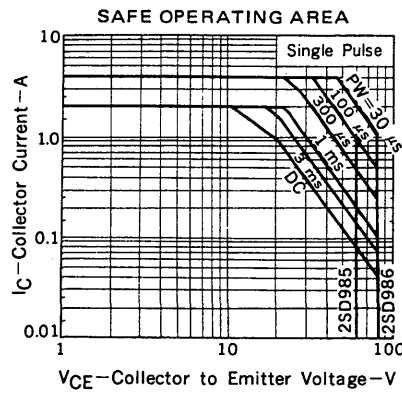
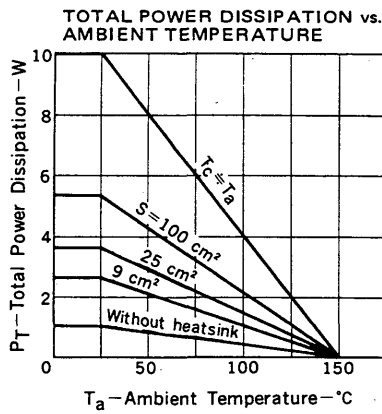
** Pulsed / $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$

Classification of h_{FE2}

Rank	M	L	K
Range	2000 to 5000	4000 to 10000	8000 to 30000

Test Conditions: $V_{CE} = 2.0$ V, $I_C = 1.0$ A

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



SWITCHING TIME (t_{on} , t_{stg} , t_f) TEST CIRCUIT