

NPN SILICON EPITAXIAL TRANSISTOR
FOR LOW-FREQUENCY POWER AMPLIFIERS

The 2SD1581 is a single type super high h_{FE} transistor and low collector saturation voltage and low power loss. This transistor is ideal for use in high current drives such as mortars, relays, and ramps.

FEATURES

- Ultra high h_{FE}
 $h_{FE} = 800$ to 3200 (@ $V_{CE} = 5.0$ V, $I_C = 500$ mA)
- Low collector saturation voltage
 $V_{CE(sat)} = 0.18$ V TYP. (@ $I_C = 1.0$ A, $I_B = 10$ mA)

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CB0}	30	V
Collector to emitter voltage	V_{CE0}	25	V
Emitter to base voltage	V_{EB0}	15	V
Collector current (DC)	$I_{C(DC)}$	2.0	A
Collector current (pulse)	$I_{C(pulse)^*}$	3.0	A
Total power dissipation	P_T	1.0	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 10$ ms, duty cycle $\leq 50\%$

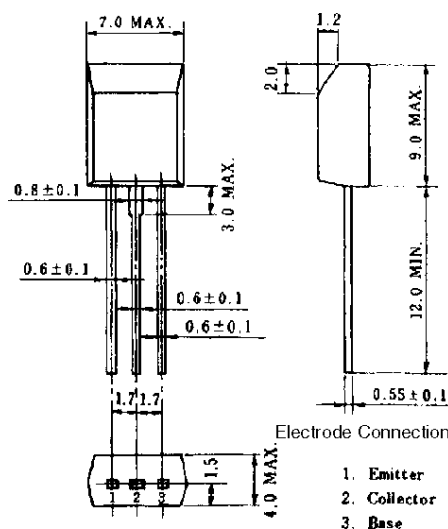
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Collector cutoff current	I_{CB0}	$V_{CB} = 30$ V, $I_E = 0$			100	nA	
Emitter cutoff current	I_{EB0}	$V_{EB} = 10$ V, $I_C = 0$			100	nA	
DC current gain	h_{FE1}	$V_{CE} = 5.0$ V, $I_C = 500$ mA	*	800	1500	3200	-
DC current gain	h_{FE2}	$V_{CE} = 5.0$ V, $I_C = 2.0$ mA	*	400			-
DC base voltage	V_{BE}	$V_{CE} = 5.0$ V, $I_C = 300$ mA	*	600	660	700	mV
Collector saturation voltage	$V_{CE(sat)}$	$I_C = 1.0$ A, $I_B = 10$ mA	*		0.18	0.30	V
Base saturation voltage	$V_{BE(sat)}$	$I_C = 1.0$ A, $I_B = 10$ mA	*		0.83	1.2	V
Output capacitance	C_{ob}	$V_{CB} = 10$ V, $I_E = 0$, $f = 1.0$ MHz		26	35		pF
Gain bandwidth product	f_r	$V_{CE} = 10$ V, $I_E = -500$ mA	150	350			MHz

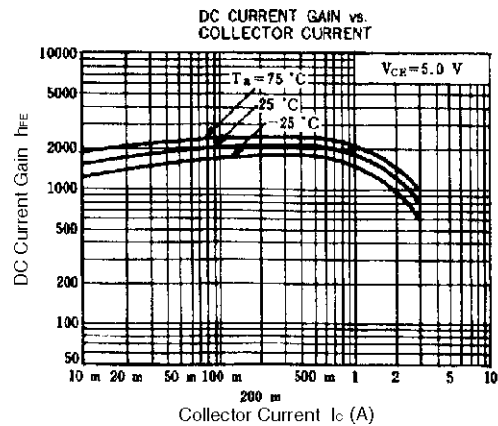
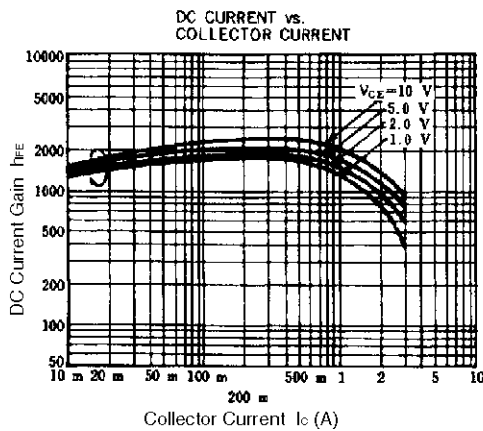
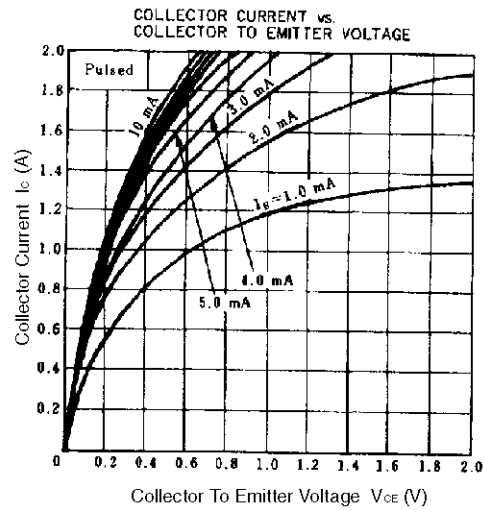
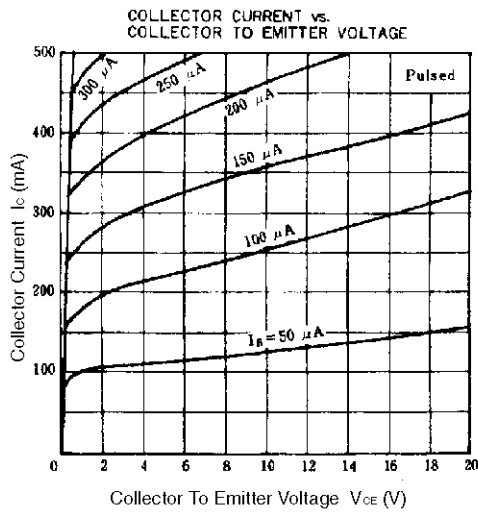
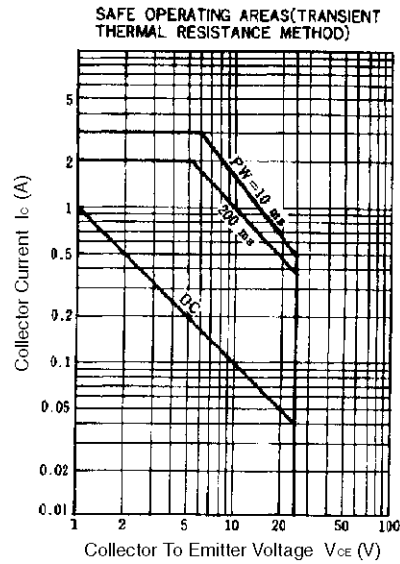
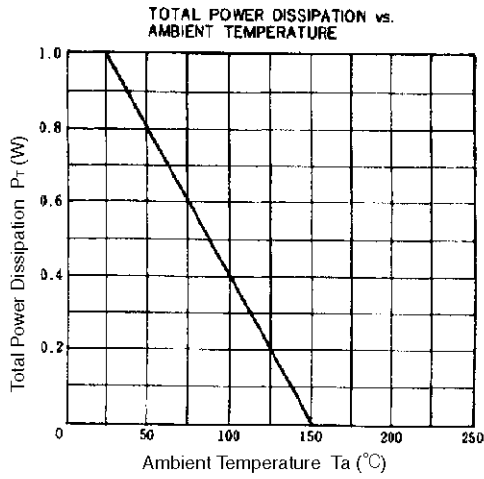
** Pulse test $PW \leq 350 \mu\text{s}$, duty cycle $\leq 2\%$ per pulsed

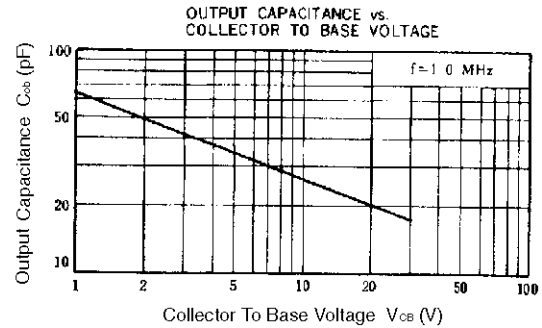
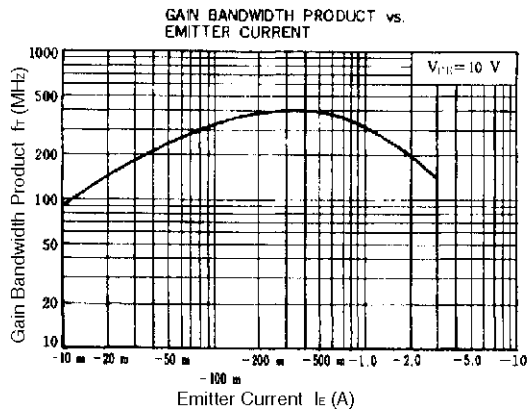
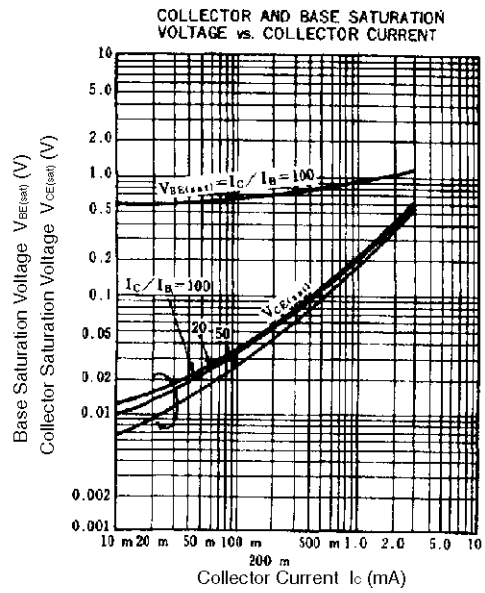
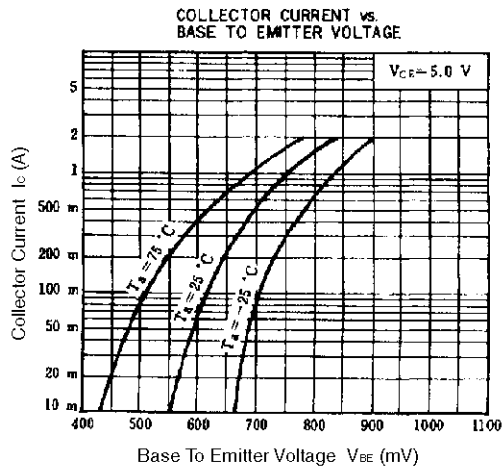
h_{FE1}/h_{FE} CLASSIFICATION M : 800 to 1600 L : 1200 to 2400 K : 2000 to 3200

PACKAGE DRAWING (UNIT: mm)



TYPICAL CHARACTERISTICS (Ta = 25°C)





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