

NPN SILICON POWER TRANSISTOR

DESCRIPTION

The 2SD882 is NPN silicon transistor suited for the output stage of 3 watts audio amplifier, voltage regulator, DC-DC converter and relay driver.

FEATURES

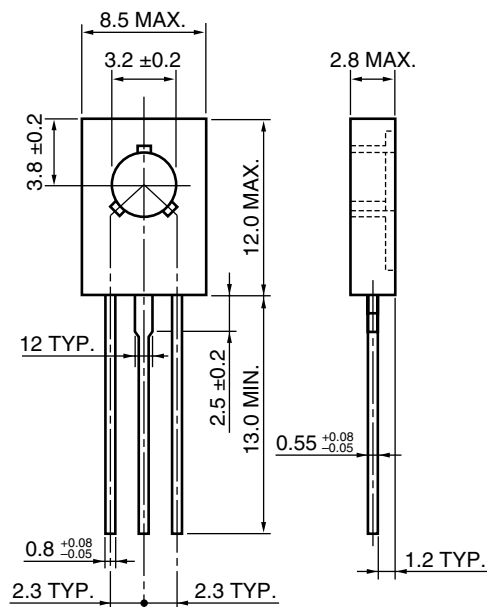
- Low saturation voltage
 $V_{CE(sat)} = 0.5 \text{ V MAX.}$ ($I_C = -2 \text{ A}$, $I_B = 0.2 \text{ A}$)
- Excellent h_{FE} linearity and high h_{FE}
 $h_{FE} = 60 \text{ to } 400$ ($V_{CE} = 2 \text{ V}$, $I_C = 1 \text{ A}$)
- Less cramping space required due to small and thin package and reducing the trouble for attachment to a radiator.
No insulator bushing required.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperature	
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 ($T_A = 25^\circ\text{C}$)	
V_{CBO} Collector to Base Voltage	40 V
V_{CEO} Collector to Emitter Voltage	30 V
V_{EBO} Emitter to Base Voltage	5.0 V
$I_{C(DC)}$ Collector Current (DC)	3.0 A
$I_{C(pulse)}$ ^{Note} Collector Current (pulse)	7.0 A

Note Pulse Test $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$

★ PACKAGE DRAWING (Unit: mm)



- 1: Emitter
- 2: Collector: connected to mounting plane
- 3: Base

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Current Gain	h_{FE1}	$V_{CE} = 2.0 \text{ V}$, $I_C = 20 \text{ mA}$ ^{Note}	30	150		
DC Current Gain	h_{FE2}	$V_{CE} = 2.0 \text{ V}$, $I_C = 1.0 \text{ A}$ ^{Note}	60	160	400	
Gain Bandwidth Product	f_T	$V_{CE} = 5.0 \text{ V}$, $I_C = 0.1 \text{ A}$		90		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1.0 \text{ MHz}$		45		pF
Collector Cutoff Current	I_{CBO}	$V_{CB} = 30 \text{ V}$, $I_E = 0 \text{ A}$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 3.0 \text{ V}$, $I_C = 0 \text{ A}$			1.0	μA
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 2.0 \text{ A}$, $I_B = 0.2 \text{ A}$ ^{Note}		0.3	0.5	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_C = 2.0 \text{ A}$, $I_B = 0.2 \text{ A}$ ^{Note}		1.0	2.0	V

Note Pulse Test: $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$

CLASSIFICATION OF h_{FE}

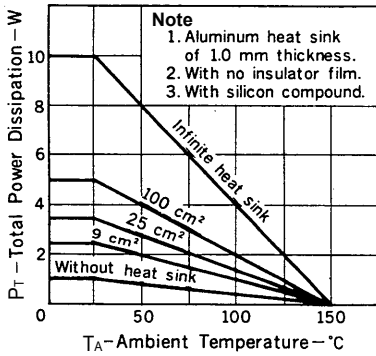
Rank	R	Q	P	E
Range	60 to 120	100 to 200	160 to 320	200 to 400

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

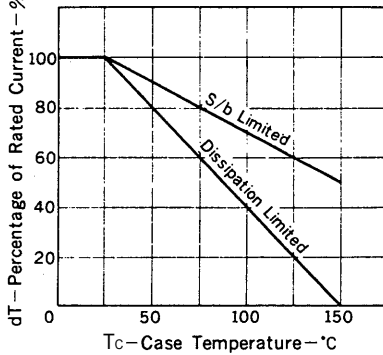
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TYPICAL CHARACTERISTICS (T_A = 25°C)

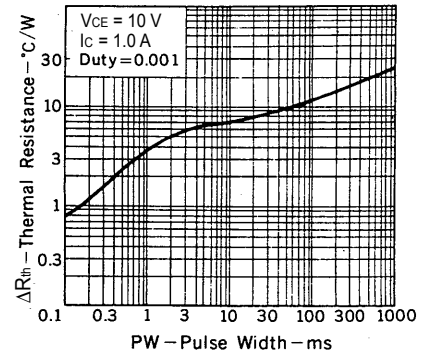
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



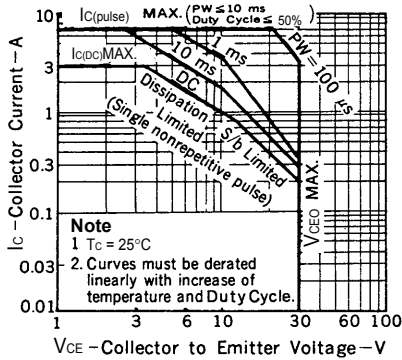
DERATING CURVES FOR ALL TYPES



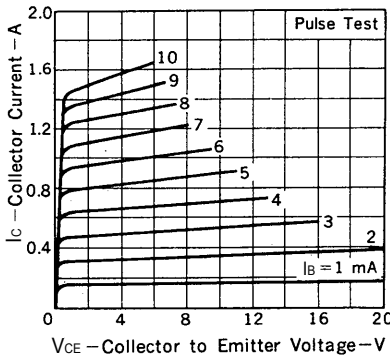
THERMAL RESISTANCE vs. PULSE WIDTH



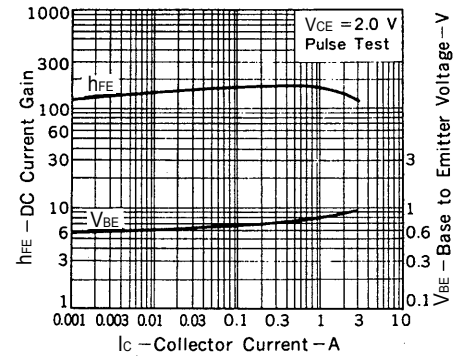
SAFE OPERATING AREAS



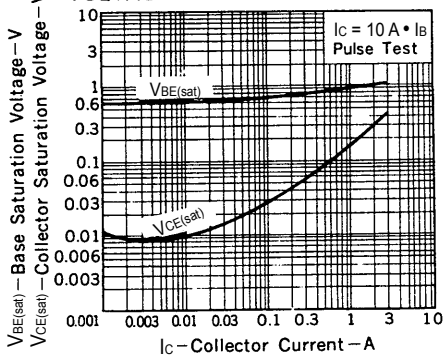
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



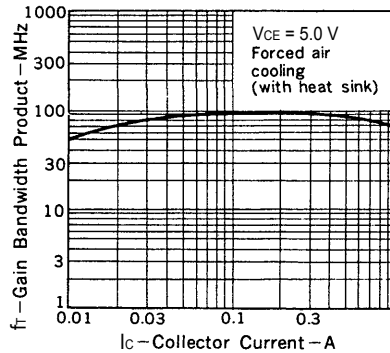
DC CURRENT GAIN, BASE TO EMITTER VOLTAGE vs. COLLECTOR CURRENT



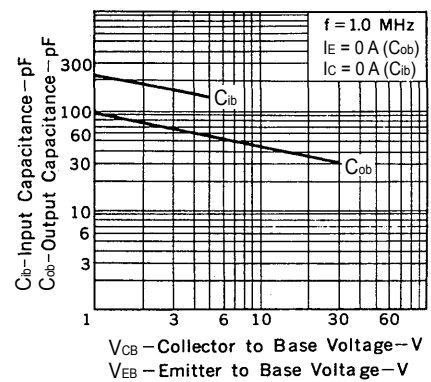
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



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