NEC

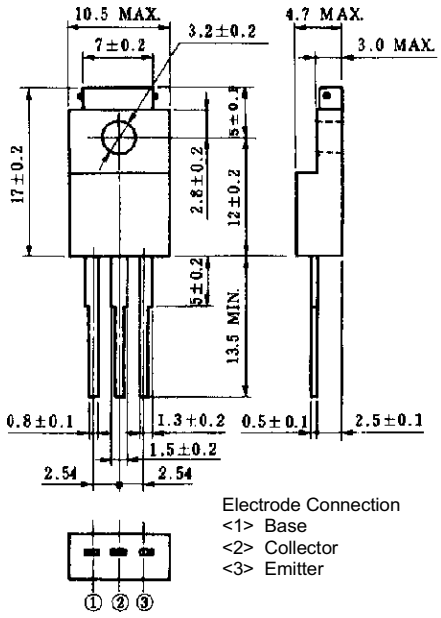
SILICON POWER TRANSISTOR
2SD1588

NPN SILICON EPITAXIAL TRANSISTOR
FOR LOW-FREQUENCY POWER AMPLIFIERS AND LOW-SPEED SWITCHING

FEATURES

- Mold package that does not require an insulating board or insulation bushing
- Large current capacity in small dimension: $I_{C(DC)}$ = 7 A
- Low collector saturation voltage: $V_{CE(sat)}$ = 0.5 V MAX. (@5 A)
- Ideal for use in ramp drivers or inductance drivers
- Complementary transistor: 2SB1097

PACKAGE DRAWING (UNIT: mm)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	100	V
Collector to emitter voltage	V_{CEO}	60	V
Emitter to base voltage	V_{EBO}	7.0	V
Collector current (DC)	$I_{C(DC)}$	7.0	A
Collector current (Pulse)	$I_{C(pulse)}$*	15	A
Base current (DC)	$I_{B(DC)}$	3.5	A
Total power dissipation	P_T (T_C = 25°C)	30	W
Total power dissipation	P_T (T_A = 25°C)	2.0	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

* PW ≤ 300 μs, duty cycle ≤ 10%

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 80 V, I_E = 0			10	μA
Emitter cutoff current	I_{EBO}	V_{EB} = 5.0 V, I_C = 0			10	μA
DC current gain	h_{FE1}**	V_{CE} = 1.0 V, I_C = 3 A	40		200	
DC current gain	h_{FE2}**	V_{CE} = 1.0 V, I_C = 5 A	20			
Collector saturation voltage	$V_{CE(sat)}$**	I_C = 5 A, I_B = 0.5 A			0.5	V
Base saturation voltage	$V_{BE(sat)}$**	I_C = 5 A, I_B = 0.5 A			1.5	V

** Pulse test PW ≤ 350 μs, duty cycle ≤ 2%/per pulsed

h_{FE} CLASSIFICATION

Marking	M	L	K
h_{FE1}	40 to 80	60 to 120	100 to 200

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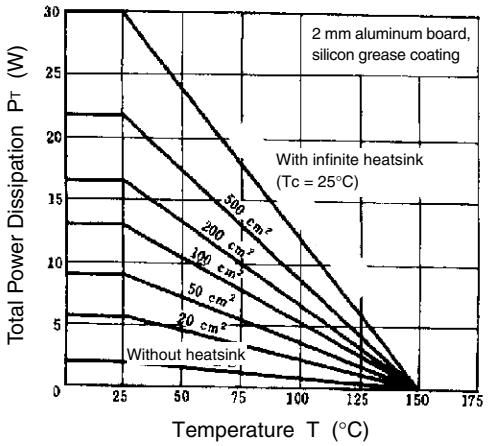
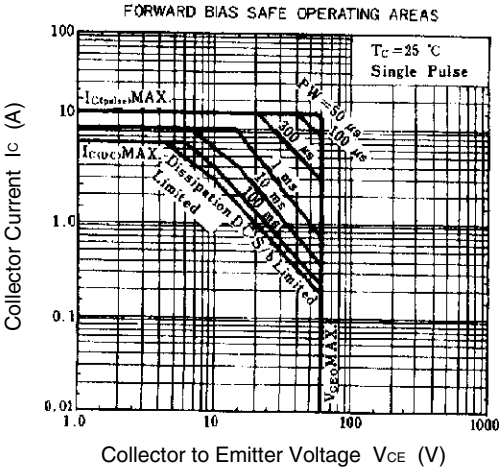
TYPICAL CHARACTERISTICS (T_A = 25°C)

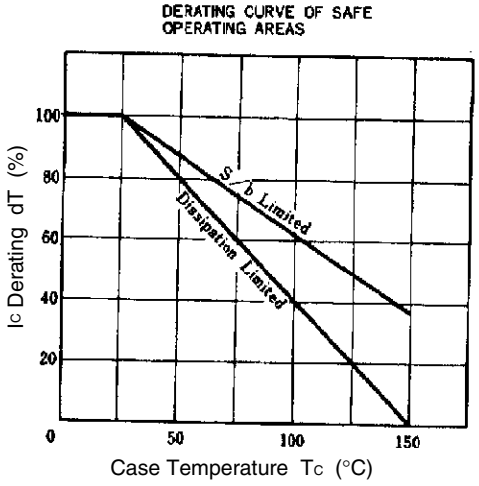
TOTAL POWER DISSIPATION vs. TEMPERATURE



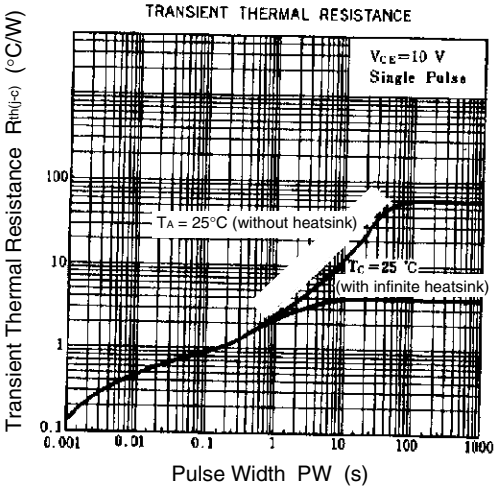
FORWARD BIAS SAFE OPERATING AREAS



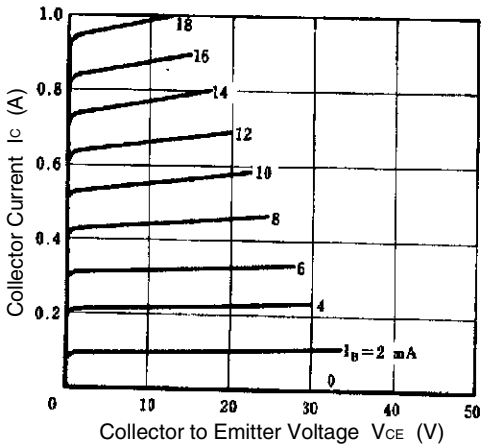
DERATING CURVE OF SAFE OPERATING AREAS



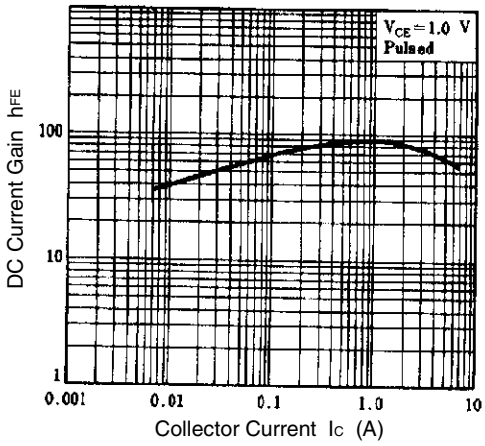
TRANSIENT THERMAL RESISTANCE



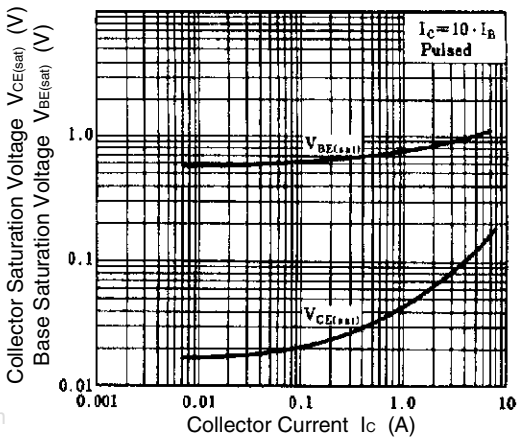
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT



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