

SILICON POWER TRANSISTOR
2SD1481

**NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION)
 FOR LOW-FREQUENCY POWER AMPLIFIERS AND LOW-SPEED SWITCHING**

FEATURES

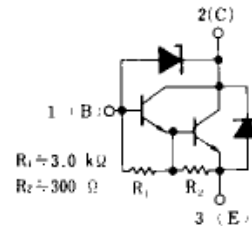
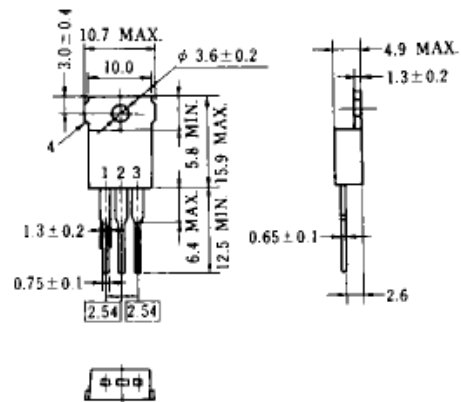
- On-chip C-to-B Zener diode for surge voltage absorption
- Low collector saturation voltage: $V_{CE(SAT)} = 1.5 \text{ V MAX.}$ (at 1 A)
- Ideal for use in a direct drive from IC to the devices such as OA and FA equipment and motor solenoid relay printer head drivers

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60 ± 10	V
Collector to emitter voltage	V_{CEO}	60 ± 10	V
Emitter to base voltage	V_{EBO}	7.0	V
Collector current	$I_{C(DC)}$	2.0	A
Collector current	$I_{C(pulse)}^*$	4.0	A
Base current	$I_{B(DC)}$	0.2	A
Total power dissipation	$P_T (T_c = 25^\circ\text{C})$	15	W
Total power dissipation	$P_T (T_a = 25^\circ\text{C})$	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

* $PW \leq 300 \mu\text{s}$, duty cycle $\leq 10\%$

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

1. Base
2. Collector
3. Emitter
4. Fin (collector)

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 Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

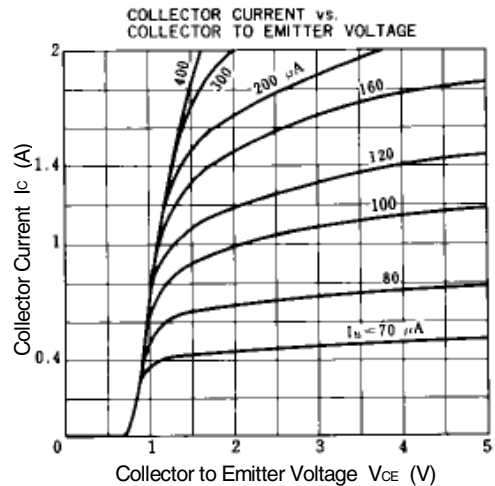
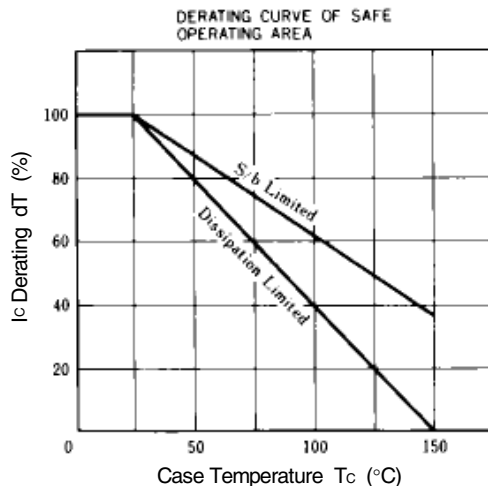
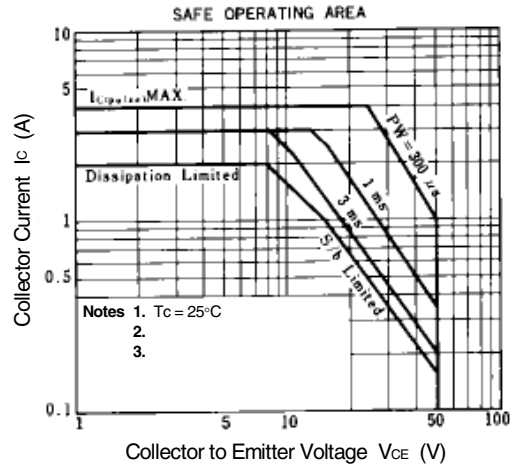
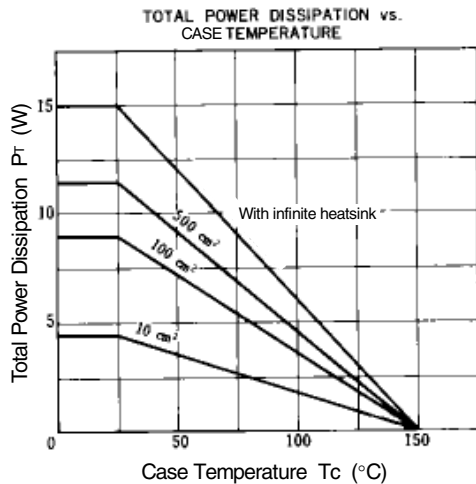
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$			1.0	μA
DC current gain	h_{FE1}	$V_{CE} = 2.0\text{ V}, I_C = 1.0\text{ A}^*$	2,000		20,000	
DC current gain	h_{FE2}	$V_{CE} = 2.0\text{ V}, I_C = 3.0\text{ A}^*$	500			
Collector saturation voltage	$V_{CE(sat)}$	$I_C = 1.0\text{ A}, I_B = 1.0\text{ mA}^*$			1.5	V
Base saturation voltage	$V_{BE(sat)}$	$I_C = 1.0\text{ A}, I_B = 1.0\text{ mA}^*$			2.0	V
Turn-on time	t_{on}	$I_C = 1.0\text{ A}, I_{B1} = -I_{B2} = 10\text{ mA}$ $R_L = 50\ \Omega, V_{CC} \cong 50\text{ V}$ Refer to the test circuit.		0.5		μs
Storage time	t_{stg}			2.0		μs
Fall time	t_f			1.0		μs

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

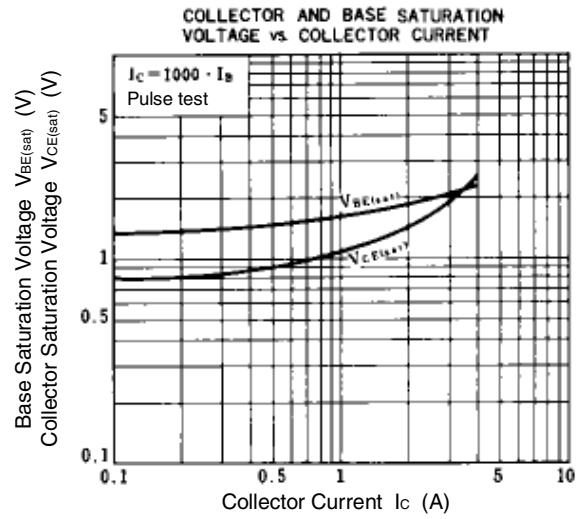
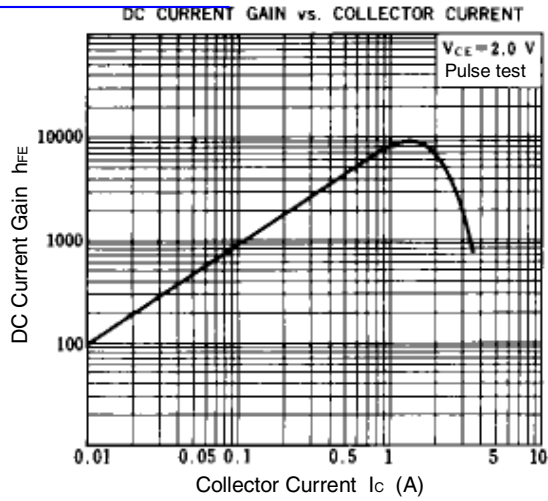
h_{FE} CLASSIFICATION

Marking	M	L	K
h_{FE1}	2,000 to 5,000	4,000 to 10,000	8,000 to 20,000

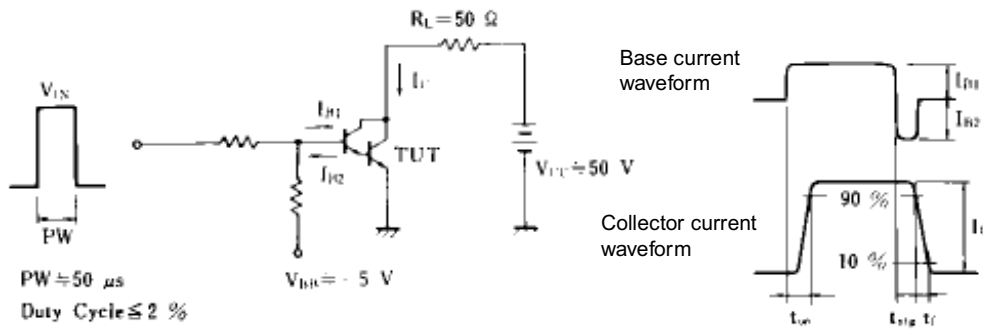
TYPICAL CHARACTERISTICS (Ta = 25°C)



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



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