

NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION) FOR LOW-FREQUENCY POWER AMPLIFIERS

FEATURES

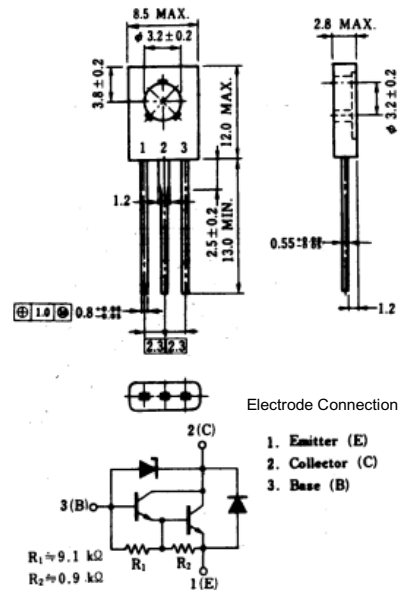
- On-chip Zener diode
- High DC current gain due to Darlington connection
- Large current capacity and low $V_{CE(sat)}$
- Large power dissipation TO-126 type power transistor
- Complementary transistor: 2SB1150

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

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}	8.0	V
Collector current (DC)	$I_{C(DC)}$	± 3.0	A
Collector current (pulse)	$I_{C(pulse)^*}$	± 5.0	A
Total power dissipation	$P_T (T_A = 25^\circ\text{C})$	1.3	W
Total power dissipation	$P_T (T_C = 25^\circ\text{C})$	15	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 $\leq 50\%$

PACKAGE DRAWING (UNIT: mm)



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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to base voltage	V_{CBO}	$I_C = 1.0$ mA, $I_E = 0$	50	60	70	V
Collector to emitter voltage	V_{CEO}	$I_C = 10$ mA, $R_{BE} = \infty$	50	60	70	V
Collector to emitter voltage	$V_{CEO(SUS)}$	$I_C = 3.0$ A, $I_B = 3.0$ mA, $L = 1.0$ mH	50			V
Collector cutoff current	I_{CBO}	$V_{CB} = 40$ V, $I_E = 0$			10	μA
Collector cutoff current	I_{CEO}	$V_{CE} = 40$ V, $R_{BE} = \infty$			1.0	mA
DC current gain	h_{FE1}^{**}	$V_{CE} = 2.0$ V, $I_C = 1.5$ A	2,000		20,000	
DC current gain	h_{FE2}^{**}	$V_{CE} = 2.0$ V, $I_C = 3.0$ A	1,000			
Collector saturation voltage	$V_{CE(sat)}^{**}$	$I_C = 1.5$ A, $I_B = 1.5$ mA		0.9	1.2	V
Base saturation voltage	$V_{BE(sat)}^{**}$	$I_C = 1.5$ A, $I_B = 1.5$ mA		1.5	2.0	V
Turn-on time	t_{on}	$I_C = 1.5$ A		0.5		μs
Storage time	t_{stg}	$I_{B1} = -I_{B2} = 1.5$ mA		2.0		μs
Fall time	t_f	$R_L = 27 \Omega$, $V_{CC} \approx 40$ V		1.0		μs

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

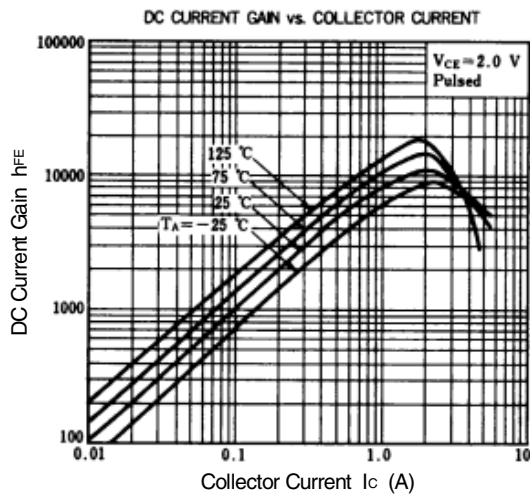
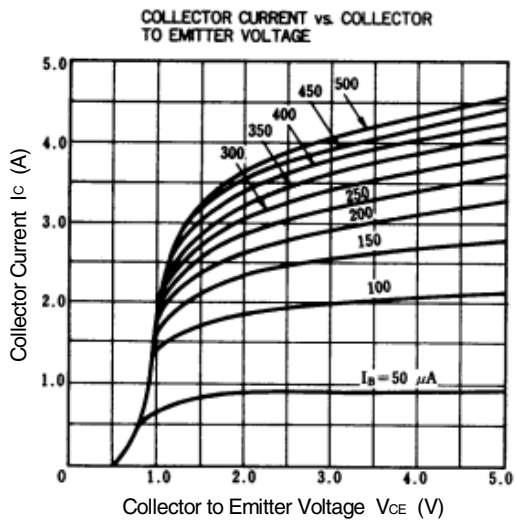
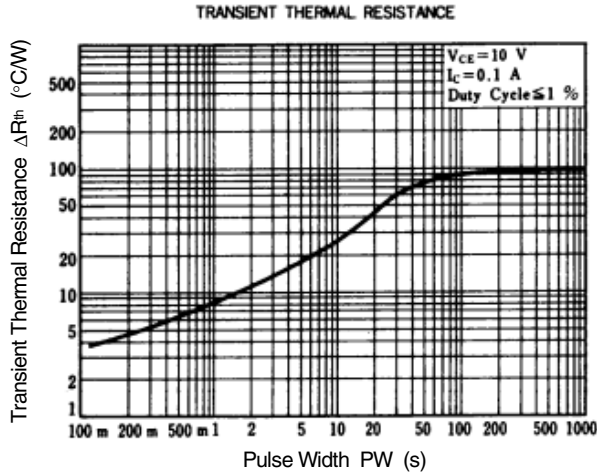
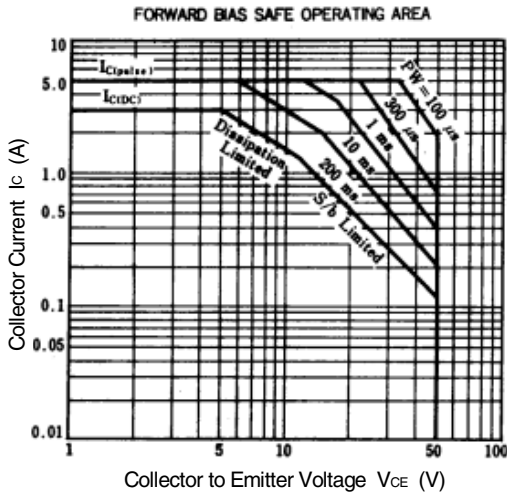
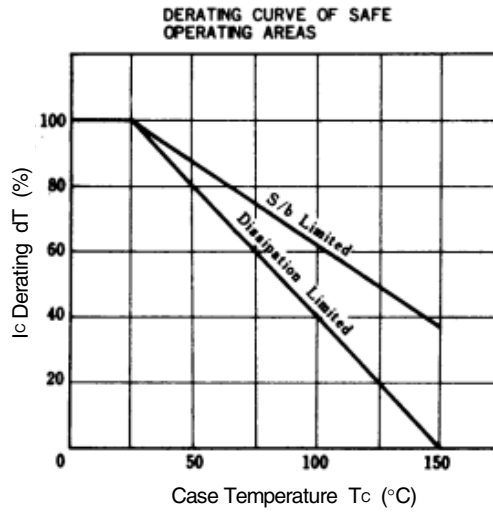
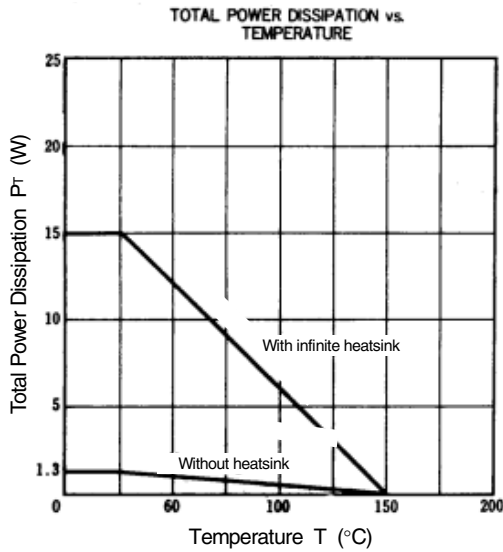
h_{FE} CLASSIFICATION

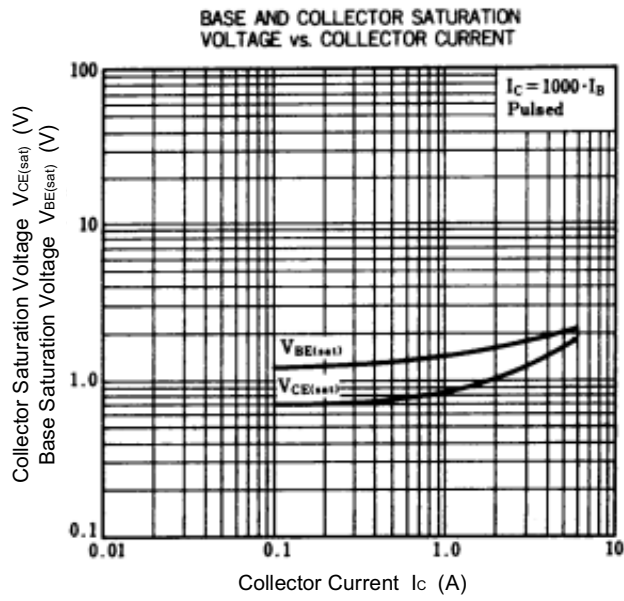
Marking	M	L	K
h_{FE1}	2,000 to 5,000	4,000 to 12,000	3,000 to 20,000

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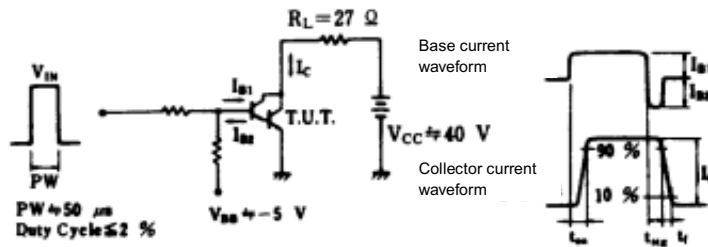
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TYPICAL CHARACTERISTICS (T_A = 25°C)





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



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