

## NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION)

### FEATURES

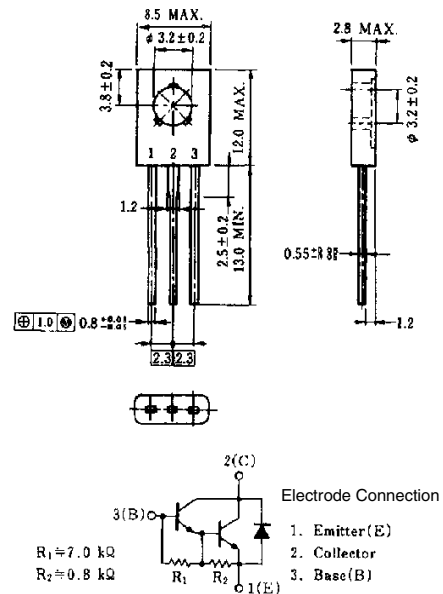
- High DC current gain due to Darlington connection
- Large current capacity and low  $V_{CE(sat)}$
- Large power dissipation TO-126 type power transistor
- Complementary transistor: 2SB1149

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	150	V
Collector to emitter voltage	$V_{CEO}$	100	V
Emitter to base voltage	$V_{EBO}$	8.0	V
Collector current (DC)	$I_{C(DC)}$	$\pm 3.0$	A
Collector current (pulse)	$I_{C(pulse)}^*$	$\pm 5.0$	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 emitter voltage	$V_{CEO(SUS)}$	$I_C = 3.0$ A, $I_B = 3.0$ mA, $L = 1.0$ mH	100			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = 100$ V, $I_E = 0$			10	$\mu\text{A}$
Collector cutoff current	$I_{CEO}$	$V_{CE} = 100$ 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		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = -I_{B2} = 1.5$ mA		2.0		$\mu\text{s}$
Fall time	$t_f$	$R_L = 27$ $\Omega$ , $V_{CC} \approx 40$ V		1.0		$\mu\text{s}$

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

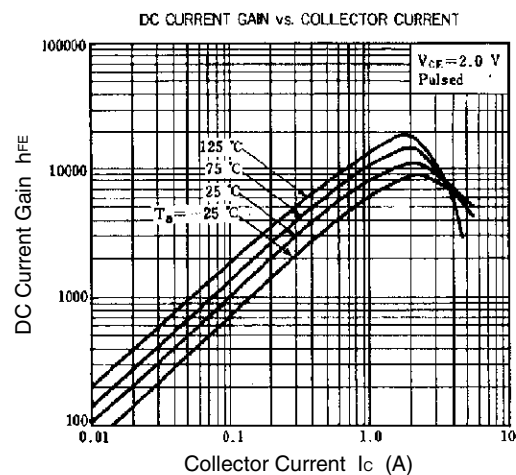
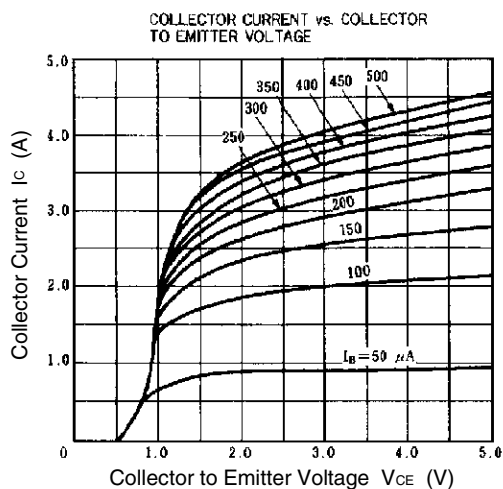
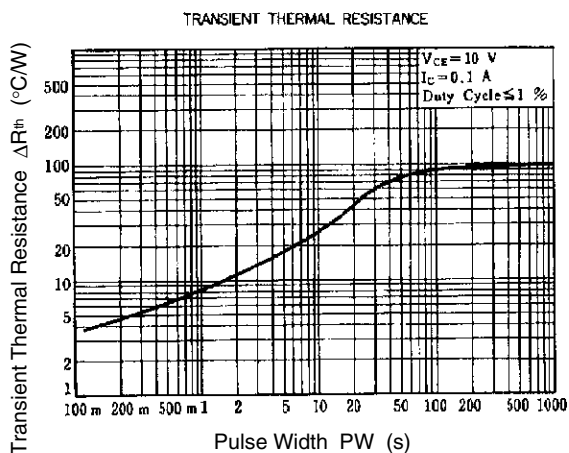
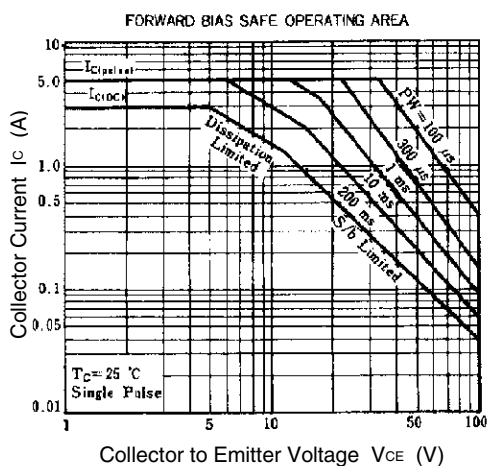
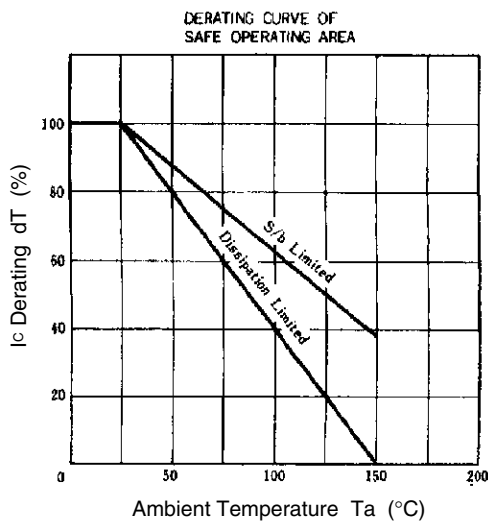
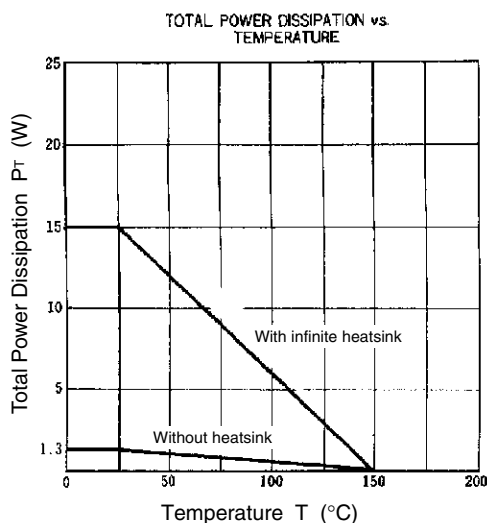
### $h_{FE}$ CLASSIFICATION

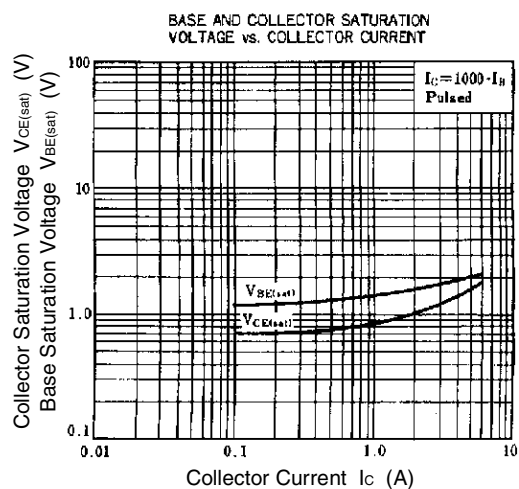
Marking	M	L	K
$h_{FE1}$	2,000 to 5,000	4,000 to 12,000	8,000 to 20,000

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TYPICAL CHARACTERISTICS (Ta = 25°C)





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

