

PNP SILICON EPITAXIAL POWER TRANSISTOR (DARLINGTON CONNECTION) FOR HIGH-SPEED SWITCHING

The 2SA1714 is a high-speed darlington power transistor. This transistor is ideal for high-precision control such as PWM control for pulse motors or brushless motor of OA and FA equipment.

FEATURES

- High DC current amplifiers due to darlington connection
- Large current capacitance and low $V_{CE(sat)}$
- TO-126 power transistor with high power dissipation
- Complementary transistor with 2SC4342

QUALITY GRADES

- Standard

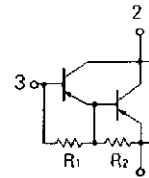
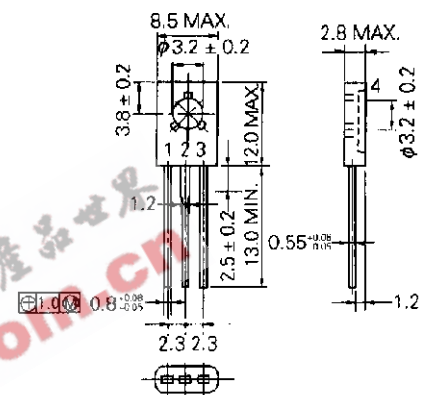
Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	-100	V
Collector to emitter voltage	V_{CEO}	-100	V
Emitter to base voltage	V_{EBO}	-8.0	V
Collector current (DC)	$I_{C(DC)}$	∓ 3.0	A
Collector current (pulse)	$I_{C(pulse)^*}$	∓ 6.0	A
Base current (DC)	$I_{B(DC)}$	-0.3	A
Total power dissipation	P_T ($T_a = 25^\circ\text{C}$)	1.3	W
Total power dissipation	P_T ($T_c = 25^\circ\text{C}$)	12	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)



$R_1 \approx 5.0 \text{ k}\Omega$
 $R_2 \approx 0.7 \text{ k}\Omega$

Electrode Connection

1. Emitter
2. Collector
3. Base
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)

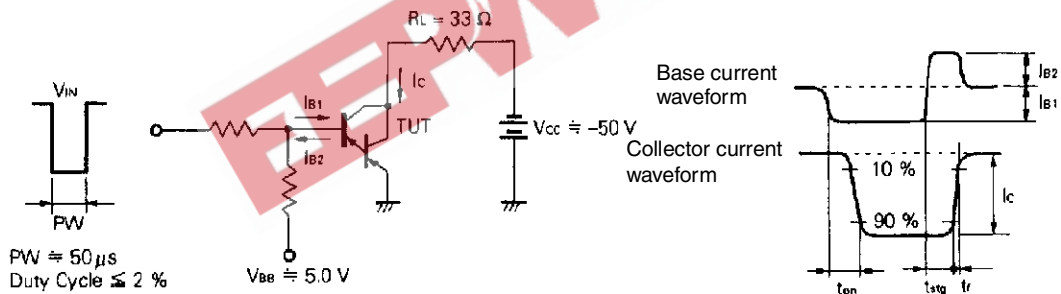
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CEO(SUS)}$	$I_C = -3.0\text{ A}, I_B = -3.0\text{ mA}, L = 1.0\text{ mH}$	-100			V
Collector cutoff current	I_{CBO}	$V_{CB} = -100\text{ V}, I_E = 0$			-10	μA
Collector cutoff current	I_{CEO}	$V_{CE} = -100\text{ V}, R_{BE} = \infty$			-10	μA
DC current gain	h_{FE1}^{**}	$V_{CE} = -2.0\text{ V}, I_C = -1.5\text{ A}$	2,000		20,000	-
DC current gain	h_{FE2}^{**}	$V_{CE} = -2.0\text{ V}, I_C = -3.0\text{ A}$	1,000			-
Collector saturation voltage	$V_{CE(sat)}^{**}$	$I_C = -1.5\text{ A}, I_B = -1.5\text{ mA}$		-0.9	-1.2	V
Base saturation voltage	$V_{BE(sat)}^{**}$	$I_C = -1.5\text{ A}, I_B = -1.5\text{ mA}$		-1.5	-2.0	V
Turn-on time	t_{on}	$I_C = -1.5\text{ A}, I_{B1} = -I_{B2} = -1.5\text{ mA},$ $R_L = 33\ \Omega, V_{CC} \cong -50\text{ V}$ Refer to the test circuit.		0.15		μs
Storage time	t_{stg}			1.2		μs
Fall time	t_f			0.6		μs

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

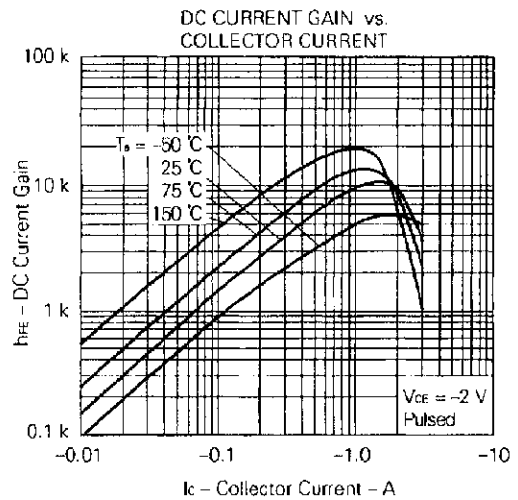
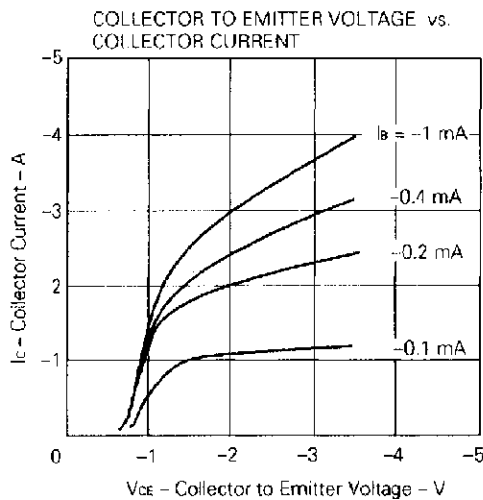
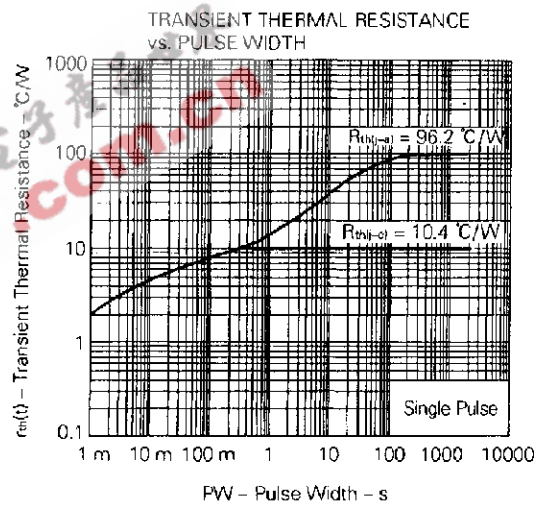
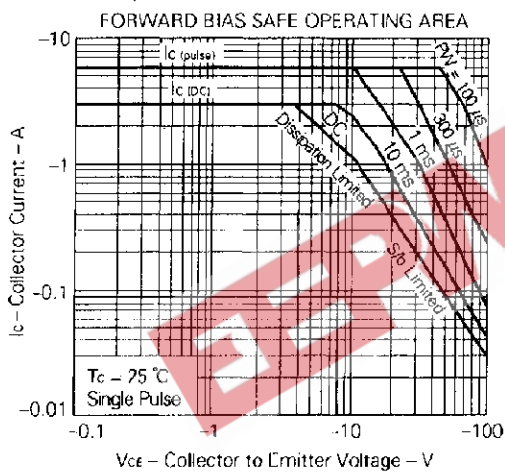
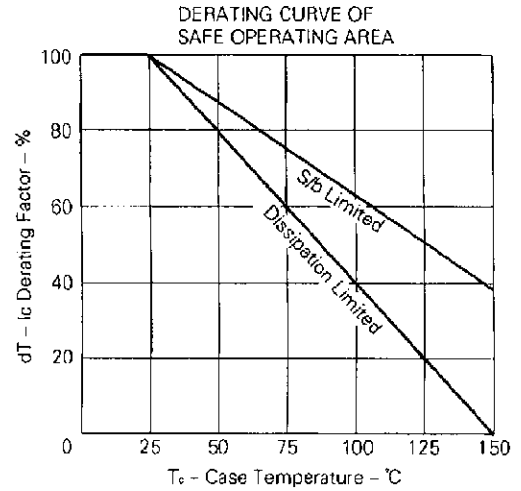
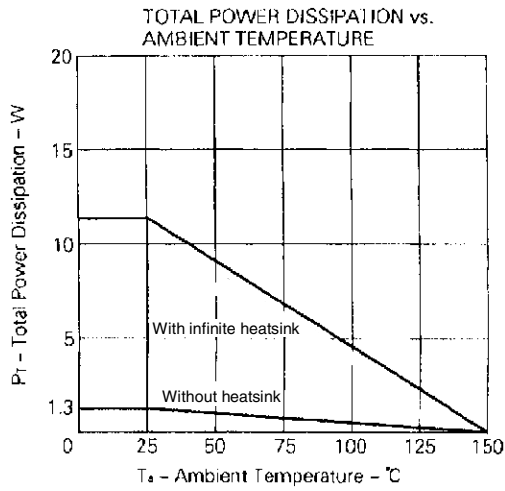
hFE CLASSIFICATION

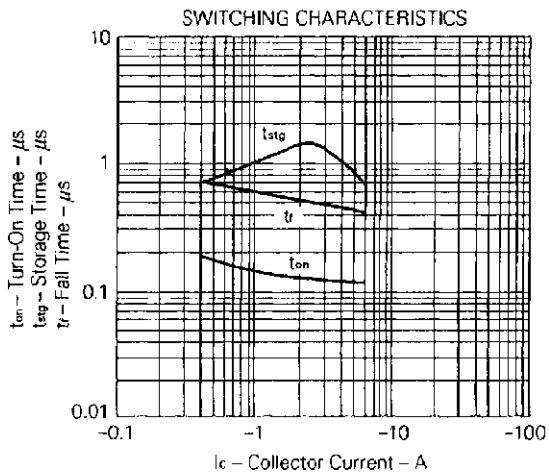
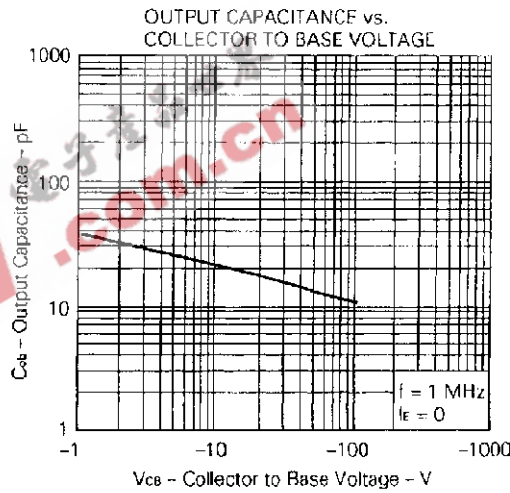
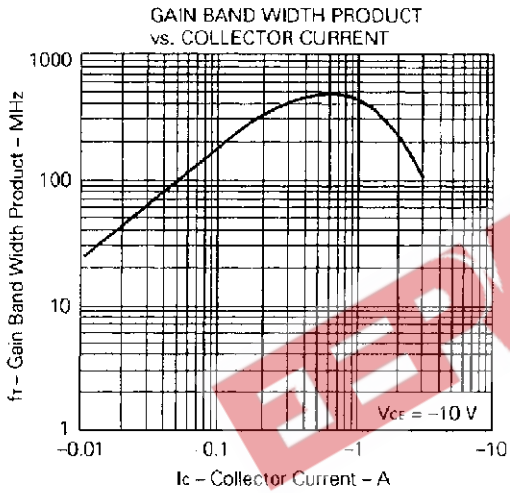
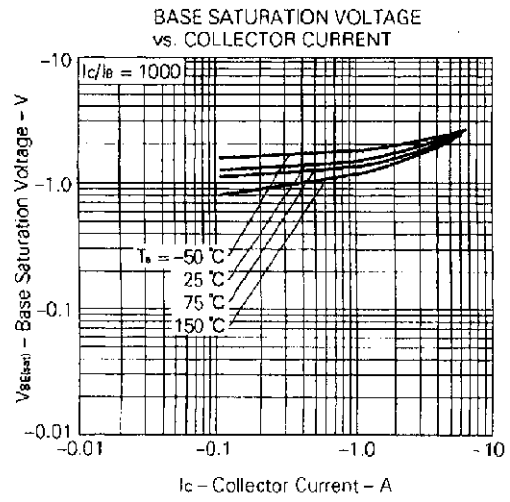
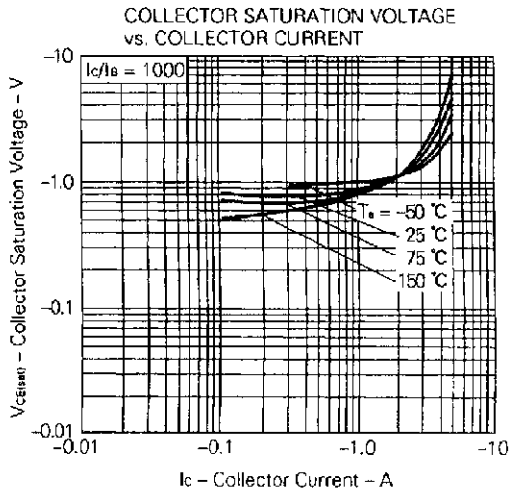
Marking	M	L	K
h_{FE1}	2,000 to 5,000	4,000 to 10,000	8,000 to 20,000

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



TYPICAL CHARACTERISTICS (Ta = 25°C)





[MEMO]



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