

DARLINGTON POWER TRANSISTOR 2SA1841

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

The 2SA1841 is a high-speed Darlington power transistor. This transistor is ideal for high-precision control such as PWM control for pulse motors or brushless motors in OA and FA equipment. In addition, this transistor features a package that can be auto-mounted in radial taping specifications, thus contributing to mounting cost reduction.

FEATURES

- Auto-mounting possible in radial taping specifications
- Resin-molded insulation type package with power rating of 1.8 W in stand-alone conditions
- High DC current amplifiers due to Darlington connection
 $h_{FE} = 4,000$ to $20,000$ @ $V_{CE} = -2.0$ V, $I_C = -4.0$ A
- On-chip C-to-E reverse diode
- Fast switching speed

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	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)	$I_{C(DC)}$		-8.0	A
Collector current (pulse)	$I_{C(pulse)}$	$PW \leq 10$ ms, duty cycle $\leq 2\%$	-16	A
Base current (DC)	$I_{B(DC)}$		-0.8	A
Total power dissipation	P_T	Ta = 25°C	1.8	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		-55 to +150	°C

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

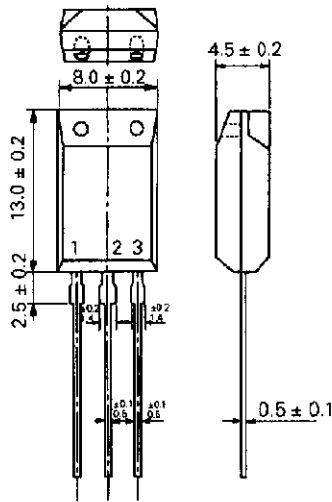
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -100\text{ V}, I_E = 0$			-1.0	μA
Collector cutoff current	I_{EBO}	$V_{EB} = -5.0\text{ V}, I_C = 0$			-5.0	mA
DC current gain	h_{FE1}^*	$V_{CE} = -2.0\text{ V}, I_C = -4.0\text{ A}$	4,000		20,000	-
DC current gain	h_{FE2}^*	$V_{CE} = -2.0\text{ V}, I_C = -8.0\text{ A}$	500			-
Collector saturation voltage	$V_{CE(sat)}^*$	$I_C = -4.0\text{ A}, I_B = -4.0\text{ mA}$			-1.5	V
Base saturation voltage	$V_{BE(sat)}^*$				-2.0	V
Turn-on time	t_{on}	$I_C = -4.0\text{ A}$		0.2		μs
Storage time	t_{stg}	$I_{B1} = -I_{B2} = -4.0\text{ mA}$ $R_L = 12.5\ \Omega, V_{CC} = -50\text{ V}$		1.5		μs
Fall time	t_f			0.7		μs

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

h_{FE} CLASSIFICATION

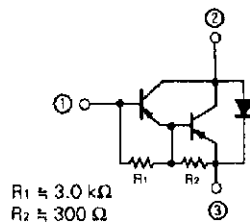
Marking	L	K
h_{FE2}	4,000 to 10,000	8,000 to 20,000

PACKAGE DRAWING (UNIT: mm)

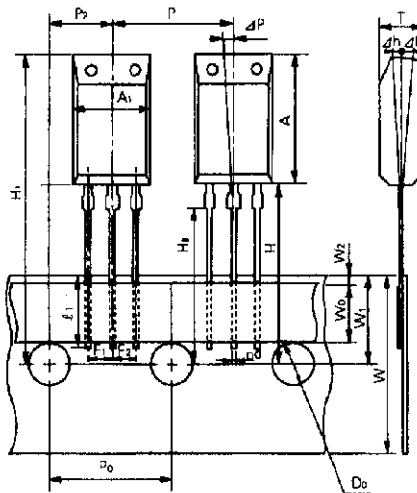


Electrode Connection

- 1. Base
- 2. Collector
- 3. Emitter

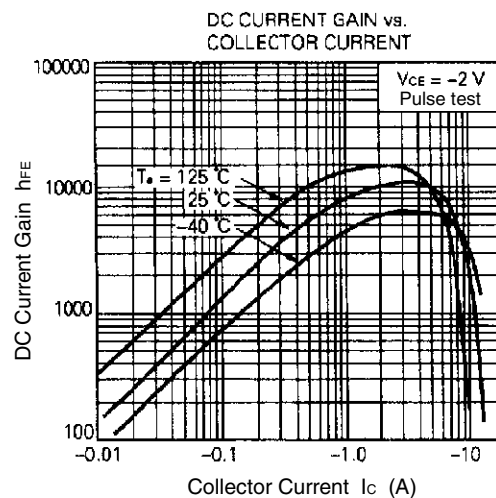
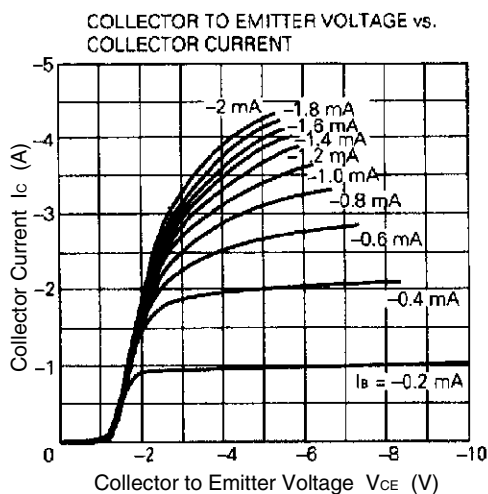
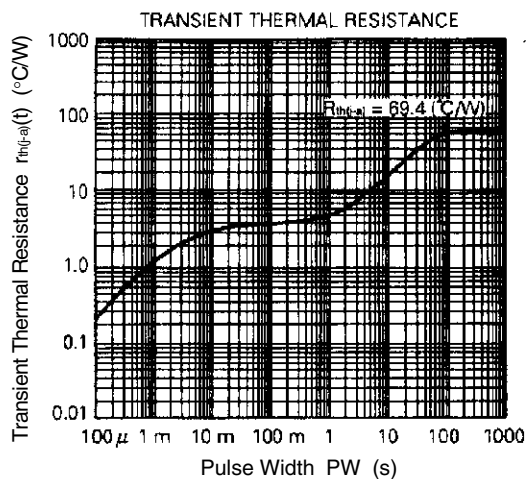
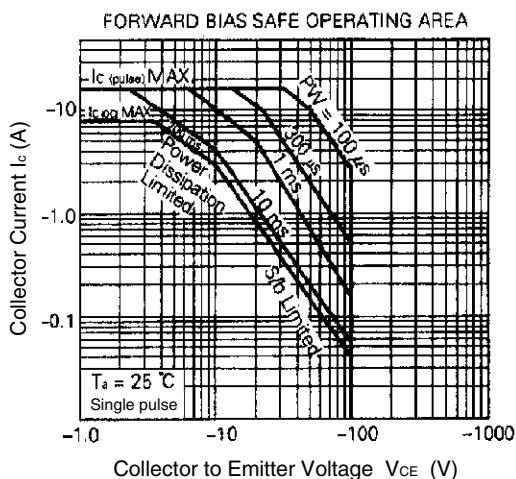
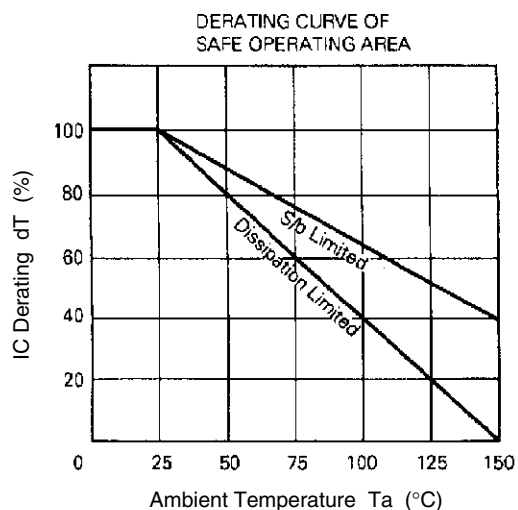
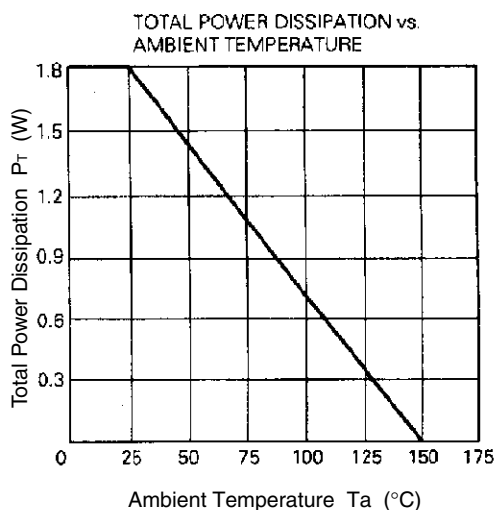


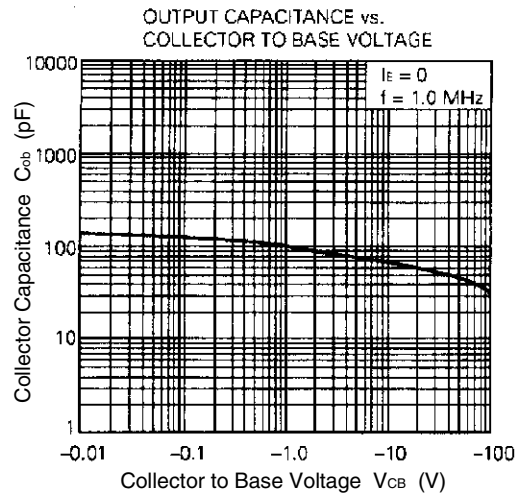
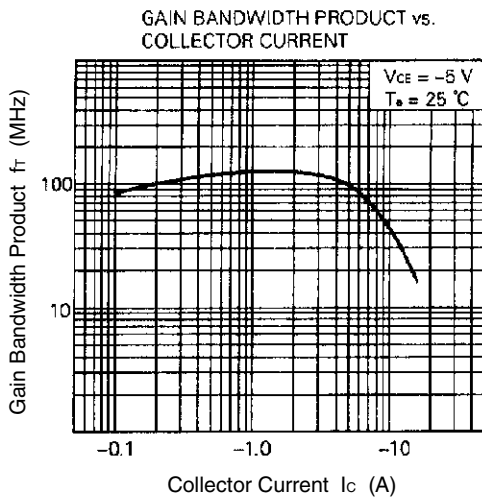
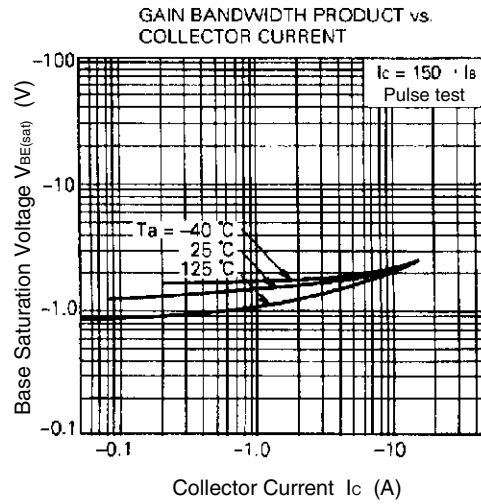
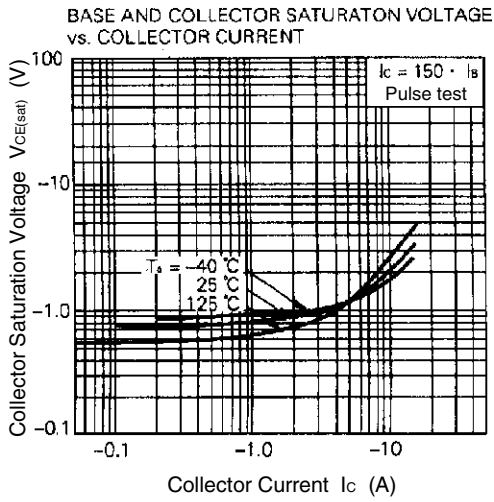
TAPING SPECIFICATION



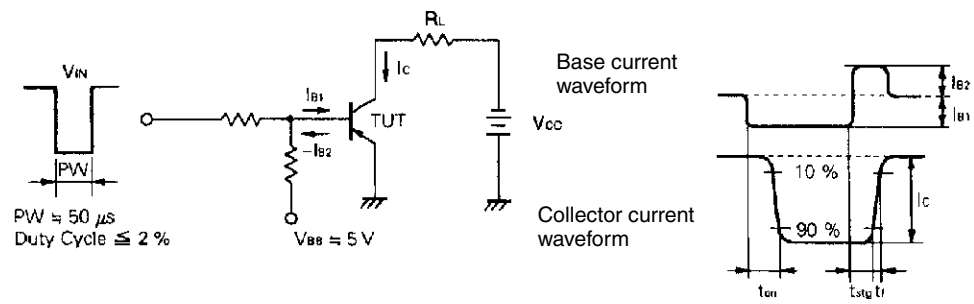
A_1	8.0 ± 0.2
A	13.0 ± 0.2
D_b	$\phi 4.0 \pm 0.2$
d	0.5 ± 0.1
F_1	$2.5^{+0.4}_{-0.1}$
F_2	$2.5^{+0.4}_{-0.1}$
H	20.0 MAX.
H_b	16.0 ± 0.5
H_1	32.2 MAX.
$4h$	0 ± 1.0
ℓ_1	2.5 MIN.
P	12.7 ± 1.0
P_0	12.7 ± 0.3
P_2	6.35 ± 0.5
dP	0 ± 1.3
T	4.5 ± 0.2
W	$18.0^{+1.0}_{-0.5}$
W_b	5.0 MIN.
W_1	9.0 ± 0.5
W_2	0.7 MIN.

TYPICAL CHARACTERISTICS (Ta = 25°C)





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



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