

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

DESCRIPTION

The 2SC4342 is a high-speed Darlington power transistor.
This transistor is ideal for high-precision control such as PWM control for pulse motors or bluishless of OA and FA equipment.

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SC4342	TO-126 (MP-5)

FEATURES

- On-chip C-to-E reverse diode
- Fast switching speed

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

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)}	±3.0	A
Collector Current (pulse)	I _{C(pulse)} ^{Note}	±5.0	A
Base Current (DC)	I _{B(DC)}	0.3	A
Total Power Dissipation (T _A = 25°C)	P _{T1}	1.3	W
Total Power Dissipation (T _C = 25°C)	P _{T2}	12	W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

Note PW ≤ 10 ms, Duty Cycle ≤ 50%

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

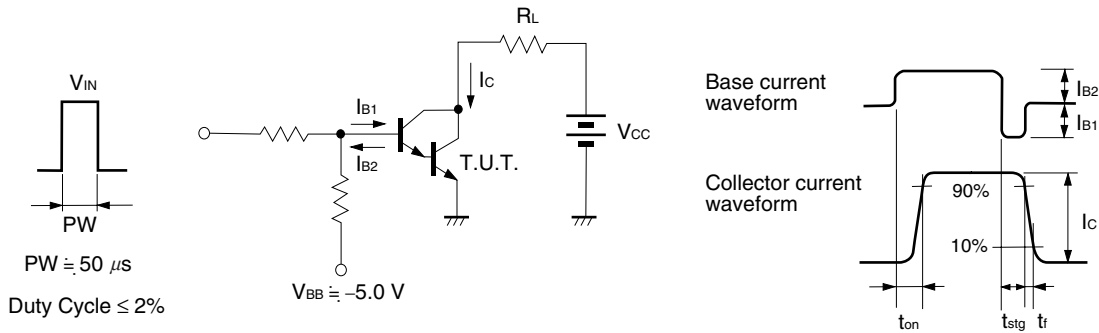
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CBO}	V _{CB} = 100 V, I _E = 0 A			1.0	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 5.0 V, I _C = 0 A			5.0	mA
DC Current Gain ^{Note}	h _{FE1}	V _{CE} = 2.0 V, I _C = 1.5 A	2000		20000	
	h _{FE2}	V _{CE} = 2.0 V, I _C = 3.0 A	1000			
Collector Saturation Voltage ^{Note}	V _{CE(sat)}	I _C = 1.5 A, I _B = 1.5 mA			1.5	V
Base Saturation Voltage ^{Note}	V _{BE(sat)}	I _C = 1.5 A, I _B = 1.5 mA			2.0	V
Turn-on Time	t _{on}	I _C = 1.5 A, R _L = 33 Ω		0.3		μs
Storage Time	t _{stg}	I _{B1} = -I _{B2} = 3.0 mA, V _{CC} ≐ 50 V		1.5		μs
Fall Time	t _f	Refer to the switching time (t _{on} , t _{stg} , t _f) test circuit		0.4		μs

Note Pulsed test PW ≤ 350 μs, Duty Cycle ≤ 2%

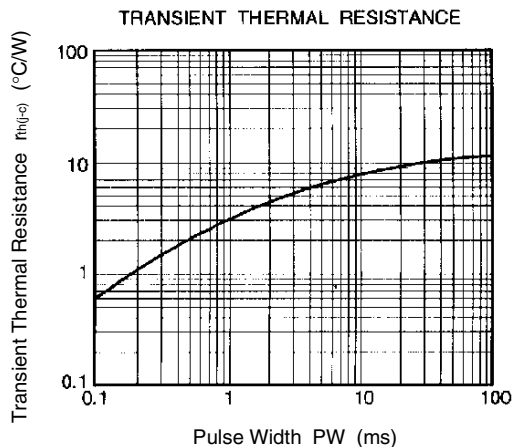
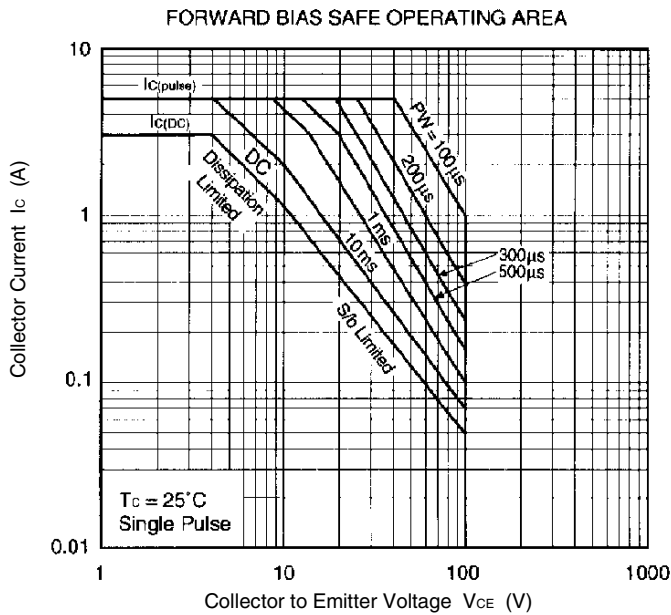
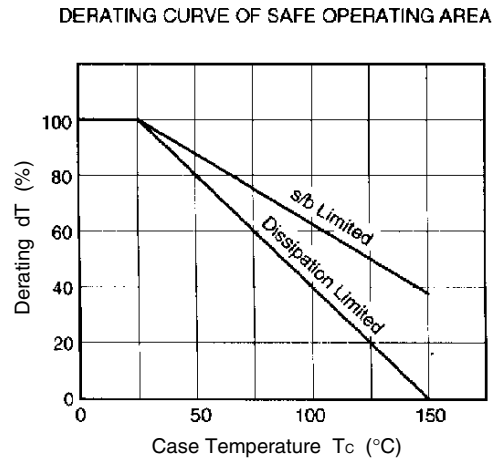
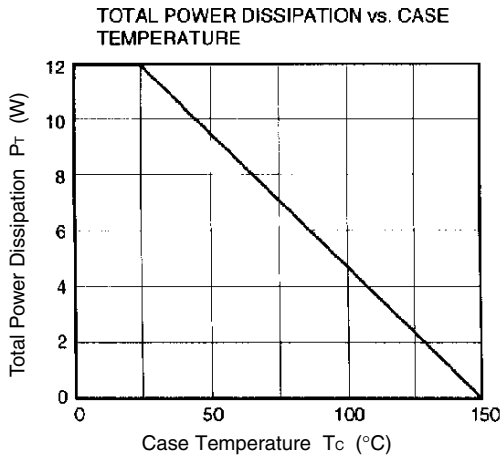
★ **h_{FE} CLASSIFICATION**

Marking	M	L	K
h _{FE1}	2000 to 5000	4000 to 10000	8000 to 20000

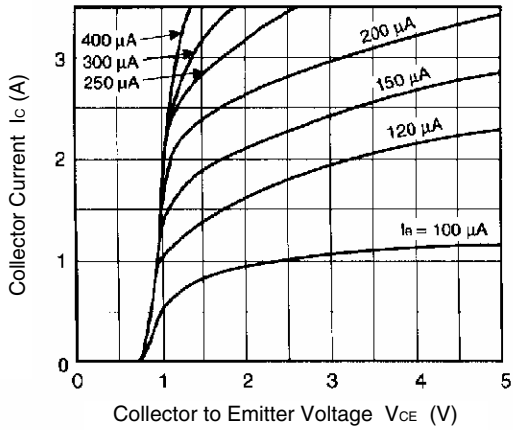
SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT



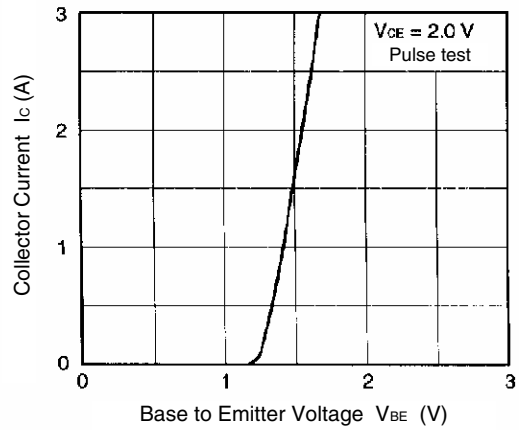
TYPICAL CHARACTERISTICS (T_A = 25°C)



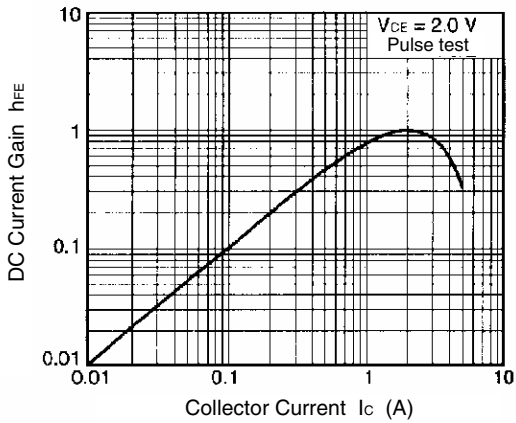
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



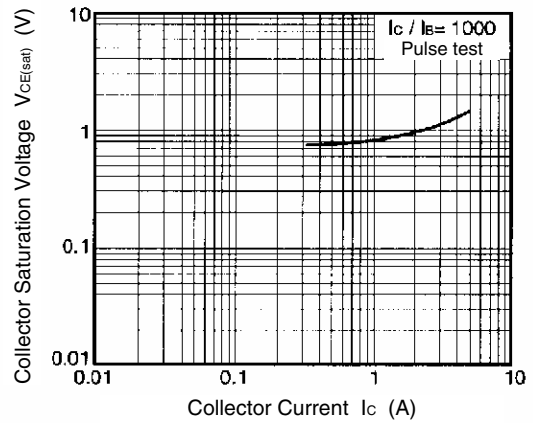
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



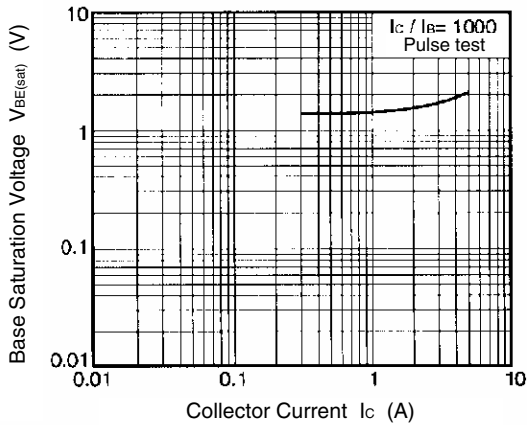
DC CURRENT GAIN vs. COLLECTOR CURRENT



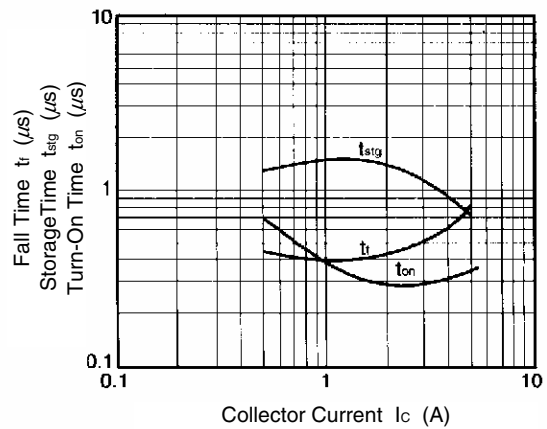
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT

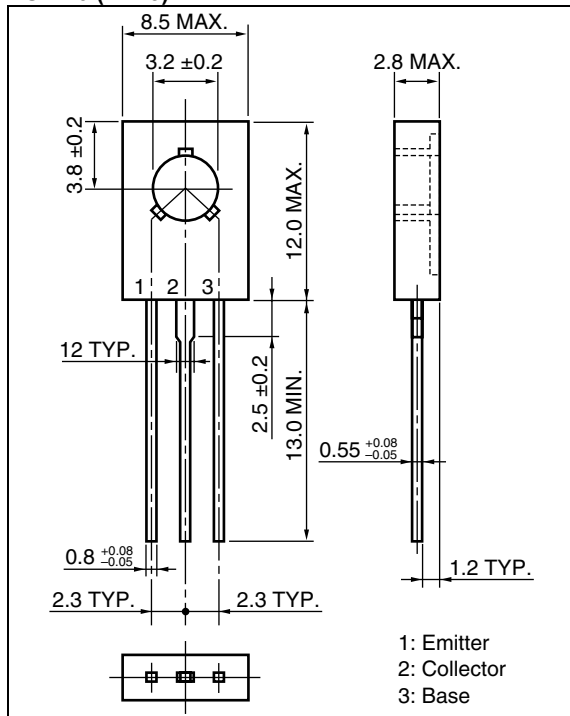


TURN ON TIME, STORAGE TIME AND FALL TIME vs. COLLECTOR CURRENT

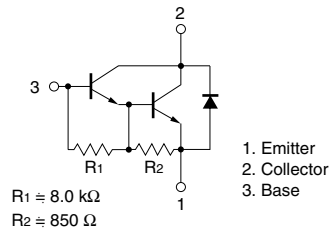


★ PACKAGE DRAWING (Unit: mm)

TO-126 (MP-5)



EQUIVALENT CIRCUIT



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