

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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DARLINGTON POWER TRANSISTOR
2SC4351

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

The 2SC4351 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

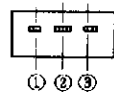
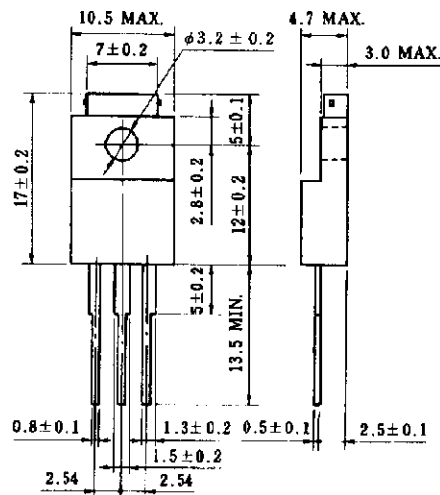
- Mold package that does not require an insulating board or insulation bushing
- On-chip C to B constant voltage diode for surge voltage absorption
- On-chip C to E reverse diode
- Fast switching speed

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

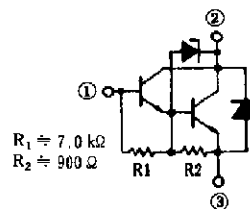
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	60 ± 10	V
Collector to emitter voltage	V _{CEO}	60 ± 10	V
Emitter to base voltage	V _{EBO}	8.0	V
Collector current (DC)	I _{C(DC)}	±5.0	A
Collector current (pulse)	I _{C(pulse)*}	±10	A
Base current (DC)	I _{B(DC)}	0.5	A
Total power dissipation	P _T (T _c = 25°C)	20	W
Total power dissipation	P _T (T _a = 25°C)	2.0	W
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* PW ≤ 10 ms, duty cycle ≤ 50%

PACKAGE DRAWING (UNIT: mm)



Electrode Connection
1. Base
2. Collector
3. Emitter



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

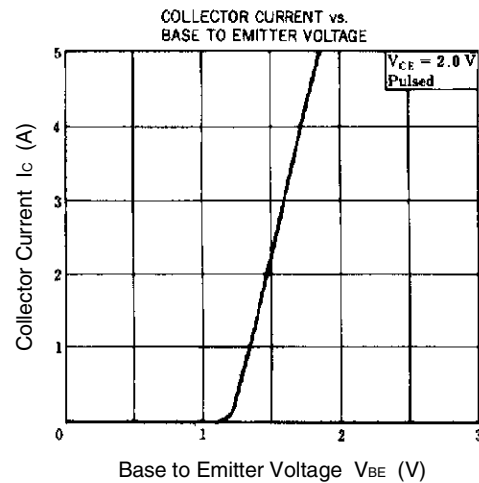
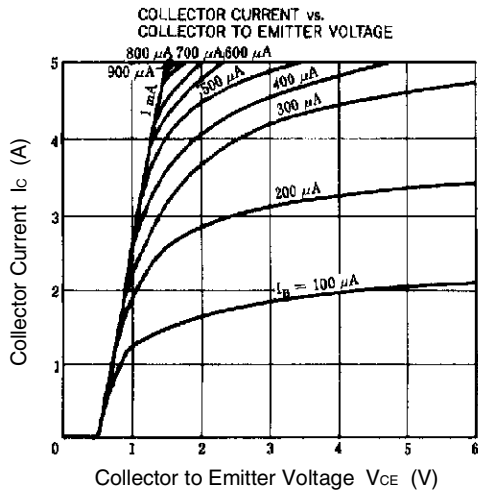
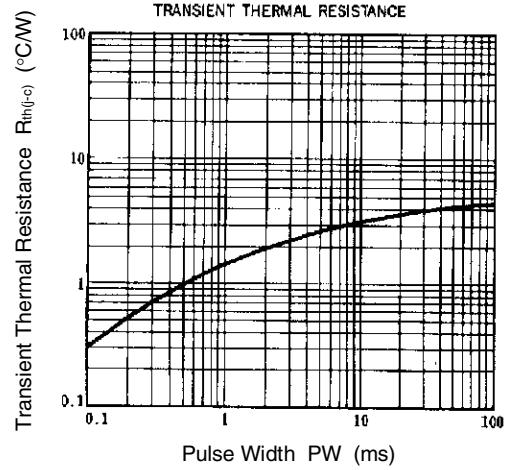
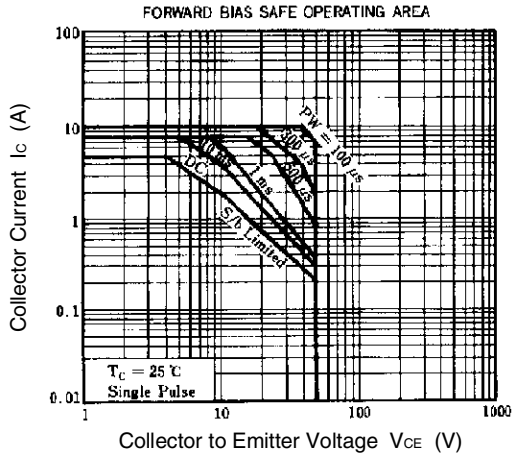
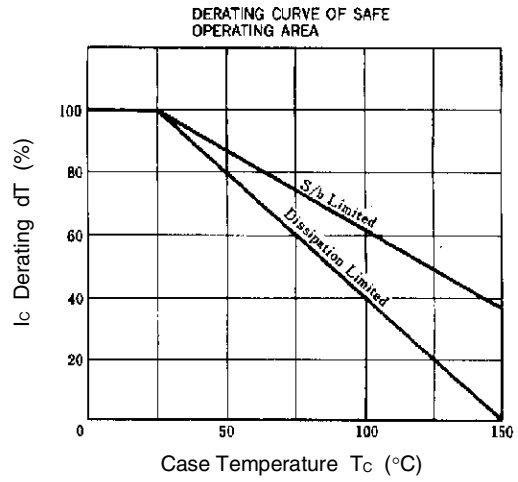
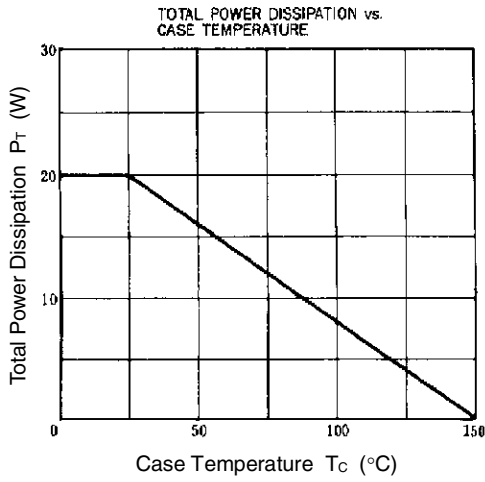
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$			0.5	μA
DC current gain	h_{FE1}^*	$V_{CE} = 2.0\text{ V}, I_C = 2.0\text{ A}$	2,000		20,000	
DC current gain	h_{FE2}^*	$V_{CE} = 2.0\text{ V}, I_C = 4.0\text{ A}$	500			
Collector saturation voltage	$V_{CE(sat)}^*$	$I_C = 2.0\text{ A}, I_B = 2.0\text{ mA}$			1.5	V
Base saturation voltage	$V_{BE(sat)}^*$	$I_C = 2.0\text{ A}, I_B = 2.0\text{ mA}$			2.0	V
Turn-on time	t_{on}	$I_C = 2.0\text{ A}, I_{B1} = -I_{B2} = 2.0\text{ mA},$ $R_L = 25\ \Omega, V_{CC} \cong 50\text{ V}$ Refer to the test circuit.		0.7		μs
Storage time	t_{stg}			2.5		μs
Fall time	t_f			0.6		μs

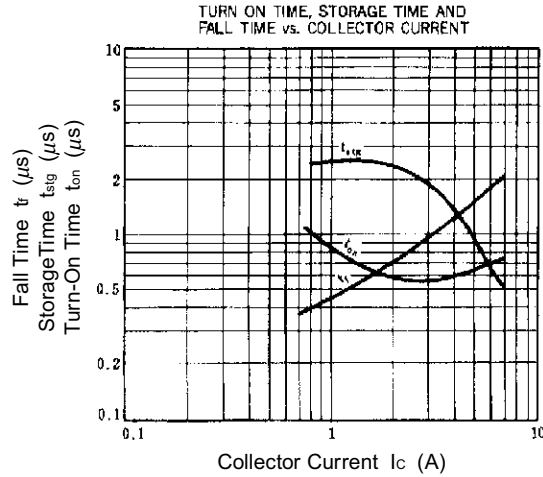
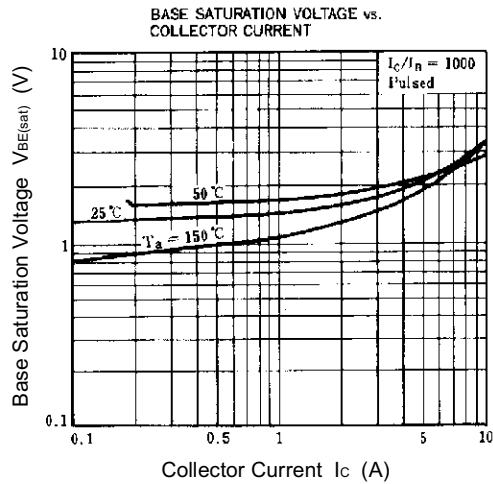
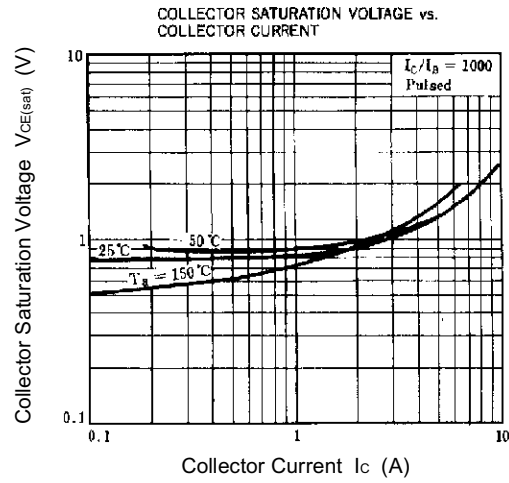
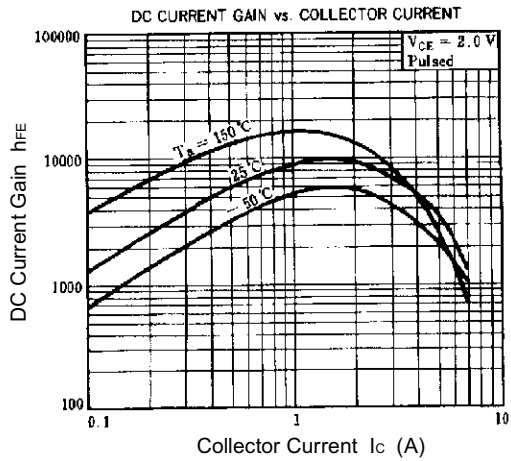
* Pulse test $PW \leq 350\ \mu\text{s}$, duty cycle $\leq 2\%$

h_{FE} CLASSIFICATION

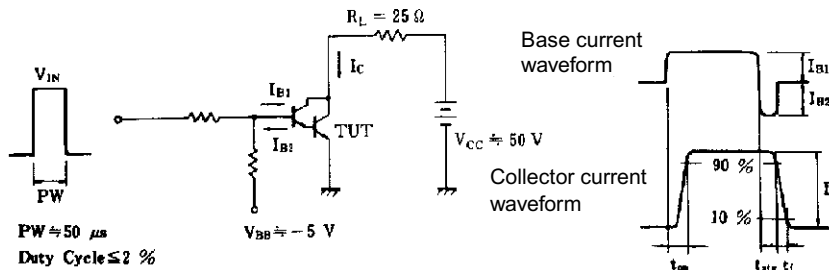
Marking	M	L	K
h_{FE1}	2,000 to 5,000	4,000 to 10,000	8,000 to 20,000

TYPICAL CHARACTERISTICS (Ta = 25°C)





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



[MEMO]

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