To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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RENESAS

DARLINGTON POWER TRANSISTOR

Phase-out/Discontinued

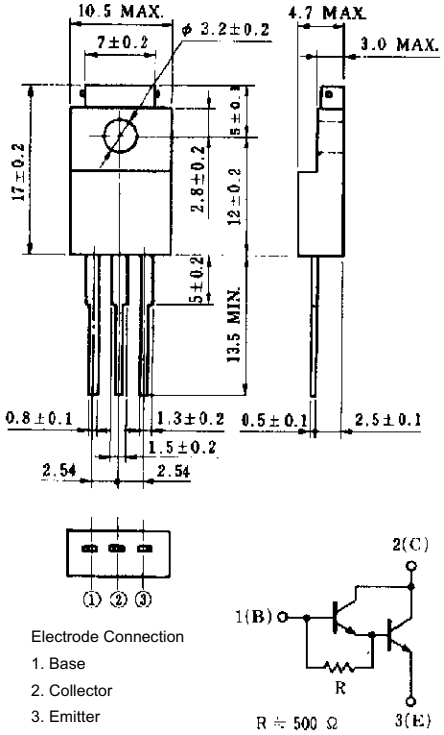
2SD1592

NPN SILICON TRIPLE DIFFUSED TRANSISTOR (DARLINGTON CONNECTION) FOR HIGH-VOLTAGE LOW-SPEED SWITCHING

FEATURES

- High DC current gain due to Darlington connection
- Low collector saturation
- Reverse deterrence type
- Ideal for use in devices such as pulse motor drivers and relay drivers of PC terminals, and ignitors of general-purpose engines.
- Mold package that does not require an insulating board or insulation bushing

PACKAGE DRAWING (UNIT: mm)



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	500	V
Collector to emitter voltage	V_{CEO}	+300, −10	V
Emitter to base voltage	V_{EBO}	10	V
Collector current	$I_{C(DC)}$	5.0	A
Collector current	$I_{C(pulse)}$*	10	A
Base current	$I_{B(DC)}$	0.5	A
Total power dissipation	P_T (Tc = 25°C)	30	W
Total power dissipation	P_T (Ta = 25°C)	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

* PW ≤ 300 μs, duty cycle ≤ 10%

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

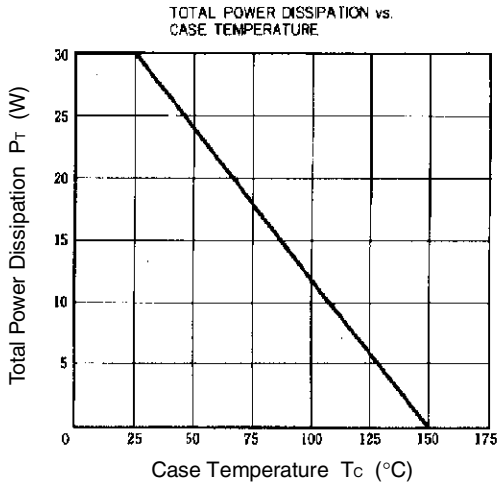
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 400 V, I_E = 0			10	μA
DC current gain	h_{FE1}*	V_{CE} = 2.0 V, I_C = 2.0 A	400		3,000	
DC current gain	h_{FE2}*	V_{CE} = 2.0 V, I_C = 3.0 A	100			
Collector saturation voltage	$V_{CE(sat)}$*	I_C = 2 A, I_B = 5 mA		1.0	1.5	V
Base saturation voltage	$V_{BE(sat)}$*	I_C = 2 A, I_B = 5 mA		1.6	2.0	V
Turn-on time	t_{on}	I_C = 3.0 A, I_{B1} = $-I_{B2}$ = 30 mA R_L = 50 Ω, V_{CC} ≅ 150 V		1.0		μs
Storage time	t_{stg}			12		μs
Fall time	t_f			6		μs

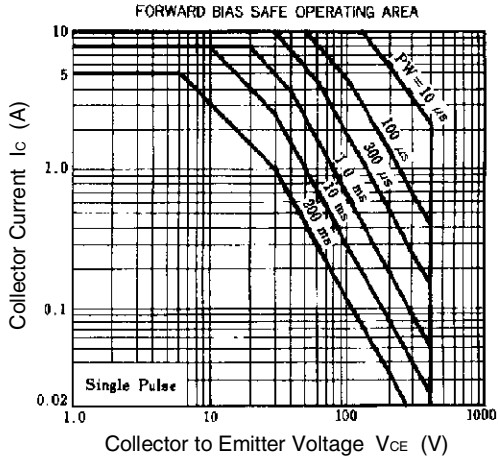
* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

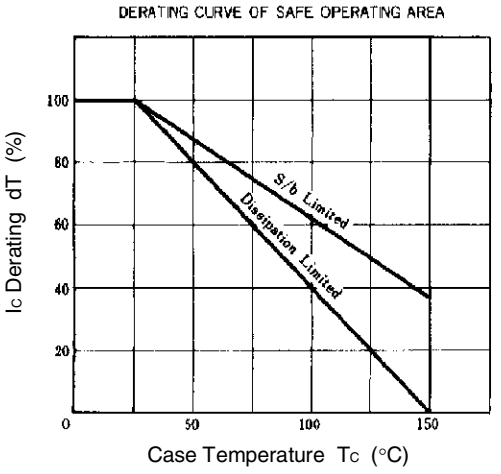
h_{FE} CLASSIFICATION

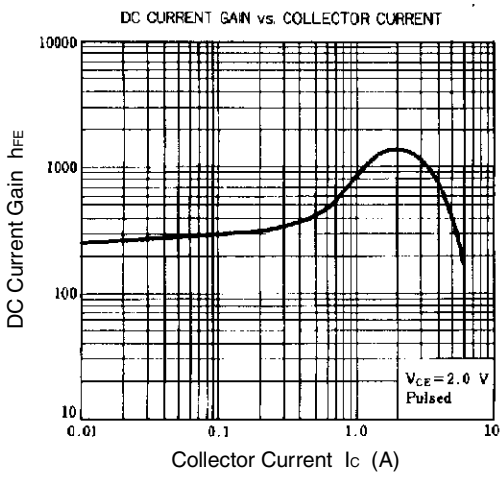
Marking	M	L	K
h_{FE}	400 to 800	600 to 1,200	1,000 to 3,000

TYPICAL CHARACTERISTICS (Ta = 25°C)

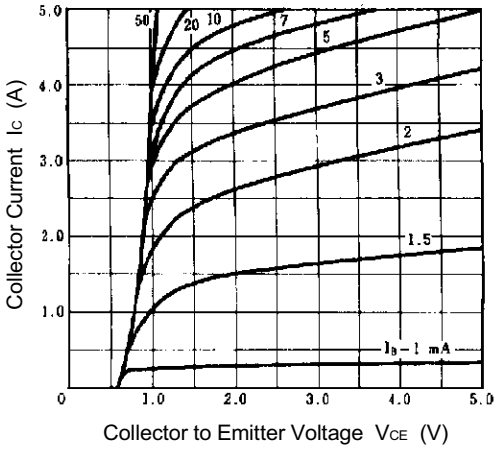








COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT