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April 1st, 2010 Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)
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SILICON POWER TRANSISTOR 2SD2162

NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION) FOR LOW-FREQUENCY POWER AMPLIFIERS AND LOW-SPEED SWITCHING

The 2SD2162 is a Darlington power transistor that can directly drive from the IC output. This transistor is ideal for motor drivers and solenoid drivers in such as OA and FA equipment.

In addition, a small resin-molded insulation type package contributes to high-density mounting and reduction of mounting cost.

FEATURES

- High here due to Darlington connection here $\geq 2,000$ (Vce = 2.0 V, Ic = 3.0 A)
- Full mold package that does not require an insulating board or insulation bushing

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	VcBO		150	٧
Collector to emitter voltage	VCEO		100	V
Emitter to base voltage	VEBO		7.0	V
Collector current (DC)	Ic(DC)		+8.0, -5.0	Α
Collector current (pulse)	IC(pulse)	PW ≤ 10 ms,	+12, -8.0	Α
		duty cycle ≤ 50%		
Base current (DC)	I _{B(DC)}		0.8	Α
Total power dissipation	Рт	Tc = 25°C	25	W
		T _A = 25°C	2.0	W
Junction temperature	Tj		150	°C
Storage temperature	T _{stg}		-55 to +150	°C

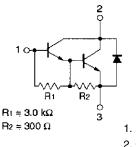
ORDERING INFORMATION

Ordering Name	Package		
2SD2162	Isolated TO-220		

(Isolated TO-220)



INTERNAL EQUIVALENT CIRCUIT



1. Base

2. Collector

3. Emitter

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ELECTRICAL CHARACTERISTICS (TA = 25°C)

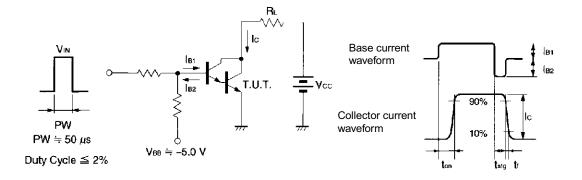
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	Ісво	Vcb = 100 V, IE = 0 A			1.0	μΑ
DC current gain	h _{FE1}	Vce = 2.0 V, Ic = 3.0 A ^{Note}	2,000		15,000	
	h _{FE2}	Vce = 2.0 V, Ic = 5.0 A ^{Note}	500			
Collector saturation voltage	V _{CE(sat)}	Ic = 3.0 A, I _B = 3.0 mA ^{Note}		0.9	1.5	V
Base saturation voltage	V _{BE(sat)}	Ic = 3.0 A, I _B = 3.0 mA ^{Note}		1.6	2.0	V
Gain bandwidth product	f⊤	Vce = 5.0 V, Ic = 0.8 A		30		MHz
Collector capacitance	Cob	Vcb = 10 V, IE = 0 A, f = 1.0 MHz		50		pF
Turn-on time	ton	Ic = 3.0 A, $R_L = 16.7 \Omega$,		1.0		μs
Storage time	t stg	lв1 = -lв2 = 3.0 mA, Vcc ≅ 50 V Refer to the test circuit.		3.5		μs
Fall time	tf	Tieres to the took one date.		1.2		μs

Note Pulse test PW \leq 350 μ s, duty cycle \leq 2%

hfe CLASSIFICATION

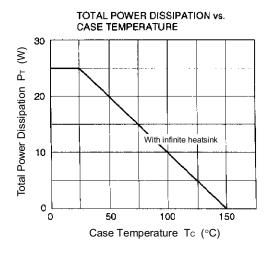
Marking	М	L	К
h _{FE1}	2,000 to 5,000	3,000 to 7,000	5,000 to 15,000

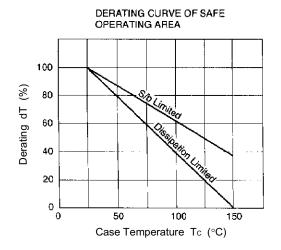
SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT



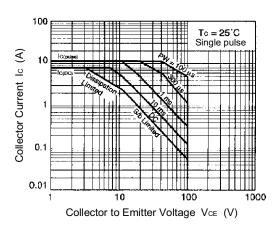


TYPICAL CHARACTERISTICS (TA = 25°C)

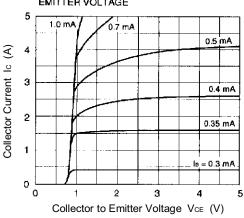




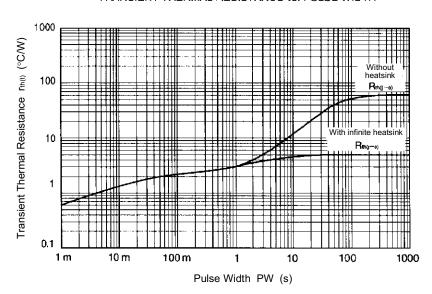
FORWARD BIAS SAFE OPERATING AREA







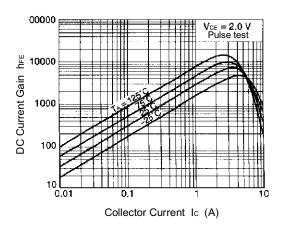
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



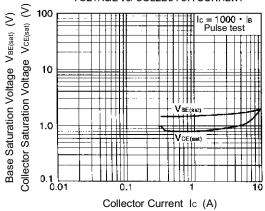
Data Sheet D14865EJ2V0DS

3

DC CURRENT GAIN vs. COLLECTOR CURRENT



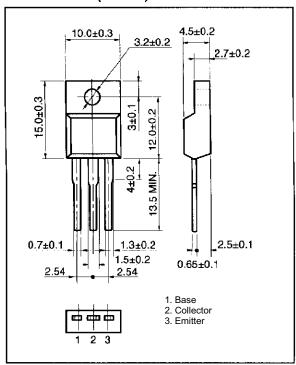
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT





PACKAGE DRAWING (UNIT: mm)

Isolated TO-220 (MP-45F)



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