

**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 h_{FE} due to Darlington connection
 $h_{FE} \geq 2,000$ ($V_{CE} = 2.0$ V, $I_C = 3.0$ A)
- Full mold package that does not require an insulating board or insulation bushing

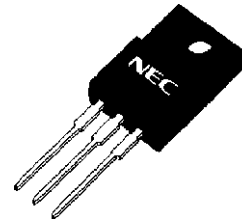
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		150	V
Collector to emitter voltage	V_{CEO}		100	V
Emitter to base voltage	V_{EBO}		7.0	V
Collector current (DC)	$I_{C(DC)}$		+8.0, -5.0	A
Collector current (pulse)	$I_{C(pulse)}$	$PW \leq 10$ ms, duty cycle $\leq 50\%$	+12, -8.0	A
Base current (DC)	$I_{B(DC)}$		0.8	A
Total power dissipation	P_T	$T_C = 25^\circ\text{C}$	25	W
		$T_A = 25^\circ\text{C}$	2.0	W
Junction temperature	T_j		150	$^\circ\text{C}$
Storage temperature	T_{sig}		-55 to +150	$^\circ\text{C}$

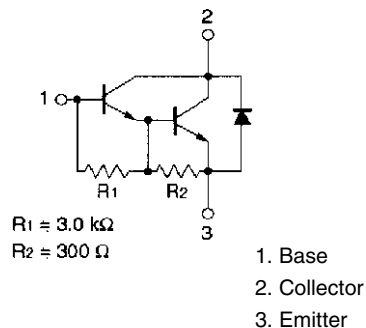
ORDERING INFORMATION

Ordering Name	Package
2SD2162	Isolated TO-220

(Isolated TO-220)



INTERNAL EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

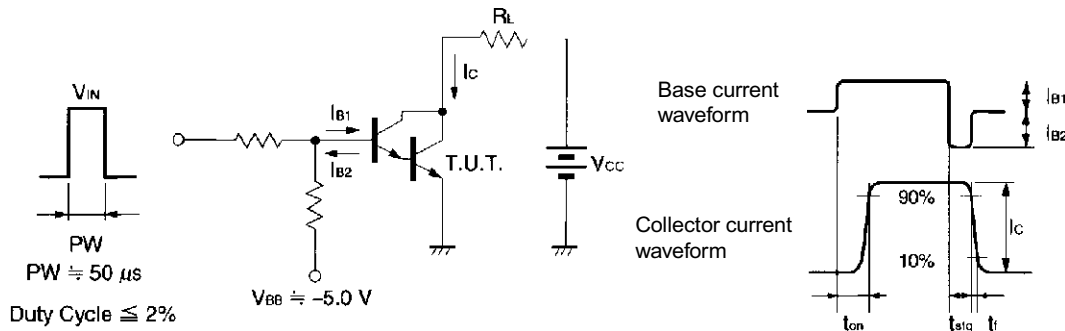
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I _{CB0}	V _{CB} = 100 V, I _E = 0 A			1.0	μA
DC current gain	h _{FE1}	V _{CE} = 2.0 V, I _C = 3.0 A ^{Note}	2,000		15,000	
	h _{FE2}	V _{CE} = 2.0 V, I _C = 5.0 A ^{Note}	500			
Collector saturation voltage	V _{CE(sat)}	I _C = 3.0 A, I _B = 3.0 mA ^{Note}		0.9	1.5	V
Base saturation voltage	V _{BE(sat)}	I _C = 3.0 A, I _B = 3.0 mA ^{Note}		1.6	2.0	V
Gain bandwidth product	f _T	V _{CE} = 5.0 V, I _C = 0.8 A		30		MHz
Collector capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0 A, f = 1.0 MHz		50		pF
Turn-on time	t _{on}	I _C = 3.0 A, R _L = 16.7 Ω, I _{B1} = -I _{B2} = 3.0 mA, V _{CC} ≅ 50 V Refer to the test circuit.		1.0		μs
Storage time	t _{stg}			3.5		μs
Fall time	t _f			1.2		μs

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

h_{FE} CLASSIFICATION

Marking	M	L	K
h _{FE1}	2,000 to 5,000	3,000 to 7,000	5,000 to 15,000

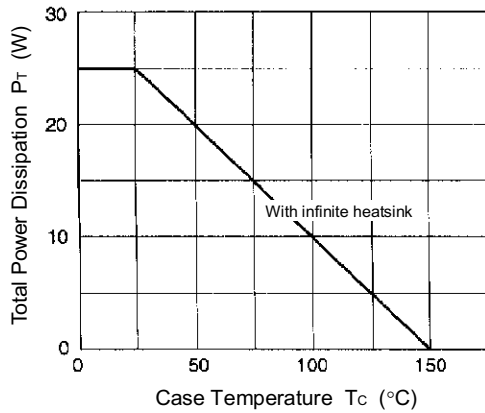
SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT



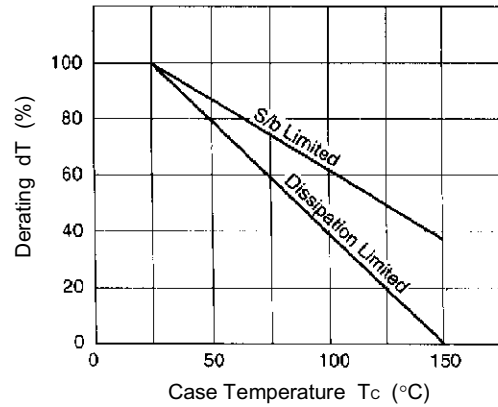
TYPICAL CHARACTERISTICS (T_A = 25°C)

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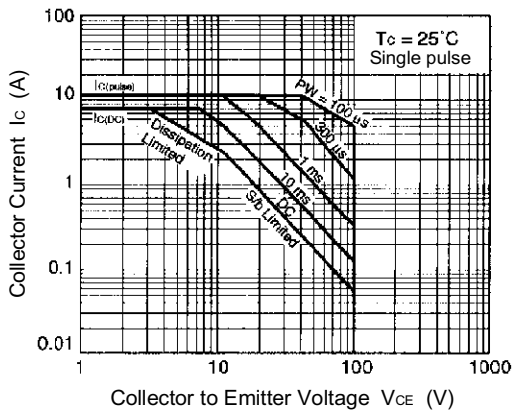
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



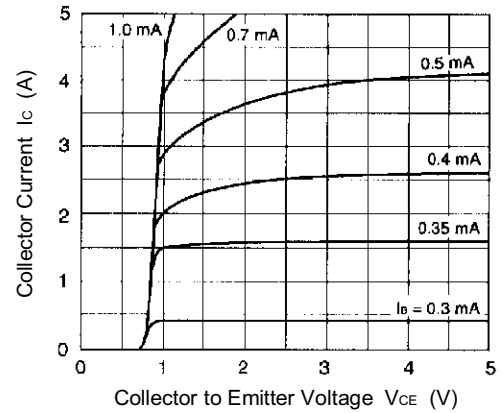
DERATING CURVE OF SAFE OPERATING AREA



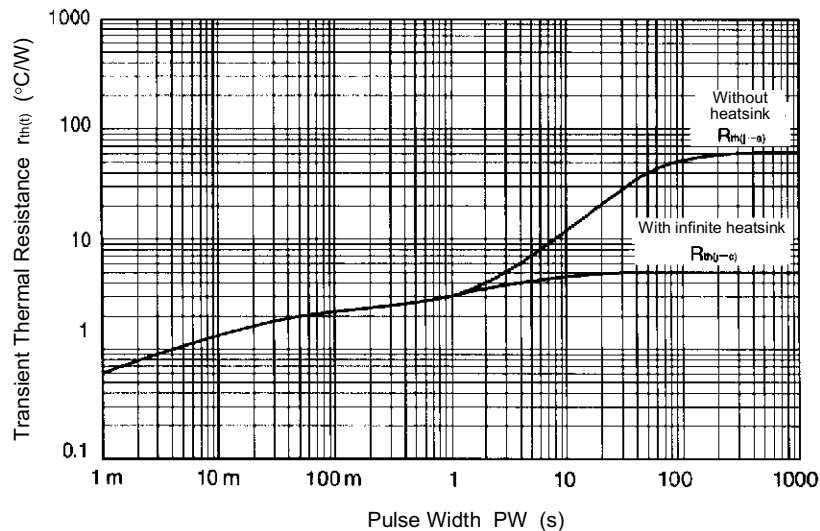
FORWARD BIAS SAFE OPERATING AREA



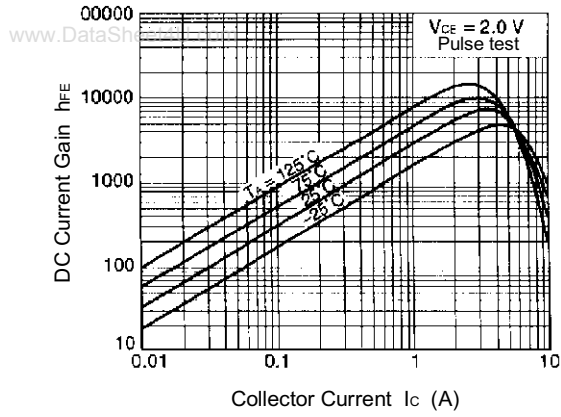
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



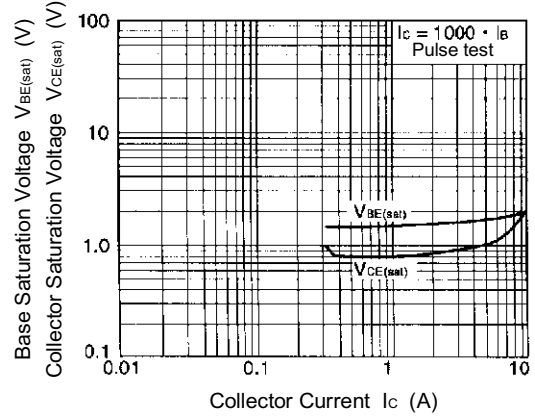
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



DC CURRENT GAIN vs. COLLECTOR CURRENT

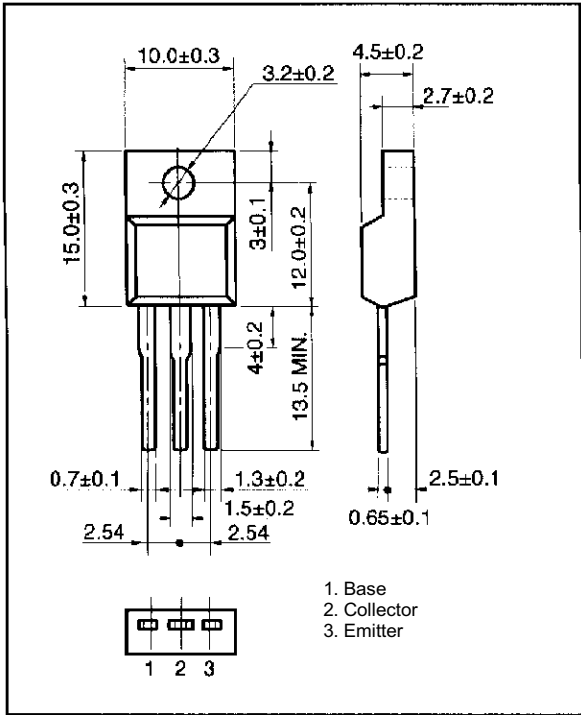


BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

www.DataSheet4U.com Isolated TO-220 (MP-45F)



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