

DARLINGTON POWER TRANSISTOR 2SA1720

ORDERING INFORMATION

Package

Isolated TO-220

Part No.

2SA1720

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

The 2SA1720 is a high-speed Darlington power transistor.

This transistor is ideal for high-precision control such as PWM control for pulse motors or brushless motors in OA and FA equipment.

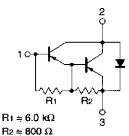
FEATURES

- Mold package that does not require an insulating board or insulation bushing
- On-chip C-to-E reverse diode
- · Fast switching speed

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	Vсво		-100	٧
Collector to emitter voltage	VCEO		-100	V
Emitter to base voltage	VEBO		-8.0	V
Collector current (DC)	Ic(DC)		-10, +3.0	Α
Collector current (pulse)	IC(pulse)	PW ≤ 10 ms,	∓20	Α
		duty cycle ≤ 50%		
Base current (DC)	I _{B(DC)}		-1.0	Α
Total power dissipation	Р⊤	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

EQUIVALENT CIRCUIT



- 1. Base
- 2. Collector
- 3. Emitter

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ELECTRICAL CHARACTERISTICS (TA = 25°C)

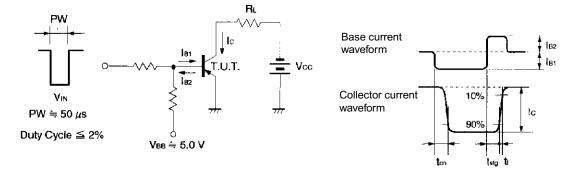
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	Ісво	Vcb = -100 V, IE = 0 A			-10	μΑ
DC current gain	h _{FE1}	$V_{CE} = -2.0 \text{ V}, I_{C} = -5.0 \text{ A}^{Note}$	4,000		20,000	
DC current gain	hFE2	$V_{CE} = -2.0 \text{ V, Ic} = -10 \text{ A}^{\text{Note}}$	500			
Collector saturation voltage	V _{CE(sat)}	$I_{C} = -5.0 \text{ A}, I_{B} = -5.0 \text{ mA}^{Note}$		-0.9	-1.5	V
Base saturation voltage	V _{BE(sat)}	$Ic = -5.0 \text{ A}, I_B = -5.0 \text{ mA}^{Note}$		-1.5	-2.0	V
Gain bandwidth product	f⊤	$V_{CE} = -5.0 \text{ V}, I_{C} = -5.0 \text{ A}$		100		MHz
Turn-on time	ton	Ic = -5.0 A, R _L = 10 Ω,		0.2		μs
Storage time	tstg	$l_{B1} = -l_{B2} = -5$ mA, $V_{CC} \cong -50$ V Refer to the switching time (ton, tstg, tr) test circuit.		1.5		μs
Fall time	t _f			0.7		μs

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

hfe CLASSIFICATION

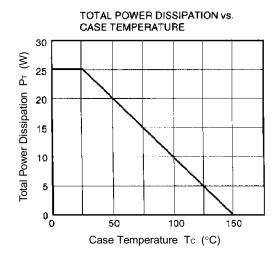
Marking	L	K		
h _{FE1}	4,000 to 10,000	8,000 to 20,000		

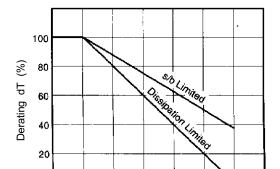
SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT





TYPICAL CHARACTERISTICS (TA = 25°C)





100

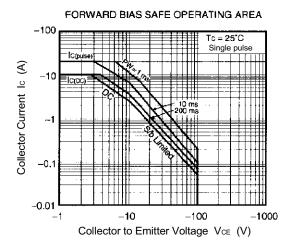
Case Temperature Tc (°C)

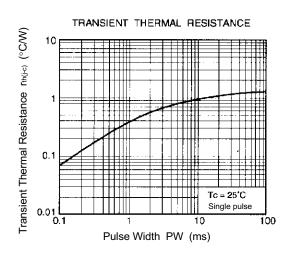
150

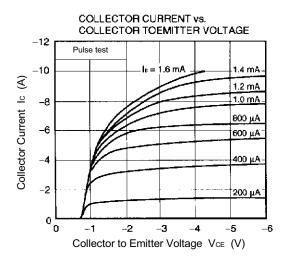
50

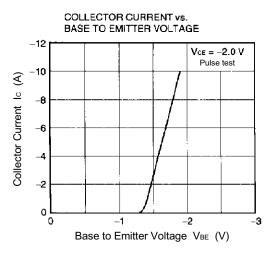
0 F

DERATING CURVE OF SAFE OPERATING AREA

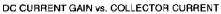


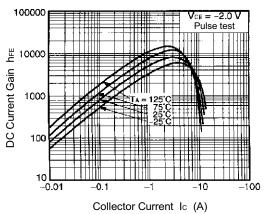


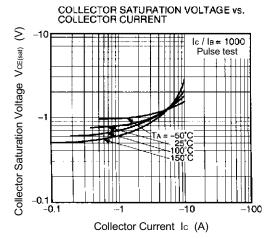




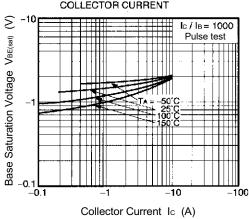
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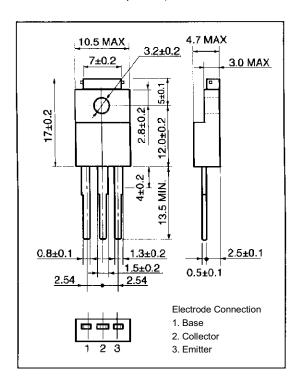
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT





PACKAGE DRAWING (UNIT: mm)

Isolated TO-220 (MP-45)



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