NPN 3.0A 50V Power Transistor

Datasheet

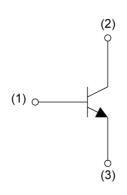
AEC-Q101 Qualified

Parameter	Value
V _{CEO}	50V
Ic	3A

DPAK TO-252

Features

- 1) Suitable for Power Driver.
- 2) Complementary PNP Types: 2SAR573D3 FRA.
- 3) Low $V_{CE(sat)}$ $V_{CE(sat)}$ =350mV(Max.). (I_C/I_B =1A/50mA)



●Inner circuit

Outline

- (1) Base (2) Collector
- (3) Emitter

Application

LOW FREQUENCY AMPLIFIER

Packaging specifications

Part No.	Package	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SCR573D3 FRA	TO-252 (DPAK)	TL	330	16	2500	2SCR573D3

● Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V _{CEO}	50	V
Emitter-base voltage	V_{EBO}	6	V
Collector ourse of	I _C	3	Α
Collector current	I _{CP} *1	6	Α
Power dissipation	P _D *2	10	W
Junction temperature	T _j	150	°C
Range of storage temperature	T _{stg}	-55 to +150	°C

● Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
raiainetei	Symbol	Conditions	Min.	Тур.	Max.	
Collector-base breakdown voltage	BV _{CBO}	I _C = 100μA	50	-	-	V
Collector-emitter breakdown voltage	BV _{CEO}	I _C = 1mA	50	-	-	V
Emitter-base breakdown voltage	BV _{EBO}	I _E = 100μA	6	-	-	V
Collector cut-off current	I _{CBO}	V _{CB} = 50V	-	-	1	μA
Emitter cut-off current	I _{EBO}	V _{EB} = 4V	-	-	1	μA
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 1A, I _B = 50mA	-	130	350	mV
DC current gain	h _{FE}	V _{CE} = 3V, I _C = 100mA	180	-	450	-
Transition frequency	f _T *3	$V_{CE} = 10V, I_{E} = -600mA,$ f = 100MHz	-	320	-	MHz
Output capacitance	C _{ob}	$V_{CB} = 10V$, $I_E = 0A$, $f = 1MHz$	ı	20	1	pF
Turn-On time	t _{on}	I _C = 1.5A, I _{B1} = 150mA,	ı	70	ı	ns
Storage time	t _{stg}	$I_{B2} = -150 \text{mA},$ $V_{CC} \approx 10 \text{V},$	ı	400	ı	ns
Fall time	t _f	$R_L = 6.8\Omega$ See test circuit	1	120	1	ns

^{*1} Pw=10ms Single Pulse

^{*2} Tc=25℃

^{*3} Pulsed

● Electrical characteristic curves(T_a = 25°C)

Fig.1 Grounded Emitter Propagation Characteristics

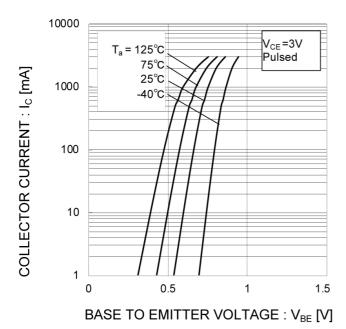
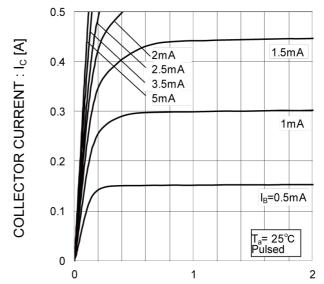


Fig.2 Typical Output Characteristics



COLLECTOR TO EMITTER VOLTAGE: V_{CE} [V]

Fig.3 DC Current Gain vs. Collector Current(I)

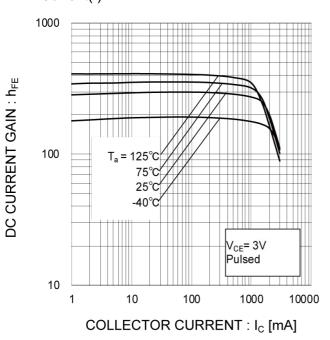
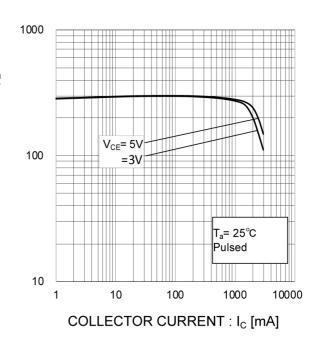


Fig.4 DC Current Gain vs. Collector Current(II)



DC CURRENT GAIN: he

● Electrical characteristic curves(T_a = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current(I)

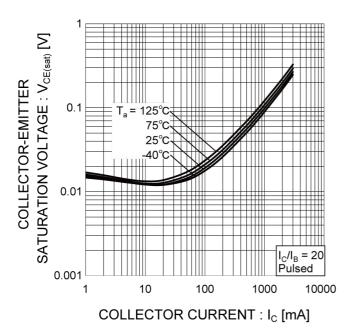


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

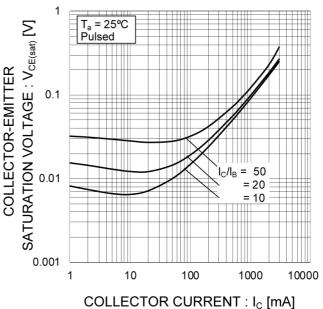


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

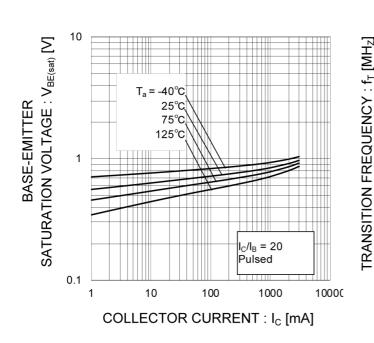
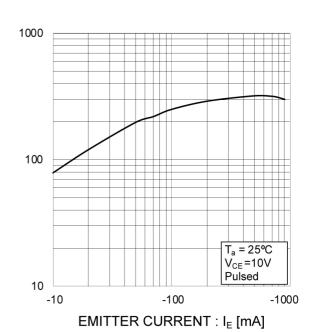


Fig.8 Gain Bandwidth Product vs. Emitter Current



● Electrical characteristic curves(T_a = 25°C)

Fig.9 Emitter input capacitance vs.

Emitter-Base Voltage

Collector output capacitance vs.

Collector-Base Voltage

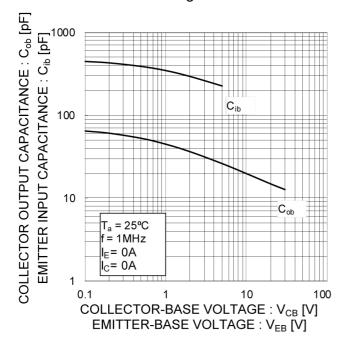
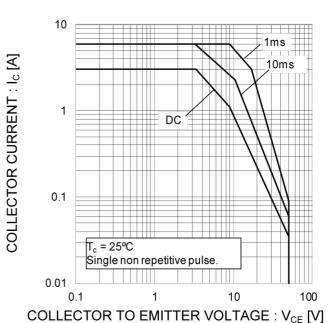
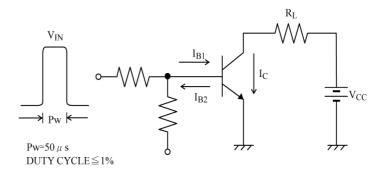
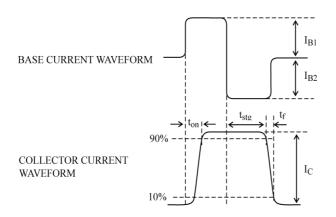


Fig.10 Safe Operating Area

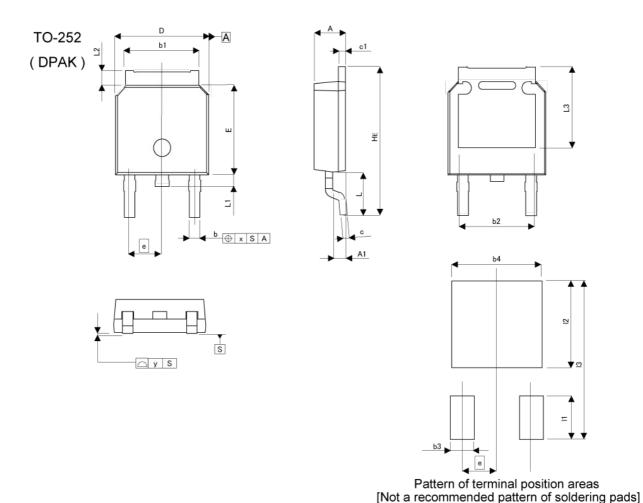


SWITCHING TIME TEST CIRCUIT





Dimensions



MILIMETERS **INCHES** DIM MIN MAX MIN MAX 0.083 2.10 2.30 0.091 Α A1 0.70 1.10 0.028 0.043 b 0.65 0.85 0.026 0.033 0.213 5.10 0.201 5.40 b1 b2 5.10 0.201 0.40 0.60 0.016 0.024 C 0.40 0.60 0.016 0.024 c1 0.252 D 6.40 6.80 0.268 е 6.00 0.236 0.252 6.40 E HE 9.50 10.50 0.374 0.413 0.114 0.70 0.028 0.035 L1 0.90 0.70 0.028 0.051 L2 1.30 L3 0.10 0.004 Х 0.10 0.004

DIM MILIME		ETERS	INCHES	
DIIVI	MIN	MAX	MIN	MAX
b3	-	1.10		0.043
b4	-	5.40	7 - 1	0.213
l1	2	2.90	-	0.114
12	-	5.50	-	0.217
13	2	10.50	-	0.413

Dimension in mm/inches



Notice

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1. If you intend to use our Products in devices requiring extremely high reliability (such as medical equipment (Note 1), aircraft/spacecraft, nuclear power controllers, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property ("Specific Applications"), please consult with the ROHM sales representative in advance. Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of any ROHM's Products for Specific Applications.

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JÁPAN	USA	EU	CHINA
CLASSIII	ОГУССШ	CLASS II b	CL ACCIII
CLASSIV	CLASSⅢ	CLASSIII	CLASSⅢ

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 - [b] Installation of redundant circuits to reduce the impact of single or multiple circuit failure
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 - [b] Use of our Products outdoors or in places where the Products are exposed to direct sunlight or dust
 - [c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - [d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - [e] Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
 - [f] Sealing or coating our Products with resin or other coating materials
 - [g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
 - [h] Use of the Products in places subject to dew condensation
- 4. The Products are not subject to radiation-proof design.
- 5. Please verify and confirm characteristics of the final or mounted products in using the Products.
- 6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- 7. De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
- 8. Confirm that operation temperature is within the specified range described in the product specification.
- 9. ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

Precaution for Mounting / Circuit board design

- 1. When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- 2. In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

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- 1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
- 2. You agree that application notes, reference designs, and associated data and information contained in this document are presented only as guidance for Products use. Therefore, in case you use such information, you are solely responsible for it and you must exercise your own independent verification and judgment in the use of such information contained in this document. ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of such information.

Precaution for Electrostatic

This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of lonizer, friction prevention and temperature / humidity control).

Precaution for Storage / Transportation

- 1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
 - [a] the Products are exposed to sea winds or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
 - [b] the temperature or humidity exceeds those recommended by ROHM
 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
- Even under ROHM recommended storage condition, solderability of products out of recommended storage time period
 may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is
 exceeding the recommended storage time period.
- 3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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Rev.001



2SCR573D3FRA - Web Page

Distribution Inventory

Part Number	2SCR573D3FRA
Package	TO-252
Unit Quantity	2500
Minimum Package Quantity	2500
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ROHM Semiconductor: 2SCR573D3FRATL

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