

PNP complex transistor with schottky barrier diode

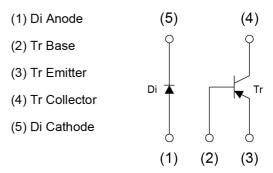
Parameter	Value
V _{CEO}	-12V
IC	-500mA

● Outline SOT-353 SC-88A UMT5

Features

1)The 2SA2018 and a diode are housed independently in a SOT-353 package.

•Inner circuit



Application

General purpose small signal amplifier

Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
UML4N	SOT-353 (UMT5)	2021	TR	180	8	3000	L4

● Absolute maximum ratings (T_a = 25°C)

Pin No.1-5 Diode

Parameter	Symbol	Value	Unit
Average rectified forward current	Io	200	mA
Forward current surge peak (60Hz, 1cyc)	I _{FSM}	1	Α
Reverse voltage	V _R	30	V
Junction temperature	T _j	125	°C

Pin No.2-3-4 Transistor

Parameter	Symbol	Value	Unit
Collector-base voltage	V _{CBO}	-15	V
Collector-emitter voltage	V _{CEO}	-12	V
Emitter-base voltage	V _{EBO}	-6	V
0-11	I _C	-500	mA
Collector current	I _{CP}	-1	Α
Junction temperature	T _j	150	°C

Each element

Parameter	Symbol	Value	Unit
Power dissipation	P _D *1,*2	150	mW/Total
Range of storage temperature	T _{stg}	-55 ~ +125	°C

● Electrical characteristics (T_a = 25°C)

Pin No.1-5 Diode

Danamatan	0	Canditiana	Values			1.114
Parameter Symbol		Conditions	Min.	Тур.	Max.	Unit
Forward voltage	V_R	I _F = 200mA	-	0.40	0.50	V
Reverse current	I _R	V _R = 10V	-	4.0	30	μA

Pin No.2-3-4 Transistor

Davameter	Cumahad	Conditions	Values			I Incit
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-base breakdown voltage	BV _{CBO}	I _C = -10μA	-15	-	-	V
Collector-emitter breakdown voltage	BV _{CEO}	I _C = -1mA	-12	ı	1	V
Emitter-base breakdown voltage	BV _{EBO}	I _E = -10μA	-6	-	-	V
Collector cut-off current	I _{CBO}	V _{CB} = -15V	-	-	-100	nA
Emitter cut-off current	I _{EBO}	V _{EB} = -6V	-	-	-100	nA
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -200mA, I _B = -10mA	-	-100	-250	mV
DC current gain	h _{FE}	$V_{CE} = -2V, I_{C} = -10mA$	270	-	680	-
Transition frequency	f _T	V _{CE} = -2V, I _E = 10mA, f = 100MHz	-	260	-	MHz
Output capacitance	C _{ob}	V _{CB} = -10V, I _E = 0A, f = 1MHz	-	6.5	-	pF

^{*1} Each termunal mounted on a reference land.

^{*2 120}mW per element must not be exceeded.

● Electrical characteristic curves(Ta=25°C) < For Diode>

Fig.1 Reverse Current vs.
Reverse Voltage

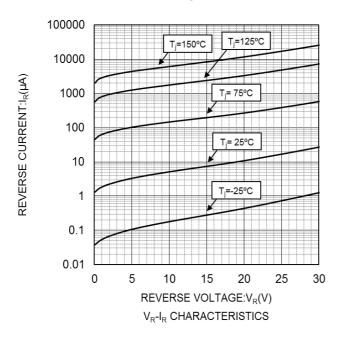


Fig.2 Forward Current vs. Forward Voltage

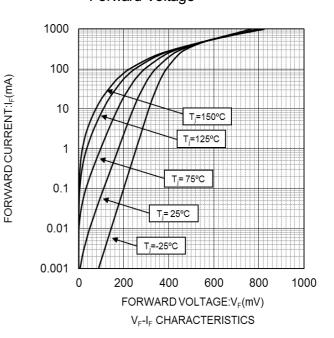
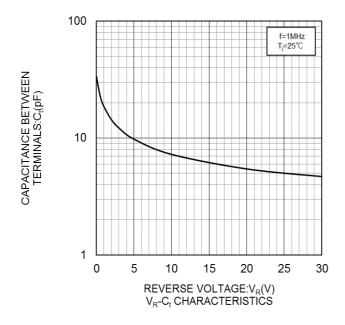


Fig.3 Capacitance Between Terminals vs. Reverse Voltage



● Electrical characteristic curves(T_a=25°C) < For Transistor>

Fig.4 Ground Emitter Propagation Characteristics

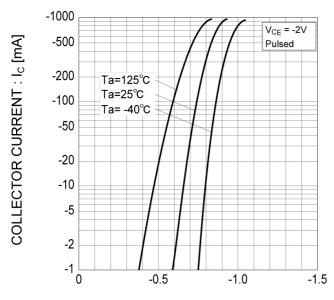
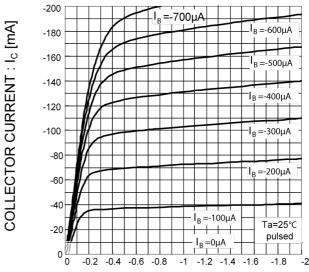


Fig.5 Typical Output Characteristics



BASE TO EMITTER VOLTAGE: V_{BE} [V]

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

Fig.6 DC Current Gain vs. Collector Current (I)

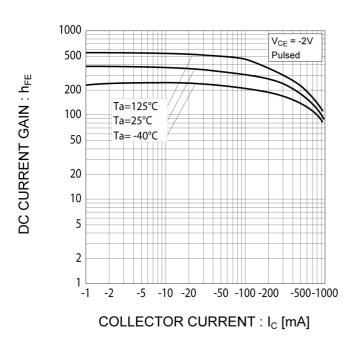
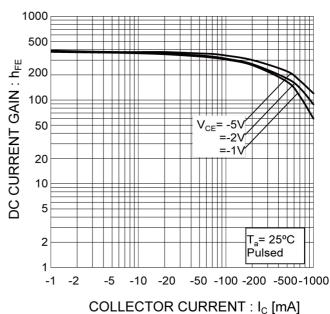


Fig.7 DC Current Gain vs. Collector Current (II)



● Electrical characteristic curves(Ta=25°C) < For Transistor>

Fig.8 Collector-Emitter Saturation Voltage vs. Collector Current (I)

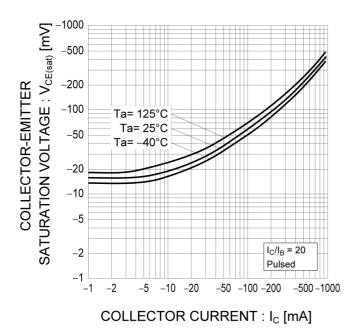
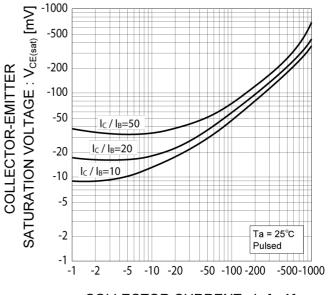


Fig.9 Collector-Emitter Saturation
Voltage vs. Collector Current (II)



COLLECTOR CURRENT: Ic [mA]

Fig.10 Base-Emitter Saturation Voltage vs. Collector Current

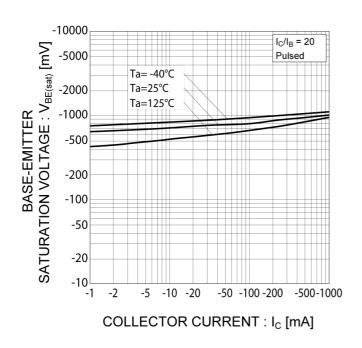
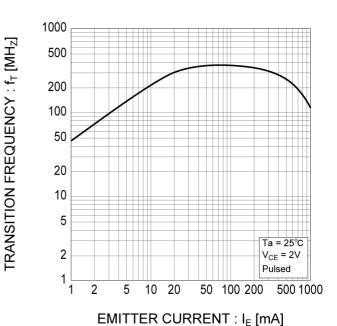


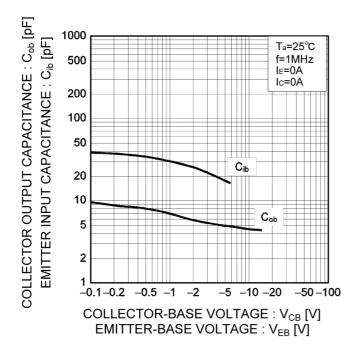
Fig.11 Gain Bandwidth Product vs. Emitter Current

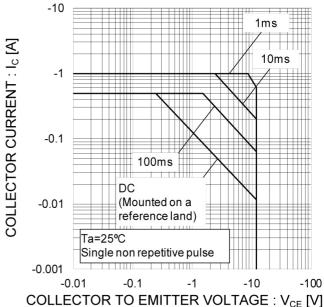


● Electrical characteristic curves(T_a=25°C) < For Transistor>

Fig.12 Emitter Input Capacitance vs.
Emitter-Base Voltage
Collector Output Capacitance vs.
Collector-Base Voltage

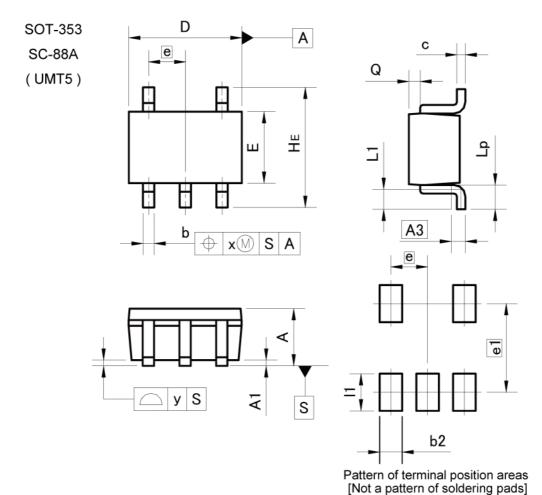
Fig.13 Safe Operating Area





ROHM

Dimensions



MILIMETERS INCHES DIM MIN MAX MIN MAX 0.80 1.00 0.031 0.039 Α1 0.00 0.10 0.000 0.004 A3 0.25 0.010 b 0.15 0.30 0.006 0.012 С 0.10 0.20 0.004 800.0 D 1.90 2.10 0.075 0.083 Ε 1.15 1.35 0.045 0.053 0.65 0.026 е HE 2.00 2.20 0.079 0.087 L1 0.10 0.40 0.004 0.016 Lp 0.25 0.55 0.010 0.022 Q 0.004 0.012 0.10 0.30 0.004 0.10 Х

DIM	MILIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
b2	=	0.40	.=	0.016	
e1	1.55		0.0	61	
11	-	0.65		0.026	

0.10

Dimension in mm/inches

У



0.004

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CLASSⅢ	CL ACCIII	CLASS II b	CI VCCIII
CLASSIV	CLASSII	CLASSⅢ	CLASSⅢ

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 - [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
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- 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.
- ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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- 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.
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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).

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 - [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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UML4N - Web Page

Distribution Inventory

Part Number	UML4N
Package	UMT5
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes