

PNP complex transistor with schottky barrier diode

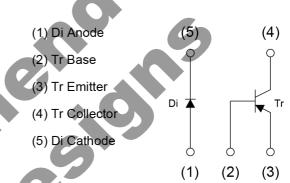
Parameter	Value
V _{CEO}	-12V
IC	-500mA

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	A
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
Collector current	Ic	-500	mA
Collector current	I _{CP}	-1	А
Junction temperature	Tj	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

Darameter	Cymahal	Canditions	Values			1.1-24
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Forward voltage	V_R	I _F = 200mA	1	0.40	0.50	V
Reverse current	I_R	V _R = 10V	1	4.0	30	μA

Pin No.2-3-4 Transistor

Danamatan	0	Values			Linit	
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-base breakdown voltage	BV_CBO	I _C = -10μA	-15	5	-	V
Collector-emitter breakdown voltage	BV _{CEO}	I _C = -1mA	-12	1	1	V
Emitter-base breakdown voltage	BV _{EBO}	Ι _Ε = -10μΑ	6	-	-	٧
Collector cut-off current	I _{CBO}	V _{CB} =-15V	1	-	-100	nA
Emitter cut-off current	I _{EBO}	V _{EB} = -6V	-	-	-100	nA
Collector-emitter saturation voltage	V _{CE(sat)}	$I_C = -200 \text{mA}, I_B = -10 \text{mA}$	-	-100	-250	mV
DC current gain	h _{FE}	$V_{CE} = -2V, I_{C} = -10mA$	270	-	680	1
Transition frequency	f⊤	$V_{CE} = -2V, I_{E} = 10mA,$ 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

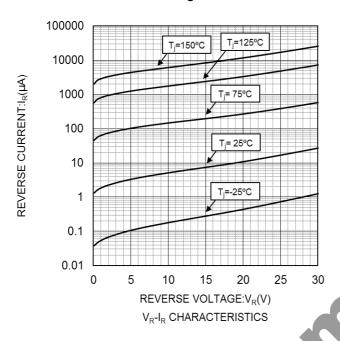


Fig.2 Forward Current vs. Forward Voltage

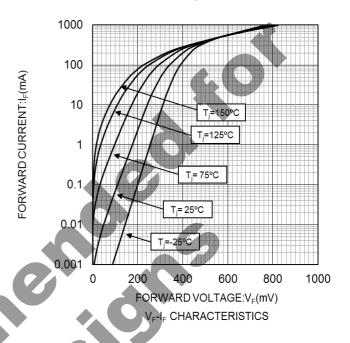
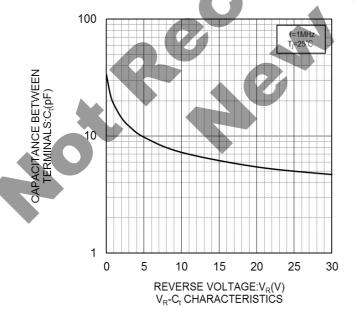
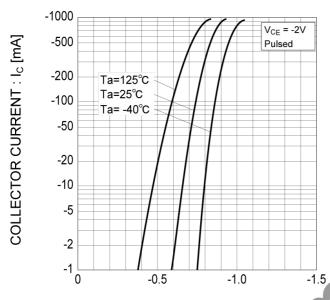


Fig.3 Capacitance Between Terminals vs. Reverse Voltage



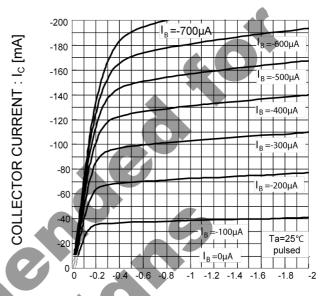
● Electrical characteristic curves(T_a=25°C) < For Transistor>

Fig.4 Ground Emitter Propagation Characteristics



BASE TO EMITTER VOLTAGE: VBE. [V]

Fig.5 Typical Output Characteristics



COLLECTOR TO EMITTER VOLTAGE : $V_{CE}\left[V\right]$

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

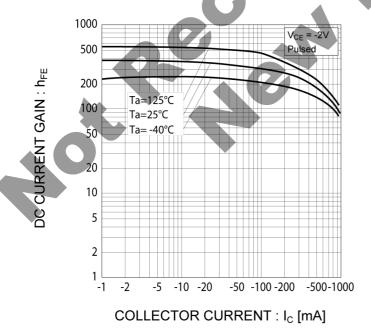
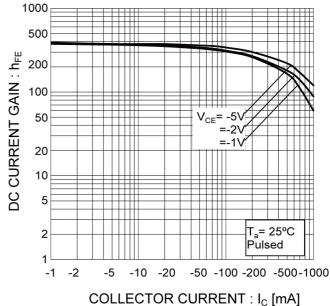


Fig.7 DC Current Gain vs. Collector Current (II)



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

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

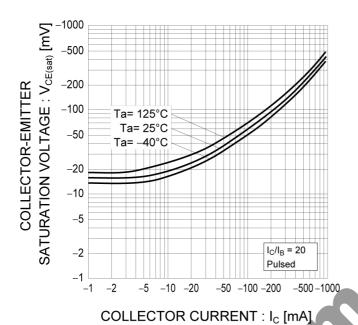
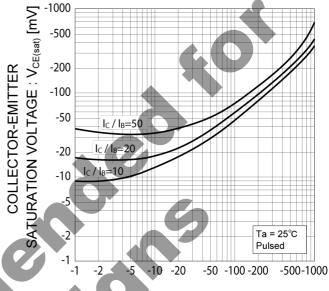


Fig.9 Collector-Emitter Saturation
Voltage vs. Collector Current (II)



COLLECTOR CURRENT : Ic [mA]

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

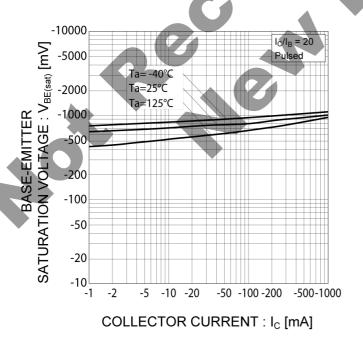
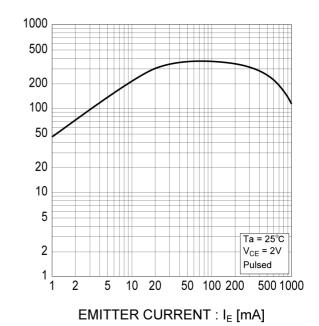


Fig.11 Gain Bandwidth Product vs. Emitter Current



TRANSITION FREQUENCY : fr [MHz]

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

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

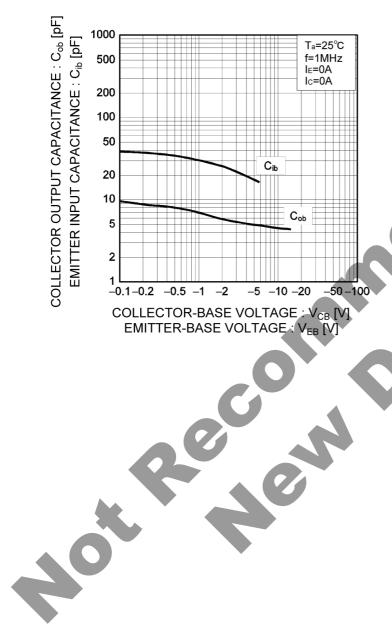
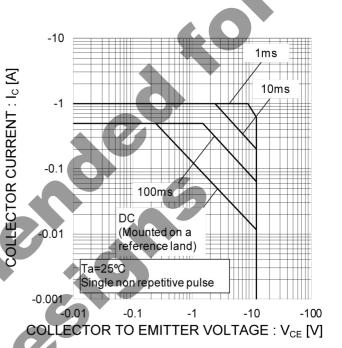
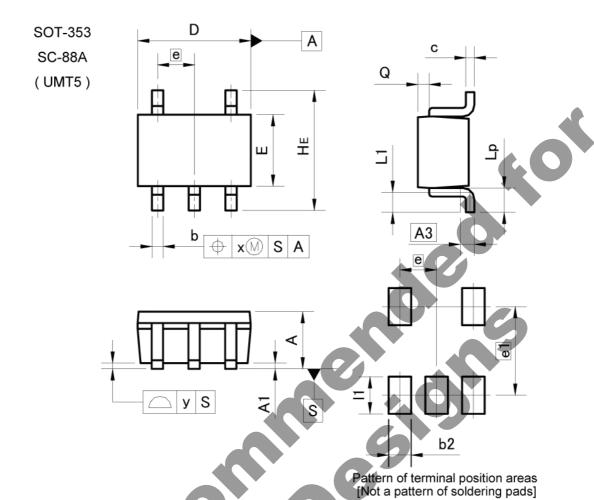


Fig.13 Safe Operating Area



Dimensions



DIM	MILIM	ETERS	INC	HES	
DIM	MIN	MAX	MIN	MAX	
A	0.80	1.00	0.031	0.039	
A1	0.00	0.10	0.000	0.004	
A3	0.	25	0.0	10	
b	0.15	0.30	0.006	0.012	
С	0.10	0.20	0.004	0.008	
D	1.90	2.10	0.075	0.083	
E	1.15	1.35	0.045	0.053	
e	0.	65	0.026		
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	0.10	0.30	0.004	0.012	
x	- -0	0.10		0.004	
У	= 0	0.10	0.77	0.004	

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

Dimension in mm/inches



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CLASSIV	CLASSⅢ	CLASSⅢ	CLASSII

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 - [d] the Products are exposed to high Electrostatic
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