



# CHENMKO ENTERPRISE CO.,LTD

## SURFACE MOUNT

Halogens free devices

### Power Management (Dual Transistor)

Tr1: VOLTAGE 12 Volts CURRENT 0.5 Ampere

DTr2: VOLTAGE 50 Volts CURRENT 50 mAmpere

CHUMF21GP

#### APPLICATION

\* Power management circuit

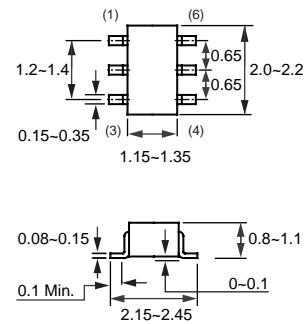
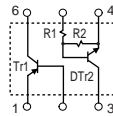
#### FEATURE

- \* Small surface mounting type. (SC-88/SOT-363)
- \* Power switching circuit in a single package.
- \* Mounting cost and area can be cut in half.
- \* Both the 2SA2018 & CHDTC114E in one package.
- \* Built in bias resistor(R1=10kΩ, Typ. )



SC-88/SOT-363

#### CIRCUIT



Dimensions in millimeters

SC-88/SOT-363

#### 2SA2018 LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CB0</sub>	Collector-base voltage		-	-15	V
V <sub>CEO</sub>	Collector-emitter voltage		-	-12	V
V <sub>EBO</sub>	Emitter-base voltage		-	-6	V
I <sub>C</sub>	DC Output current		-	-500	mA
I <sub>CP</sub>		NOTE.1	-	-1000	
P <sub>c</sub>	power dissipation	NOTE.2	-	150	mW
T <sub>STG</sub>	Storage temperature		-55	+150	°C
T <sub>J</sub>	Junction temperature		-	150	°C

#### Note

1. Single Pulse Pw=1ms
2. 120mW per element must not be exceeded  
Each terminal mounted on a recommended land.

**CHDTC114E LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CC</sub>	Supply voltage		–	50	V
V <sub>IN</sub>	Input voltage		-10	+40	V
I <sub>O</sub>	DC Output current		–	50	mA
I <sub>C(Max.)</sub>		NOTE.1	–	100	
P <sub>C</sub>	Power dissipation	NOTE.2	–	150	mW
T <sub>STG</sub>	Storage temperature		-55	+150	°C
T <sub>J</sub>	Junction temperature		–	150	°C

**Note**

1. Characteristics of built-in transistor.
2. Each terminal mounter on a recommended land.

**2SA2018 CHARACTERISTICS**

T<sub>amb</sub> = 25 °C unless otherwise specided.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
BV <sub>CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> =-1mA	-12	–	–	V
BV <sub>CBO</sub>	Collector-base breakdown voltage	I <sub>C</sub> =-10uA	-15	–	–	V
BV <sub>EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> =-10uA	-6	–	–	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =-15V	–	–	-100	nA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =-6V	–	–	-100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> =-2V, I <sub>C</sub> =-10mA	270	–	680	–
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA	–	-100	-250	mV
C <sub>ob</sub>	Collector output capacitance	V <sub>CB</sub> =-10V, I <sub>E</sub> =0mA, f=1MHZ	–	6.5	–	pF
f <sub>T</sub>	Transition frequency	V <sub>CE</sub> =-2V, I <sub>E</sub> =10mA, f=100MHZ	–	260	–	MHz

**Note**

1. Pulse test: t<sub>p</sub>≤300uS; δ≤0.02.

**CHDTC114E CHARACTERISTICS**

T<sub>amb</sub> = 25 °C unless otherwise specided.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>I(off)</sub>	Input off voltage	I <sub>O</sub> =100uA; V <sub>CC</sub> =5.0V	0.5	–	–	V
V <sub>I(on)</sub>	Input on voltage	I <sub>O</sub> =10mA; V <sub>O</sub> =0.3V	–	–	3.0	V
V <sub>O(on)</sub>	Output voltage	I <sub>O</sub> =10mA; I <sub>I</sub> =0.5mA	–	0.1	0.3	V
I <sub>I</sub>	Input current	V <sub>I</sub> =5V	–	–	0.88	mA
I <sub>C(off)</sub>	Output current	V <sub>I</sub> =0V; V <sub>CC</sub> =50V	–	–	0.5	uA
G <sub>1</sub>	DC current gain	I <sub>O</sub> =5mA; V <sub>O</sub> =5.0V	30	–	–	–
R <sub>1</sub>	Input resistor		7	10	13	KΩ
R <sub>2/R<sub>1</sub></sub>	Resistor ratio		0.8	1.0	1.2	–
f <sub>T</sub>	Transition frequency	I <sub>E</sub> =-5mA, V <sub>CE</sub> =10.0V f=100MHz	–	250	–	MHz

**Note**

- Pulse test: t<sub>p</sub>≤300uS; δ≤0.02.

## RATING CHARACTERISTIC CURVES ( CHUMF21GP )

### 2SA2018 Typical Electrical Characteristics

Fig.1 Ground emitter propagation characteristics

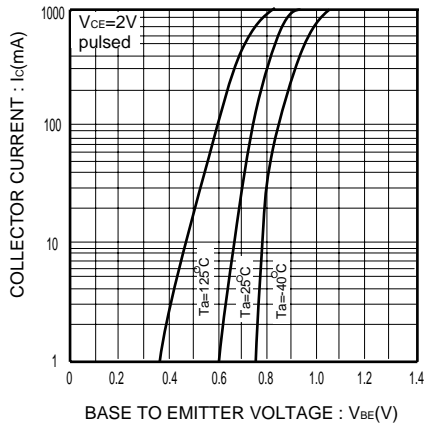


Fig.2 DC current gain vs. collector current

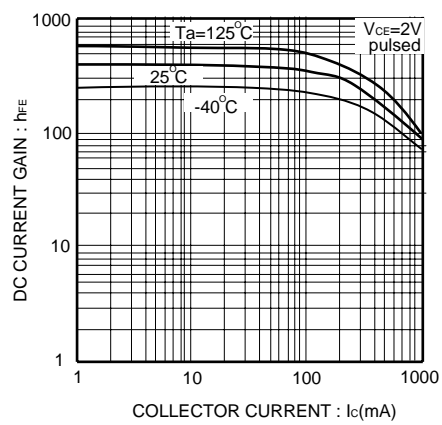


Fig.3 Collector-emitter saturation voltage vs. collector current ( I )

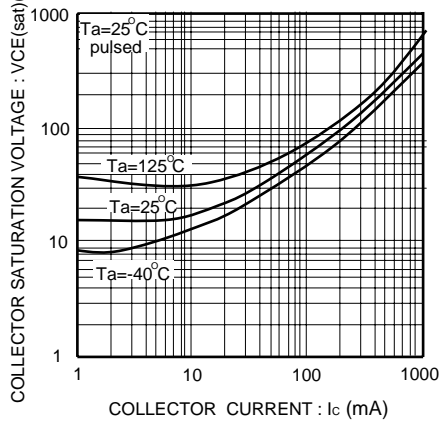
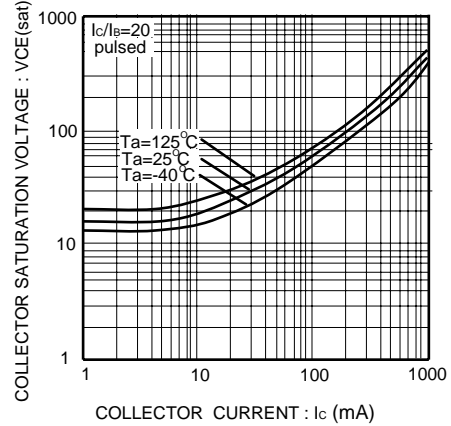


Fig.4 Collector-emitter saturation voltage vs. collector current ( II )



## RATING CHARACTERISTIC CURVES ( CHUMF21GP )

### 2SA2018 Typical Electrical Characteristics

Fig.5 Base-emitter saturation voltage vs. collector current

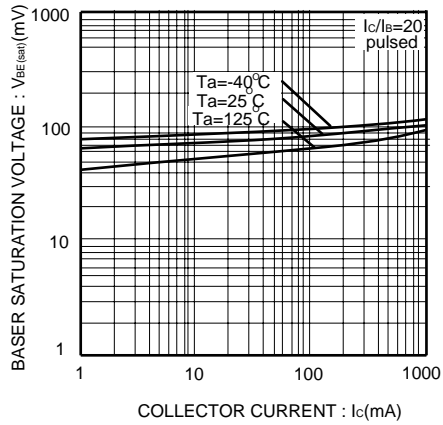


Fig.6 Gain bandwidth product vs. collector current

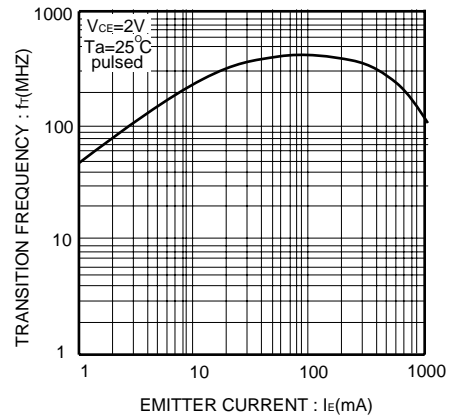
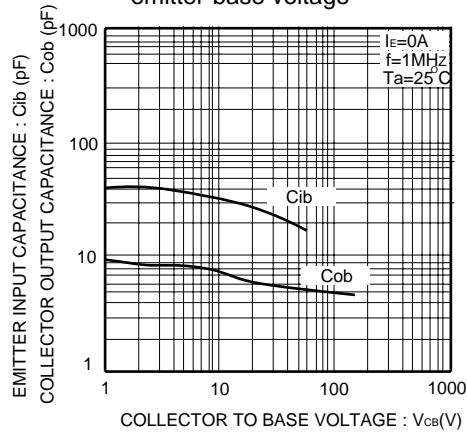


Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage



## RATING CHARACTERISTIC CURVES ( CHUMF21GP )

### CHDTC114E Typical Electrical Characteristics

Fig.1 Input voltage vs. output current  
(ON characteristics)

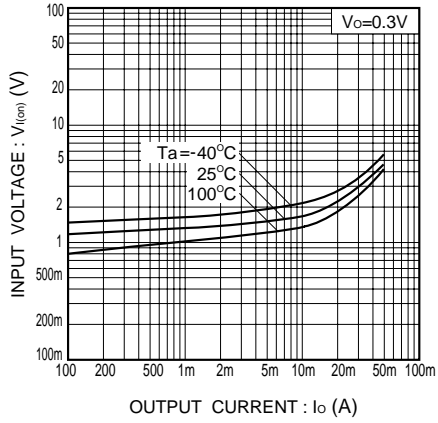


Fig.2 Output current vs. input voltage  
(OFF characteristics)

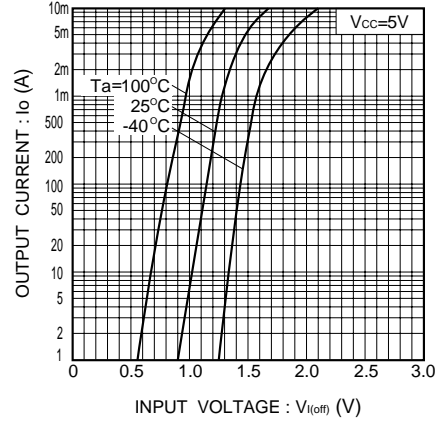


Fig.3 DC current gain vs. output current

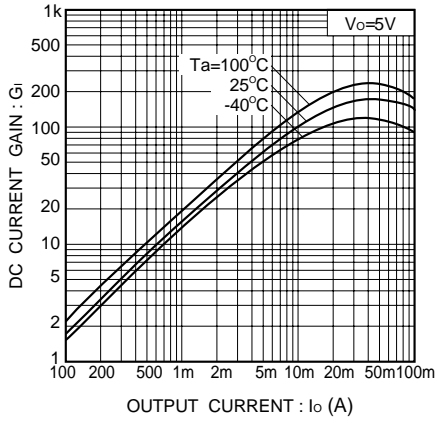


Fig.4 Output voltage vs. output current

