# CHENMKO ENTERPRISE CO.,LTD

**CHUMF5PT**

## SURFACE MOUNT

## Power Management (Dual Transistor)

*Tr1:VOLTAGE 12 Volts CURRENT 0.5 Ampere*

*DTr2:VOLTAGE 50 Volts CURRENT 30 mAmpere*

Lead free devices

### APPLICATION

* Power management circuit

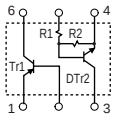
### FEATURE

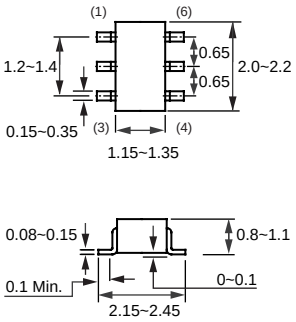
* Small surface mounting type. (SC-88/SOT-363)
* Power switching circuit in a single package.
* Mounting cost and area can be cut in half.
* Both the 2SA2018 & CHDTC144E in one package.
* Built in bias resistor(R1=47kΩ, Typ. )



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 |
|---|---|---|---|---|---|
| $V_{CBO}$ | Collector-base voltage | | – | -15 | V |
| $V_{CEO}$ | Collector-emitter voltage | | – | -12 | V |
| $V_{EBO}$ | Emitter-base voltage | | – | -6 | V |
| IC | DC Output current | | – | -500 | mA |
| $I_{CP}$ | | NOTE.1 | – | -1000 | |
| $P_{TOT}$ | Total power dissipation | NOTE.2 | – | 150 | mW |
| $T_{STG}$ | Storage temperature | | –55 | +150 | °C |
| $T_J$ | Junction temperature | | – | 150 | °C |

**Note**

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

**CHDTC144E LIMITING VALUES**

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{CC}$ | Supply voltage | | – | 50 | V |
| $V_{IN}$ | Input voltage | | -10 | +40 | V |
| $I_O$ | DC Output current | | – | 30 | mA |
| $I_{C(Max.)}$ | | NOTE.1 | – | 100 | |
| $P_C$ | Power dissipation | NOTE.2 | – | 150 | mW |
| $T_{STG}$ | Storage temperature | | –55 | +150 | °C |
| $T_J$ | Junction temperature | | – | 150 | °C |

**Note**

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

**2SA2018 CHARACTERISTICS**

$T_{amb}$ = 25 °C unless otherwise speciÞed.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $BV_{CEO}$ | Collector-emitter breakdown voltage | $I_C$=-1mA | -12 | – | – | V |
| $BV_{CBO}$ | Collector-base breakdown voltage | $I_C$=-10uA | -15 | – | – | V |
| $BV_{EBO}$ | Emitter-base breakdown voltage | $I_E$=-10uA | -6 | – | – | V |
| $I_{CBO}$ | Collector cut-off current | $V_{CB}$=-15V | – | – | -100 | nA |
| $I_{EBO}$ | Emitter cut-off current | $V_{EB}$=-6V | – | – | -100 | nA |
| $h_{FE}$ | DC current gain | $V_{CE}$=-2V,$I_C$=-10mA | 270 | – | 680 | – |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage | $I_C$=-200mA,$I_B$=-10mA | – | -100 | -250 | mV |
| Cob | Collector output capacitance | $V_{CB}$=-10V,$I_E$=0mA,f=1MHZ | – | 6.5 | – | pF |
| $f_T$ | Transition frequency | $V_{CE}$=-2V,$I_E$=10mA,f=100MHZ | – | 260 | – | MHz |

**Note**

1.Pulse test: tp≤300uS; δ≤0.02.

**CHDTC144E CHARACTERISTICS**

$T_{amb}$ = 25 °C unless otherwise speciÞed.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $V_{I(off)}$ | Input off voltage | $I_O$=100uA; $V_{CC}$=5.0V | 0.5 | – | – | V |
| $V_{I(on)}$ | Input on voltage | $I_O$=2mA; $V_O$=0.3V | – | – | 3.0 | V |
| $V_{O(on)}$ | Output voltage | $I_O$=10mA; $I_I$=0.5mA | – | 0.1 | 0.3 | V |
| $I_I$ | Input current | $V_I$=5V | – | – | 180 | uA |
| $I_{C(off)}$ | Output current | $V_I$=0V; $V_{CC}$=50V | – | – | 500 | nA |
| G1 | DC current gain | $I_O$=5mA; $V_O$=5.0V | 68 | – | – | – |
| $R_1$ | Input resistor | | 32.9 | 47 | 61.1 | KΩ |
| $R_2/R_1$ | Resistor ratio | | 0.8 | 1.0 | 1.2 | – |
| $f_T$ | Transition frequency | $I_E$=-5mA, $V_{CE}$=10.0V<br>f=100MHz | – | 250 | – | MHz |

**Note**

Pulse test: tp≤300uS; δ≤0.02.

# RATING CHARACTERISTIC CURVES ( CHUMF5PT )

**2SA2018 Typical Electrical Characteristics**

Fig.1 Ground emitter propagation characteristics

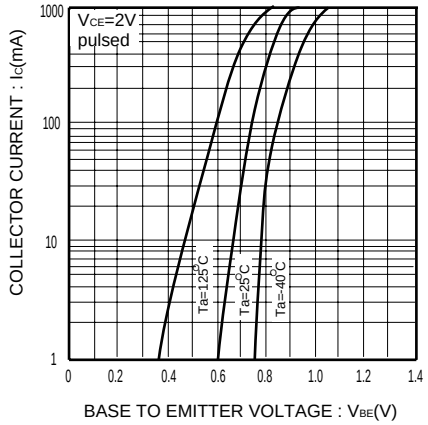



Fig.2 DC current gain vs. collector current

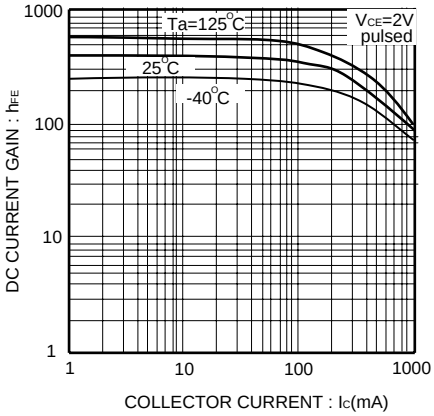



Fig.3 Collector-emitter saturation voltage vs. collector current ( I )

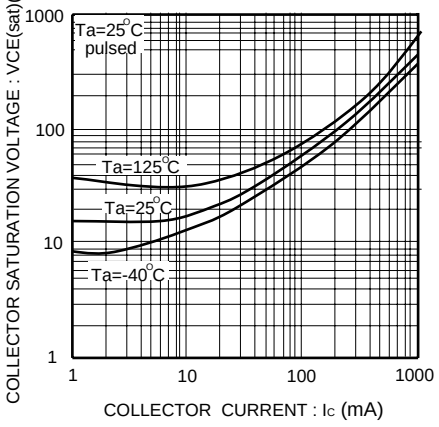
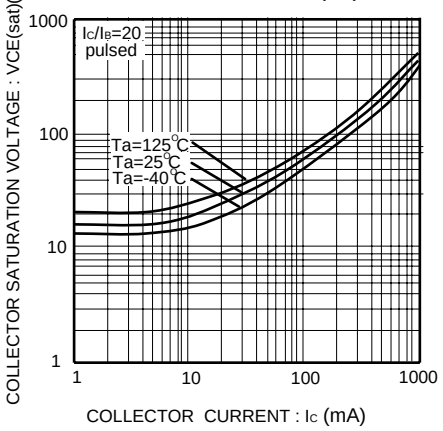



Fig.4 Collector-emitter saturation voltage vs. collector current ( II )



# RATING CHARACTERISTIC CURVES ( CHUMF5PT )

**2SA2018 Typical Electrical Characteristics**

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

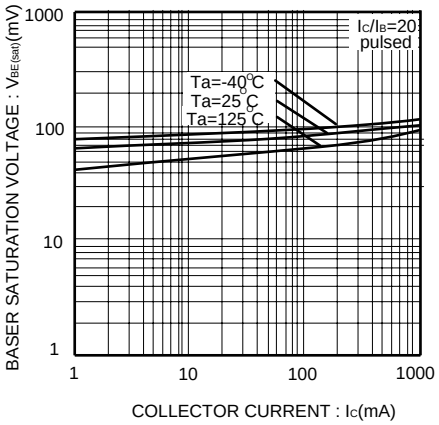



Fig.6 Gain bandwidth product vs. collector current

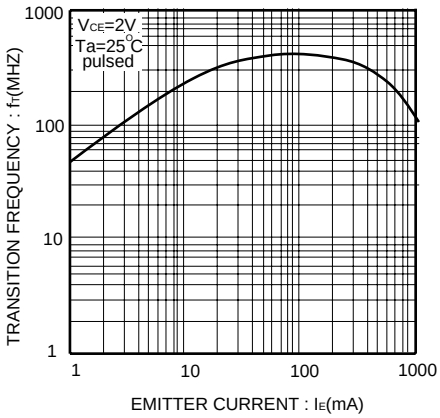
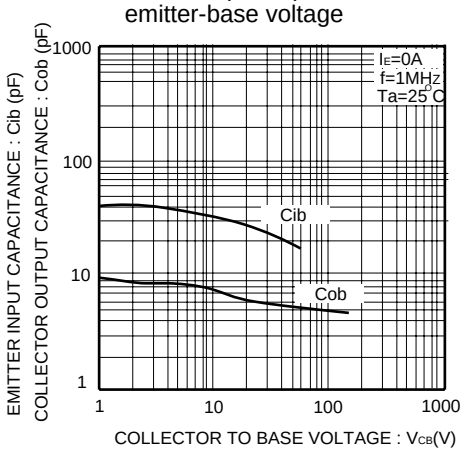



Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage



# RATING CHARACTERISTIC CURVES ( CHUMF5PT )

**CHDTC144E Typical Electrical Characteristics**

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

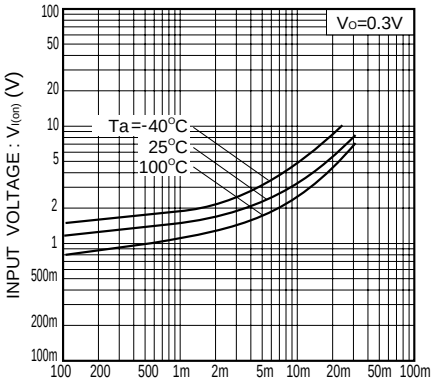



Fig.2 Output current vs. input voltage (OFF characteristics)

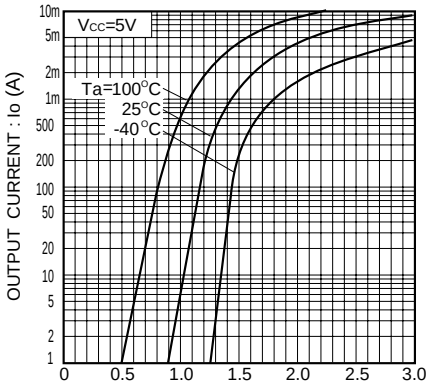



Fig.3 DC current gain vs. output current

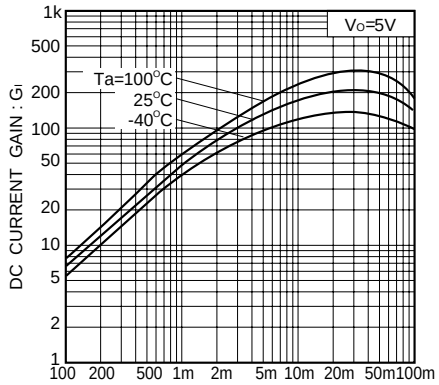



Fig.4 Output voltage vs. output current

