



**CHENMKO ENTERPRISE CO.,LTD**

**CH867UPNPT**

**SURFACE MOUNT**

**PNP&NPN Multi-Chip General Purpose Transistor**

VOLTAGE 50 Volts CURRENT 150 mAmperes

Lead free devices

**APPLICATION**

- \* AF input stages and driver applicationon equipment.
- \* Other general purpose applications.

**FEATURE**

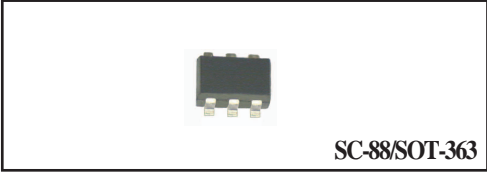
- \* Small surface mounting type. (SC-88/SOT-363)
- \* High current gain.
- \* Suitable for high packing density.
- \* Low collector-emitter saturation.
- \* High saturation current capability.
- \* Two internal isolated PNP and NPN transistors in one package.

**CONSTRUCTION**

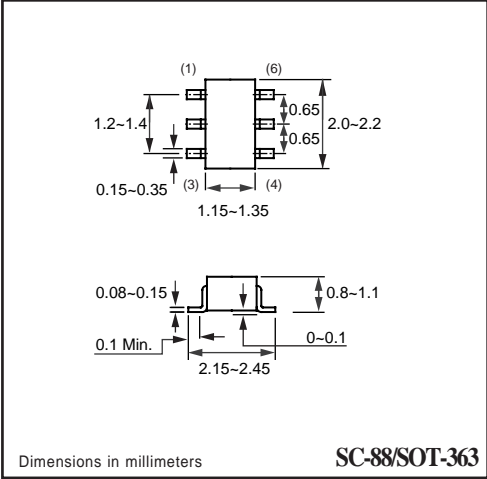
- \* PNP and NPN transistors in one package.

**MARKING**

- \* U10



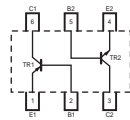
SC-88/SOT-363



Dimensions in millimeters

SC-88/SOT-363

**CIRCUIT**



**LIMITING VALUES of TR1( PNP Transistor )**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	-	-50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	-	-50	V
V <sub>CES</sub>	collector-base voltage	open emitter	-	-50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	-	-6	V
I <sub>C</sub>	collector current (DC)		-	-150	mA
I <sub>CM</sub>	peak collector current		-	-200	mA
I <sub>BM</sub>	peak base current		-	-30	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	-	200	mW
T <sub>stg</sub>	storage temperature		-55	+150	°C
T <sub>j</sub>	junction temperature		-	150	°C
T <sub>amb</sub>	operating ambient temperature		-55	+150	°C

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## RATING CHARACTERISTIC ( CH867UPNPT )

### LIMITING VALUES of TR2( NPN Transistor )

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	50	V
$V_{CEO}$	collector-emitter voltage	open base	–	50	V
$V_{CES}$	collector-base voltage	open emitter	–	50	V
$V_{EBO}$	emitter-base voltage	open collector	–	7	V
$I_C$	collector current (DC)		–	150	mA
$I_{CM}$	peak collector current		–	200	mA
$I_{BM}$	peak base current		–	30	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	200	mW
$T_{stg}$	storage temperature		–55	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		–55	+150	$^\circ\text{C}$

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to ambient	note 1	415	K/W

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

### CHARACTERISTICS of TR1( PNP Transistor )

$T_{amb} = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 50\text{ V}$	–	–	-0.1	$\mu\text{A}$
		$I_C = 0; V_{CB} = 50\text{ V}; T_A = 125\text{ }^\circ\text{C}$	–	–	-50	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -6\text{ V}$	–	–	-0.1	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = -2.0\text{ mA}; V_{CE} = -6.0\text{V}$ ; note 1	120	–	400	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -10\text{ mA}$	–	-200	-400	mV
$C_c$	collector capacitance	$I_E = I_E = 0; V_{CB} = -10\text{V}; f = 1\text{ MHz}$	–	4.0	5.0	pF
$f_T$	transition frequency	$I_C = -1\text{mA}; V_{CE} = -10\text{V}; f = 100\text{ MHz}$	–	120	–	MHz

#### Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .
2.  $h_{FE}$ : Y:120~240; G:200~400

## RATING CHARACTERISTIC ( CH867UPNPT )

### CHARACTERISTICS of TR2 ( NPN Transistor )

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

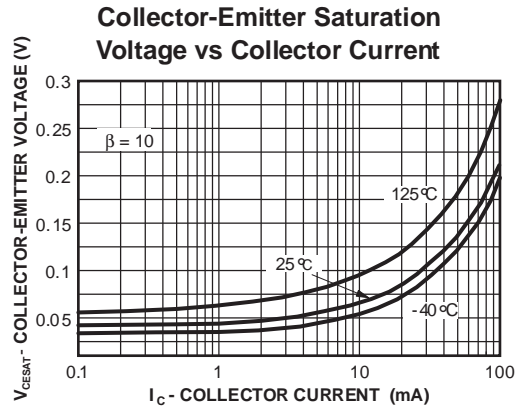
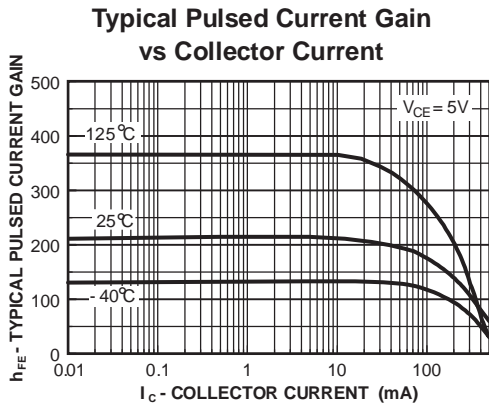
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -50\text{ V}$	–	–	0.1	$\mu\text{A}$
		$I_C = 0; V_{CB} = -50\text{ V}; T_A = 125\text{ }^{\circ}\text{C}$	–	–	50	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 6\text{ V}$	–	–	0.1	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = 2.0\text{ mA}; V_{CE} = 6.0\text{V}; \text{note 1}$	120	–	400	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	100	300	mV
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{V}; f = 1\text{ MHz}$	–	2.0	3.5	pF
$f_T$	transition frequency	$I_C = 1\text{ mA}; V_{CE} = 10\text{V}; f = 100\text{ MHz}$	–	150	–	MHz

#### Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .
2.  $h_{FE}$ : Y:120~240; G:200~400

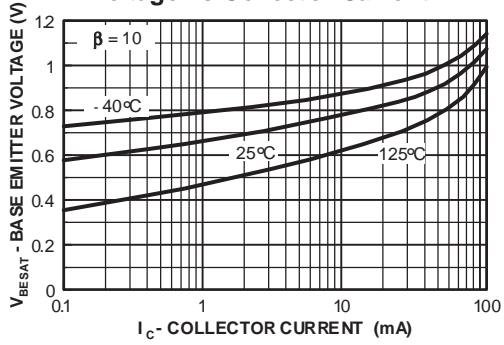
## RATING CHARACTERISTIC CURVES ( CH867UPNPT )

### CHARACTERISTIC CURVES of Tr1 ( PNP Transistor )

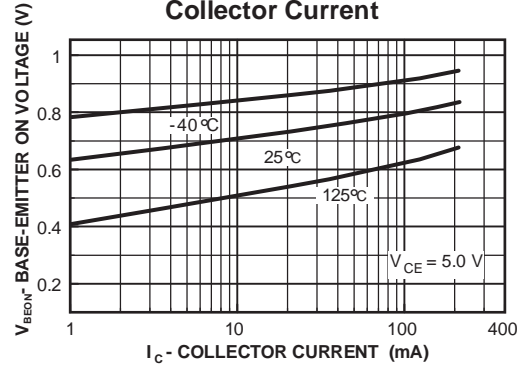


## RATING CHARACTERISTIC CURVES ( CH867UPNPT )

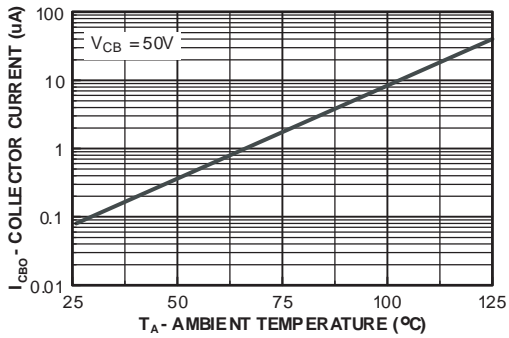
**Base-Emitter Saturation Voltage vs Collector Current**



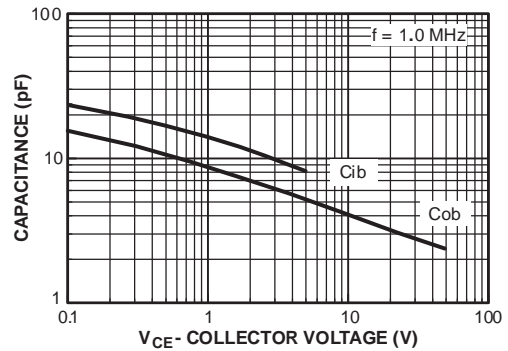
**Base-Emitter ON Voltage vs Collector Current**



**Collector-Cutoff Current vs Ambient Temperature**

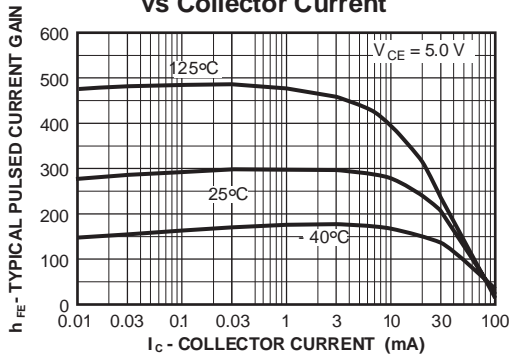


**Input and Output Capacitance vs Reverse Voltage**

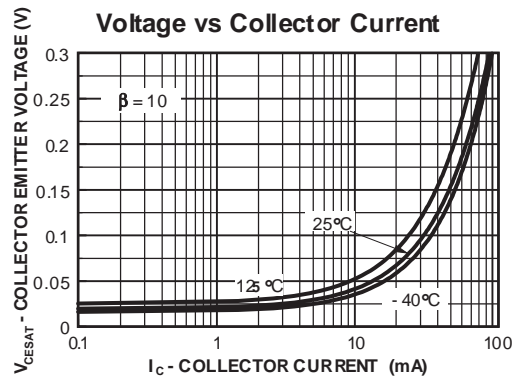


### CHARACTERISTIC CURVES of Tr2 ( NPN Transistor )

**Typical Pulsed Current Gain vs Collector Current**



**Collector-Emitter Saturation Voltage vs Collector Current**



## RATING CHARACTERISTIC CURVES ( CH867UPNPT )

