



**CHENMKO ENTERPRISE CO.,LTD**

**SURFACE MOUNT**

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

VOLTAGE 45 Volts CURRENT 100 mAmperes

**CH847UPNPT**

*Lead free devices*

**APPLICATION**

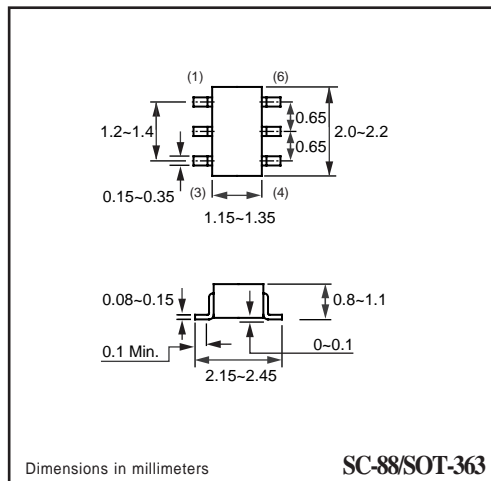
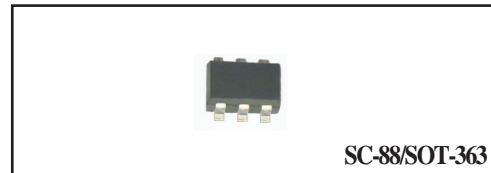
- \* AF input stages and driver applicationon equipment.
- \* Other general purpose applications.

**FEATURE**

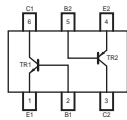
- \* Small surface mounting type. (SC-88/SOT-363)
- \* High current gain.
- \* Suitable for high packing density.
- \* Low collector-emitter saturation.
- \* High saturation current capability.
- \* Two internal isolated PNP and NPN transistors in one package.

**CONSTRUCTION**

- \* PNP and NPN transistors in one package.



**CIRCUIT**



**LIMITING VALUES of TR1( NPN 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	—	45	V
V <sub>CES</sub>	collector-base voltage	open emitter	—	50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	—	6.0	V
I <sub>C</sub>	collector current (DC)		—	100	mA
I <sub>CM</sub>	peak collector current		—	200	mA
I <sub>BM</sub>	peak base current		—	200	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 ( CH847UPNPT )

### LIMITING VALUES of TR2(PNP Transistor )

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CB0</sub>	collector-base voltage	open emitter	–	-50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	-45	V
V <sub>CES</sub>	collector-base voltage	open emitter	–	-50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	-5.0	V
I <sub>C</sub>	collector current (DC)		–	-100	mA
I <sub>CM</sub>	peak collector current		–	-200	mA
I <sub>BM</sub>	peak base current		–	-200	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.

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-s</sub>	thermal resistance from junction to ambient	note 1	625	W/°C

#### Note

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

## RATING CHARACTERISTIC ( CH847UPNPT )

### CHARACTERISTICS of TR1 ( 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	$V_{CB} = 30\text{ V}$	-	-	15	nA
		$V_{CB} = 30\text{ V}; T_A = 125\text{ }^{\circ}\text{C}$	-	-	5.0	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	-	-	0.1	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = 2.0\text{ mA}; V_{CE} = 5.0\text{ V};$ note 1	200	-	450	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	-	90	250	mV
		$I_C = 100\text{ mA}; I_B = 5.0\text{ mA}$	-	200	600	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	-	700	-	mV
		$I_C = 100\text{ mA}; I_B = 5.0\text{ mA}$	-	900	-	mV
$V_{BEon}$	base-emitter voltage	$I_C = 2.0\text{ mA}; V_{CE} = 5\text{ V}$	580	660	700	mV
		$I_C = 10.0\text{ mA}; V_{CE} = 5\text{ V}$	-	-	720	mV
$C_{CBO}$	collector-base capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	-	3.5	6.0	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V};$ $f = 100\text{ MHz}$	100	300	-	MHz

#### Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02.$

### CHARACTERISTICS of TR2( 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	$V_{CB} = 30\text{ V}$	-	-	-15	nA
		$V_{CB} = 30\text{ V}; T_A = 125\text{ }^{\circ}\text{C}$	-	-	-4.0	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	-	-	-0.1	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = -2.0\text{ mA}; V_{CE} = -5.0\text{ V}$	200	290	450	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	-	-75	-300	mV
		$I_C = 100\text{ mA}; I_B = 5.0\text{ mA}$	-	-250	-650	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	-	-700	-	mV
		$I_C = 100\text{ mA}; I_B = 5.0\text{ mA}$	-	-850	-950	mV
$V_{BEon}$	base-emitter voltage	$I_C = 2.0\text{ mA}; V_{CE} = 5\text{ V}$	-600	-650	-750	mV
		$I_C = 10.0\text{ mA}; V_{CE} = 5\text{ V}$	-	-	-820	mV
$C_{CBO}$	collector-base capacitance	$I_E = i_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	-	3.0	4.5	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V};$ $f = 100\text{ MHz}$	100	200	-	MHz

#### Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02.$