BC847CPN-AU

DUAL GENERAL PURPOSE TRANSISTORS

NPN/PNP Duals (Complementary)

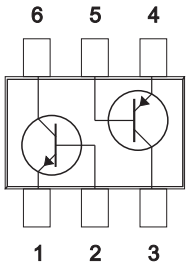
These transistors are designed for general purpose amplifier appliactions. They are housed in the SOT-363 which is designed for low power surface mount applications.

FEATURES

- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard
- Acquire quality system certificate : TS16949
- AEC-Q101 qualified

MECHANICAL DATA

- Case : SOT-363
- Terminals : Solderable per MIL-STD-750,Method 2026
- Approx weight : 0.006 grams



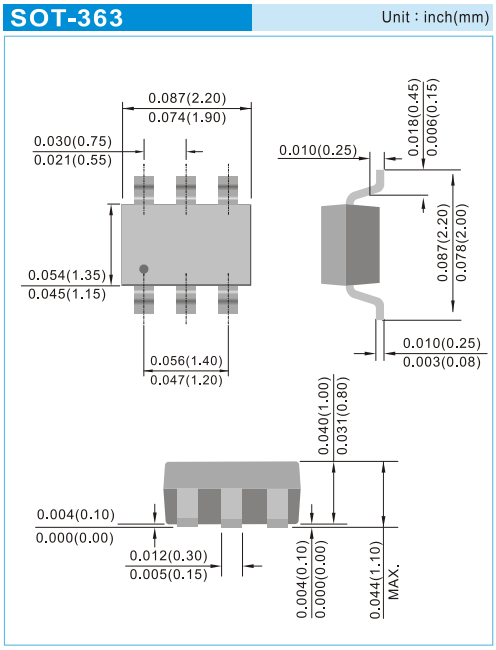


Fig.55

MAXIMUM RATINGS-NPN

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	45	V
Collector-Base Voltage	V_{CBO}	50	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current-Continuous	I_C	100	mAdc

MAXIMUM RATINGS-PNP

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-45	V
Collector-Base Voltage	V_{CBO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current-Continuous	I_C	-100	mAdc

Maximum ratings are those values beyond which device damage can occur.Maximum ratings applied to the device are individual stress limit values (not noraml operting conditions) and are not valid simultaneously.If these limits are exceeded, device functional operation is not implied,damage may occur and reliability may be affected.

BC847CPN-AU

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Disspation Per Device FR-4 Board (Note 1) T_A=25°C Derate above 25°C	P_D	380 250 3	mW mW/°C
Thermal Resistance,Junction-to-Ambient (Note 1)	$R_{\Theta JA}$	328	°C/W
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\Theta JA}$	550	°C/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150	°C

1.FR-4 = 70 x 60 x 1mm.

2.Mounted on an FR4 PCB, single-sided copper, mini pad.

ELECTRICAL CHARACTERISTICS (NPN) (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C=10mA	$V_{(BR)CEO}$	45	-	-	V
Collector-Emitter Breakdown Voltage I_C=10μA,V_{EB}=0	$V_{(BR)CES}$	50	-	-	V
Collector-Base Breakdown Voltage I_C=10μA	$V_{(BR)CBO}$	50	-	-	V
Emitter-Base Breakdown Voltage I_E=1.0μA	$V_{(BR)EBO}$	6.0	-	-	V
Collector Cutoff Current V_{CB}=30V V_{CB}=30V,T_A=150°C	I_{CBO}	-	-	15 5.0	nA μA
ON CHARACTERISTICS					
DC Current Gain I_C=10μA,V_{CE}=5.0V I_C=2.0mA,V_{CE}=5.0V	h_{FE}	- 420	270 520	- 800	-
Collector-Emitter Saturation Voltage I_C=10mA,I_B=0.5mA I_C=100mA,I_B=5.0mA	V_{CE}(sat)	- -	- -	0.25 0.6	V
Base-Emitter Saturation Voltage I_C=10mA,I_B=0.5mA I_C=100mA,I_B=5.0mA	V_{BE}(sat)	- -	0.7 0.9	- -	V
Base-Emitter Voltage I_C=2.0mA,V_{CE}=5.0V I_C=10mA,V_{CE}=5.0V	V_{BE}(on)	580 -	660 -	700 770	mV
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product I_C=10mA,V_{CE}=5.0Vdc,f=100MHz	f_T	100	-	-	MHz
Output Capacitance (V_{CB}=10V,f=1MHz)	Cobo	-	-	4.5	pF
Noise Figure I_C=0.2mA,V_{CE}=5.0Vdc,R_S=2.0kΩ,f=1.0kHz,BW=200Hz	NF	-	-	10	dB

BC847CPN-AU

ELECTRICAL CHARACTERISTICS (PNP) (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C=-10mA	$V_{(BR)CEO}$	-45	-	-	V
Collector-Emitter Breakdown Voltage I_C=-10μA,V_{EB}=0	$V_{(BR)CES}$	-50	-	-	V
Collector-Base Breakdown Voltage I_C=-10μA	$V_{(BR)CBO}$	-50	-	-	V
Emitter-Base Breakdown Voltage I_E=-1.0μA	$V_{(BR)EBO}$	-5.0	-	-	V
Collector Cutoff Current V_{CB}=-30V V_{CB}=-30V,T_A=150°C	I_{CBO}	-	-	-15 -4.0	nA μA
ON CHARACTERISTICS					
DC Current Gain I_C=-10μA,V_{CE}=-5.0V I_C=-2.0mA,V_{CE}=-5.0V	h_{FE}	- 420	270 520	- 800	-
Collector-Emitter Saturation Voltage I_C=-10mA,I_B=-0.5mA I_C=-100mA,I_B=-5.0mA	V_{CE}(sat)	- -	- -	-0.3 -0.65	V
Base-Emitter Saturation Voltage I_C=-10mA,I_B=-0.5mA I_C=-100mA,I_B=-5.0mA	V_{BE}(sat)	- -	-0.7 -0.9	- -	V
Base-Emitter Voltage I_C=-2.0mA,V_{CE}=-5.0V I_C=-10mA,V_{CE}=-5.0V	V_{BE}(on)	-0.6 -	- -	-0.75 -0.82	mV
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product I_C=-10mA,V_{CE}=-5.0Vdc,f=100MHz	f_T	100	-	-	MHz
Output Capacitance (V_{CB}=-10V,f=1MHz)	Cobo	-	-	4.5	pF
Noise Figure I_C=-0.2mA,V_{CE}=-5.0Vdc,R_S=2.0kΩ,1.0kHz,BW=200Hz	NF	-	-	10	dB

BC847CPN-AU

TYPICAL NPN CHARACTERISTICS

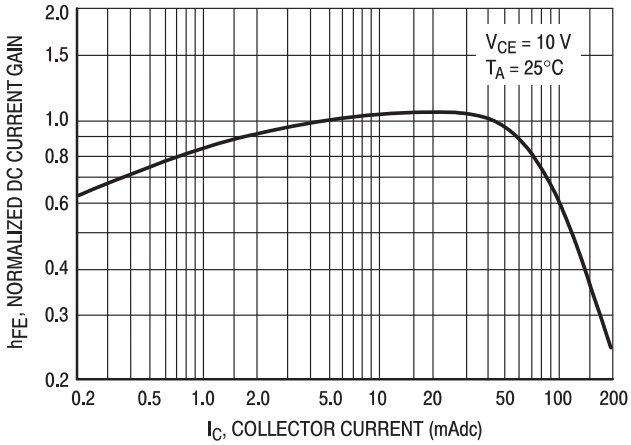


Figure 1 . Normalized DC Current Gain

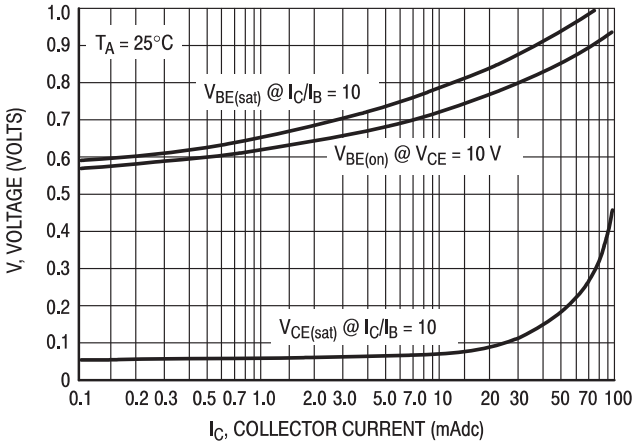


Figure 2 . "Saturation" and "On" Voltages

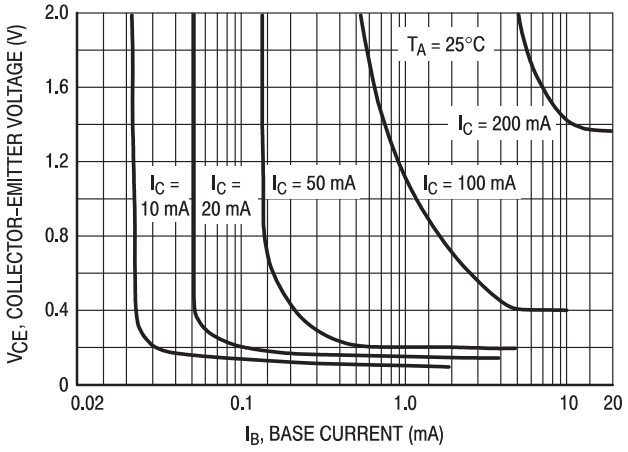


Figure 3 . Collector Saturation Region

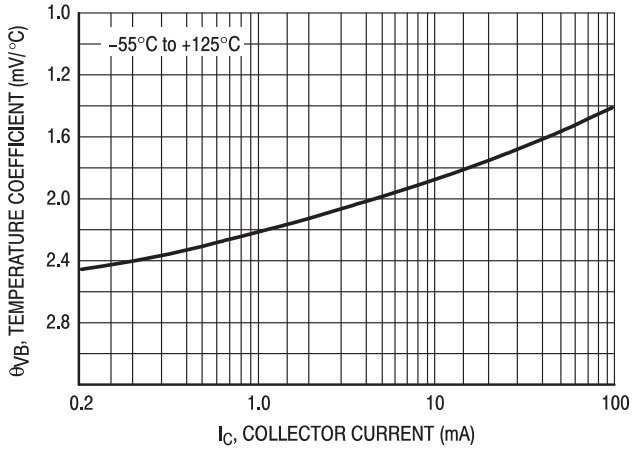


Figure 4 . Base–Emitter Temperature Coefficient

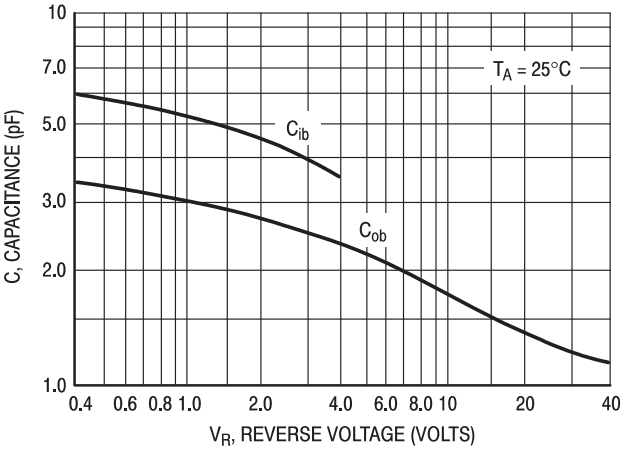


Figure 5 . Capacitances

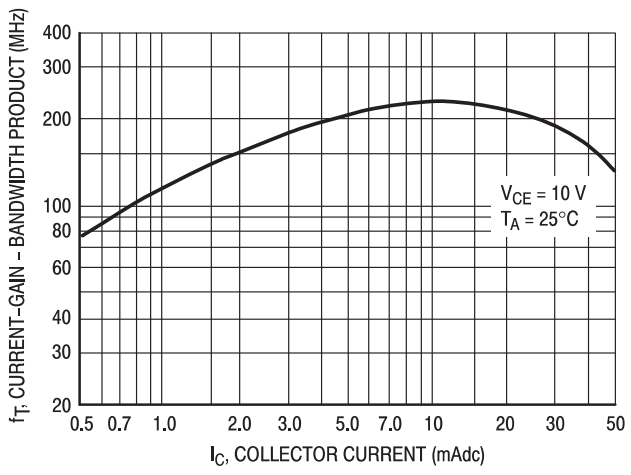


Figure 6 . Current–Gain – Bandwidth Product

BC847CPN-AU

TYPICAL PNP CHARACTERISTICS

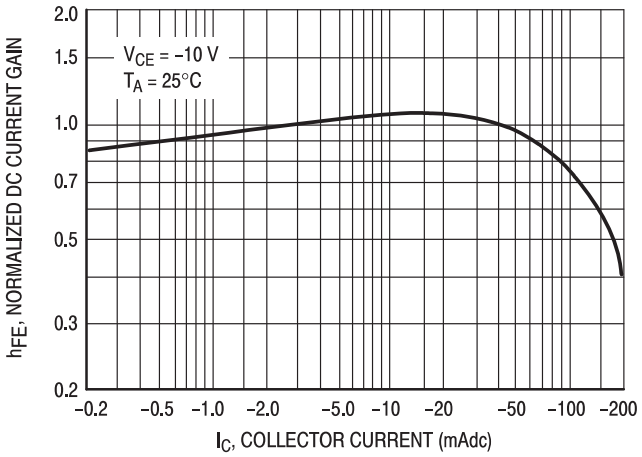


Figure 7 . Normalized DC Current Gain

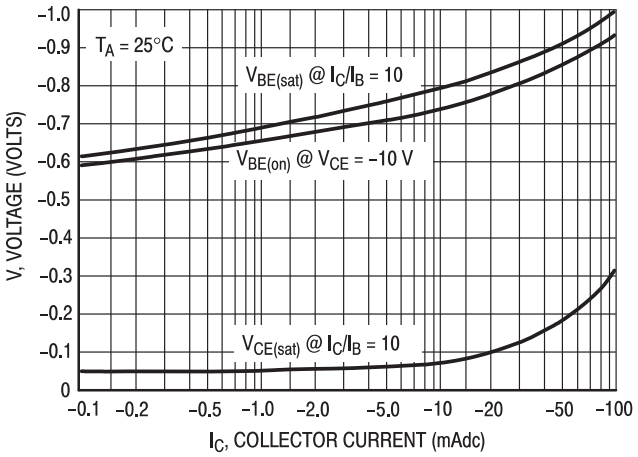


Figure 8 . "Saturation" and "On" Voltages

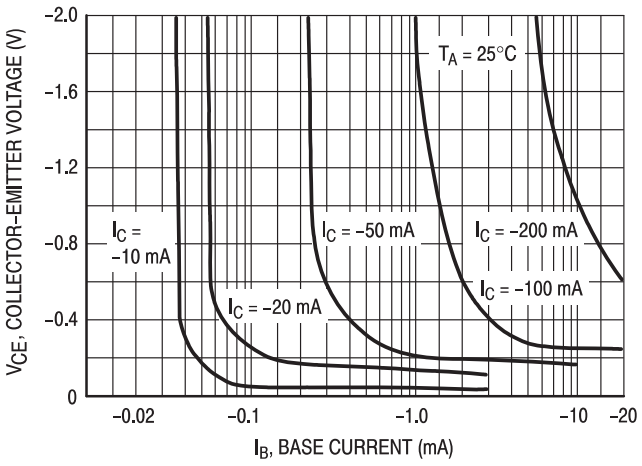


Figure 9 . Collector Saturation Region

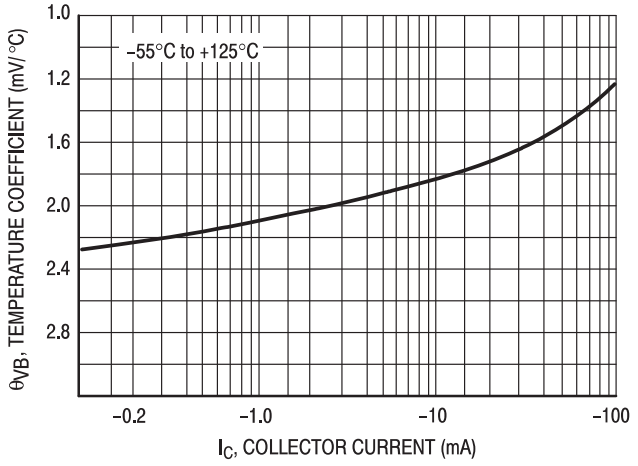


Figure 10 . Base–Emitter Temperature Coefficient

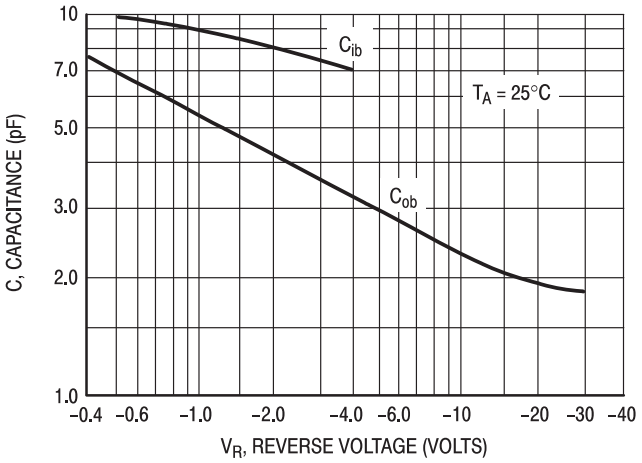


Figure 11 . Capacitances

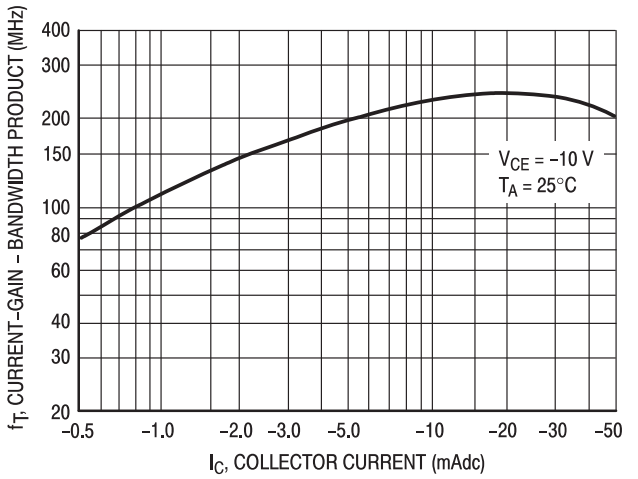


Figure 12 . Current–Gain – Bandwidth Product

BC847CPN-AU

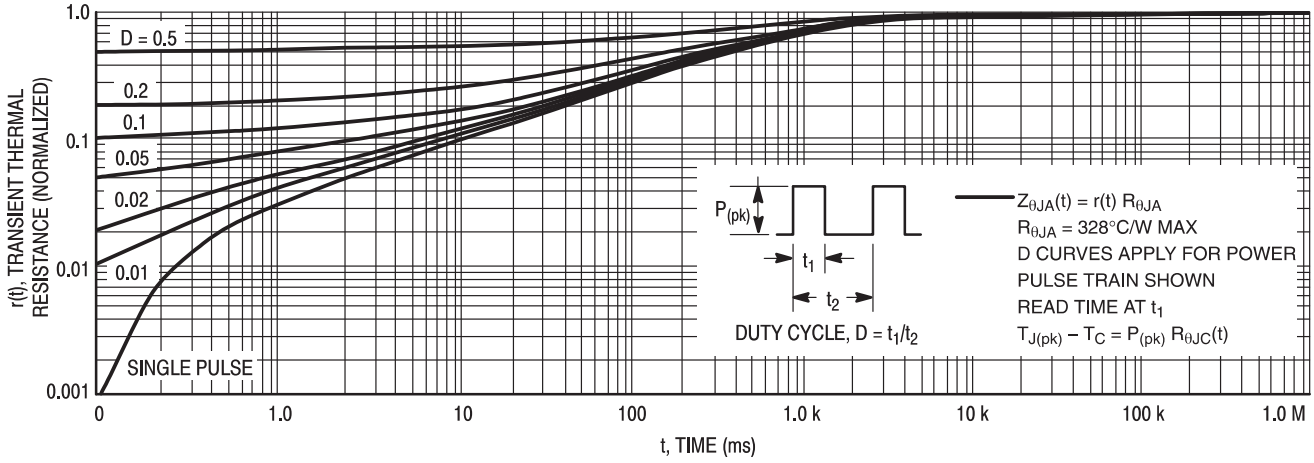


Figure 13. Thermal Response

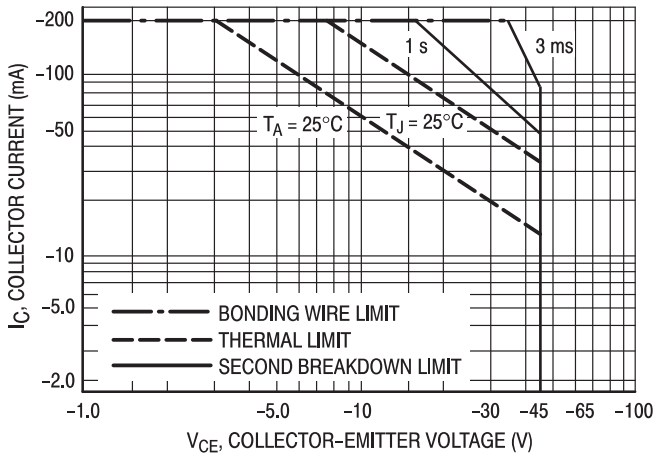


Figure 14 . Active Region Safe Operating Area

The safe operating area curves indicate I_C–V_{CE} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

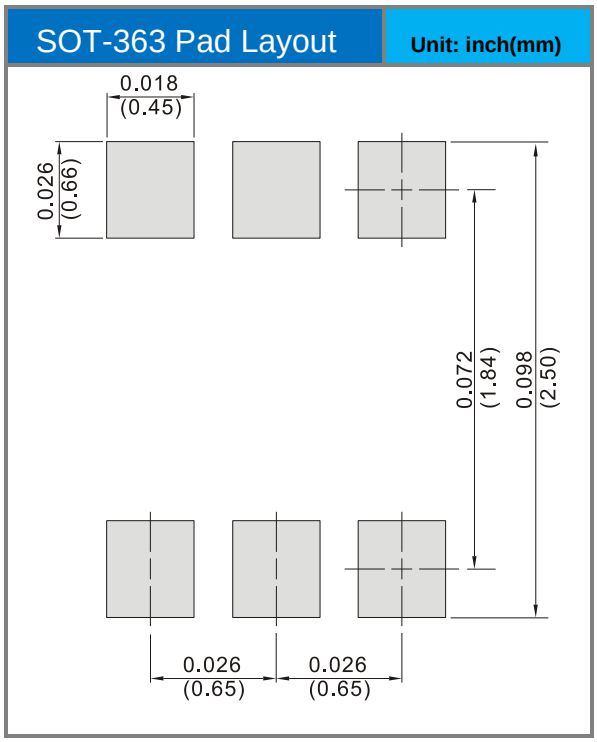
The data of Figure 26 is based upon $T_{J(pk)}$ = 150°C; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150°C$. $T_{J(pk)}$ may be calculated from the data in Figure 25. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary breakdown.

BC847CPN-AU

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BC847CPN-AU	SOT-363	3K pcs / 7” reel	4C7
BC847CPN-AU	SOT-363	10K pcs / 13” reel	4C7

Mounting Pad Layout



BC847CPN-AU

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.