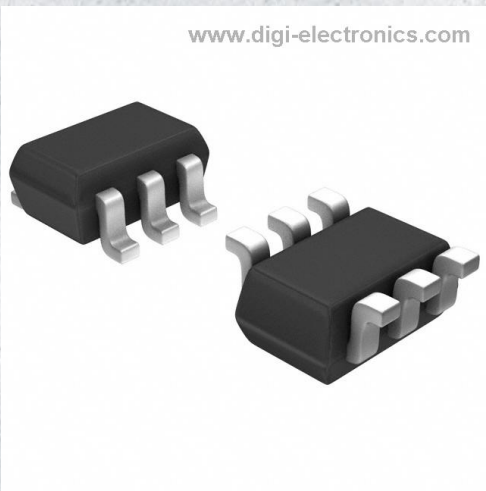
# BC847SH6433XTMA1 Datasheet

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| | |
|---|---|
| DiGi Electronics Part Number | BC847SH6433XTMA1-DG |
| Manufacturer | Infineon Technologies |
| Manufacturer Product Number | BC847SH6433XTMA1 |
| Description | TRANS 2NPN 45V 0.1A SOT363 |
| Detailed Description | Bipolar (BJT) Transistor Array 2 NPN (Dual) 45V 100 mA 250MHz 250mW Surface Mount PG-SOT363-PO |

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RFQ Email: Info@DiGi-Electronics.com

## Purchase and inquiry

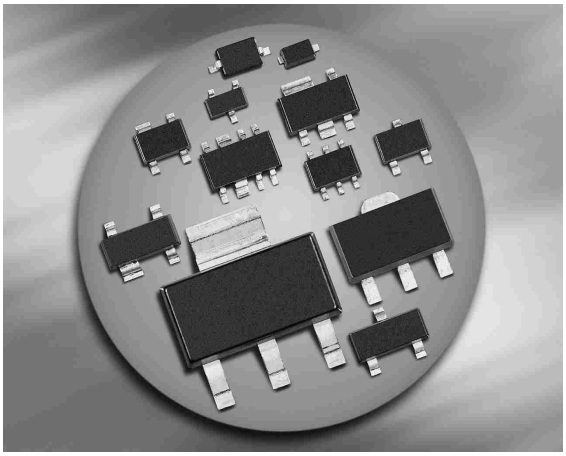
| Manufacturer Product Number: | Manufacturer: |
| --- | --- |
| BC847SH6433XTMA1 | Infineon Technologies |
| Series: | Product Status: |
| - | Last Time Buy |
| Transistor Type: | Current - Collector (Ic) (Max): |
| 2 NPN (Dual) | 100mA |
| Voltage - Collector Emitter Breakdown (Max): | Vce Saturation (Max) @ Ib, Ic: |
| 45V | 600mV @ 5mA, 100mA |
| Current - Collector Cutoff (Max): | DC Current Gain (hFE) (Min) @ Ic, Vce: |
| 15nA (ICBO) | 200 @ 2mA, 5V |
| Power - Max: | Frequency - Transition: |
| 250mW | 250MHz |
| Operating Temperature: | Mounting Type: |
| 150°C (TJ) | Surface Mount |
| Package / Case: | Supplier Device Package: |
| 6-VSSOP, SC-88, SOT-363 | PG-SOT363-PO |
| Base Product Number: | |
| BC847 | |

## Environmental & Export classification

| RoHS Status: | Moisture Sensitivity Level (MSL): |
| --- | --- |
| ROHS3 Compliant | 1 (Unlimited) |
| REACH Status: | ECCN: |
| REACH Unaffected | EAR99 |
| HTSUS: | |
| 8541.21.0075 | |

# BC846S/ BC846U/ BC847S

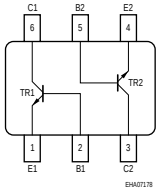
**NPN Silicon AF Transistor Arrays**



- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated transistors with good matching in one package
- BC846S / U, BC847S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

AEC Qualified RoHS

**BC846S**
**BC846U**
**BC847S**




| Type | Marking | Pin Configuration | | | | | | Package |
|---|---|---|---|---|---|---|---|---|
| BC846S | 1Ds | 1=E1 | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363 |
| BC846U | 1Ds | 1=E1 | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SC74 |
| BC847S | 1Cs | 1=E1 | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363 |

## Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CEO}$ | | V |
| BC846S/U | | 65 | |
| BC847S | | 45 | |
| Collector-base voltage | $V_{CBO}$ | | |
| BC846S/U | | 80 | |
| BC847S | | 50 | |
| Emitter-base voltage | $V_{EBO}$ | 6 | |
| Collector current | $I_C$ | 100 | mA |
| Peak collector current, $t_p \leq 10$ ms | $I_{CM}$ | 200 | |
| Total power dissipation- | $P_{tot}$ | | mW |
| $T_S \leq 115$ °C, BC846S, BC847S | | 250 | |
| $T_S \leq 118$ °C, BC846U | | 250 | |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature | $T_{stg}$ | -65 ... 150 | |

## Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Junction - soldering point[1)] | $R_{thJS}$ | | K/W |
| BC846S, BC847S | | ≤ 140 | |
| BC847U | | ≤ 130 | |

[1]For calculation of $R_{thJA}$ please refer to Application Note AN077 (Thermal Resistance Calculation)

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | | | | V |
| $I_C$ = 10 mA, $I_B$ = 0 , BC846S/U | | - | 65 | - | |
| $I_C$ = 10 mA, $I_B$ = 0 , BC847S | | - | 45 | - | |
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | | | | |
| $I_C$ = 10 µA, $I_E$ = 0 , BC846S/U | | - | 80 | - | |
| $I_C$ = 10 µA, $I_E$ = 0 , BC847S | | - | 50 | - | |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | - | 6 | - | |
| $I_E$ = 1 µA, $I_C$ = 0 | | | | | |
| Collector-base cutoff current | $I_{CBO}$ | | | | µA |
| $V_{CB}$ = 45 V, $I_E$ = 0 | | - | - | 0.015 | |
| $V_{CB}$ = 30 V, $I_E$ = 0 , $T_A$ = 150 °C | | - | - | 5 | |
| DC current gain- | $h_{FE}$ | | | | - |
| $I_C$ = 10 µA, $V_{CE}$ = 5 V | | - | 250 | - | |
| $I_C$ = 2 mA, $V_{CE}$ = 5 V | | 200 | 290 | 450 | |
| Collector-emitter saturation voltage[1)] | $V_{CEsat}$ | | | | mV |
| $I_C$ = 10 mA, $I_B$ = 0.5 mA | | - | 90 | 250 | |
| $I_C$ = 100 mA, $I_B$ = 5 mA | | - | 200 | 600 | |
| Base emitter saturation voltage[1)] | $V_{BEsat}$ | | | | |
| $I_C$ = 10 mA, $I_B$ = 0.5 mA | | - | 700 | - | |
| $I_C$ = 100 mA, $I_B$ = 5 mA | | - | 900 | - | |
| Base-emitter voltage[1)] | $V_{BE(ON)}$ | | | | |
| $I_C$ = 2 mA, $V_{CE}$ = 5 V | | 580 | 660 | 700 | |
| $I_C$ = 10 mA, $I_B$ = 5 V | | - | - | 770 | |

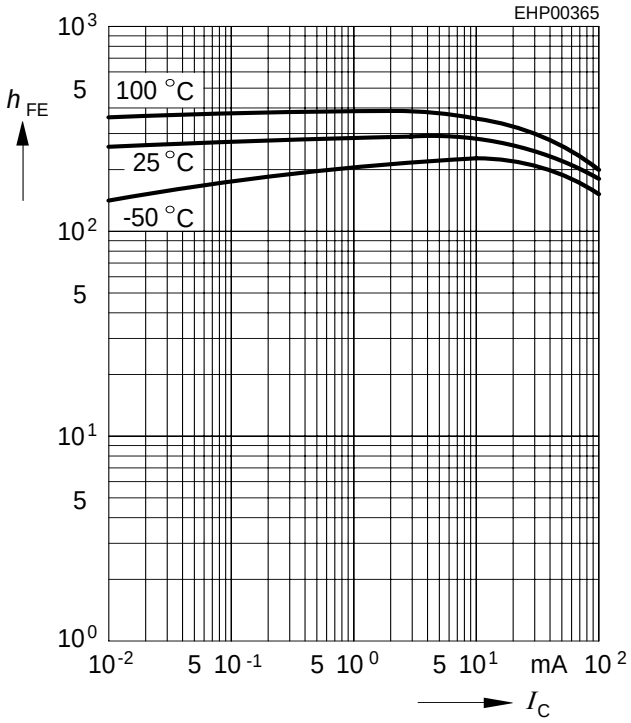
[1]Pulse test: t < 300µs; D < 2%

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **AC Characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 20 mA, $V_{CE}$ = 5 V, $f$ = 100 MHz | $f_T$ | - | 250 | - | MHz |
| Collector-base capacitance<br>$V_{CB}$ = 10 V, $f$ = 1 MHz | $C_{cb}$ | - | 0.95 | - | pF |
| Emitter-base capacitance<br>$V_{EB}$ = 0.5 V, $f$ = 1 MHz | $C_{eb}$ | - | 9 | - | |
| Short-circuit input impedance<br>$I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 1 kHz | $h_{11e}$ | - | 4.5 | - | kΩ |
| Open-circuit reverse voltage transf. ratio<br>$I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 1 kHz | $h_{12e}$ | - | 2 | - | $10^{-4}$ |
| Short-circuit forward current transf. ratio<br>$I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 1 kHz | $h_{21e}$ | - | 330 | - | - |
| Open-circuit output admittance<br>$I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 1 kHz | $h_{22e}$ | - | 30 | - | µS |
| Noise figure<br>$I_C$ = 200 µA, $V_{CE}$ = 5 V, $f$ = 1 kHz,<br>$\Delta f$ = 200 Hz, $R_S$ = 2 kΩ | $F$ | - | - | 10 | dB |

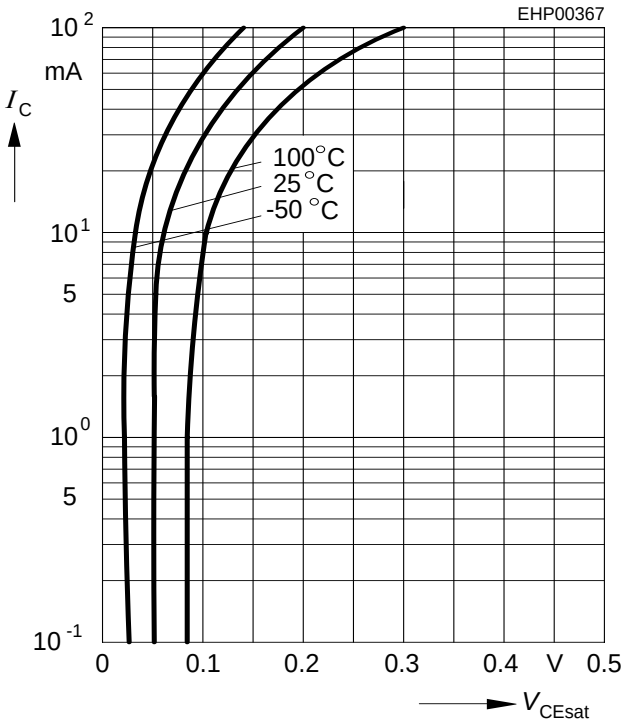
**DC current gain $h_{FE} = f(I_C)$**

$V_{CE}$ = 5 V



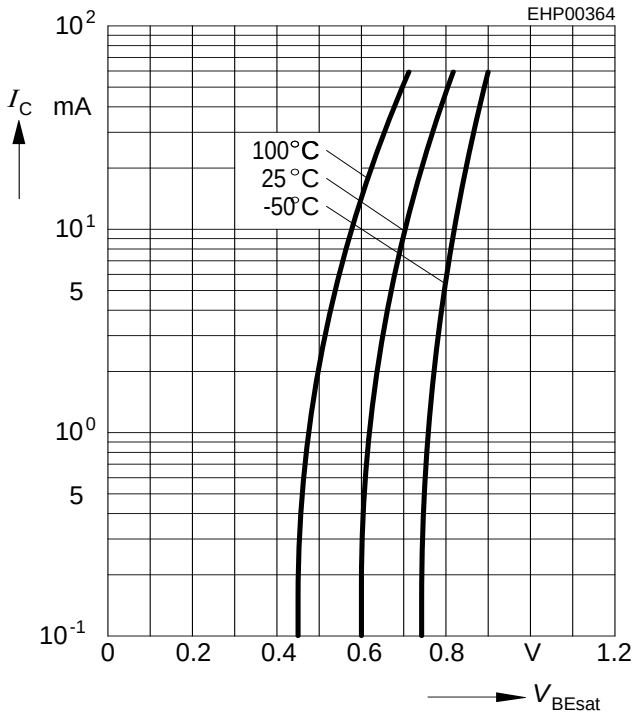

**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat})$, $h_{FE}$ = 20



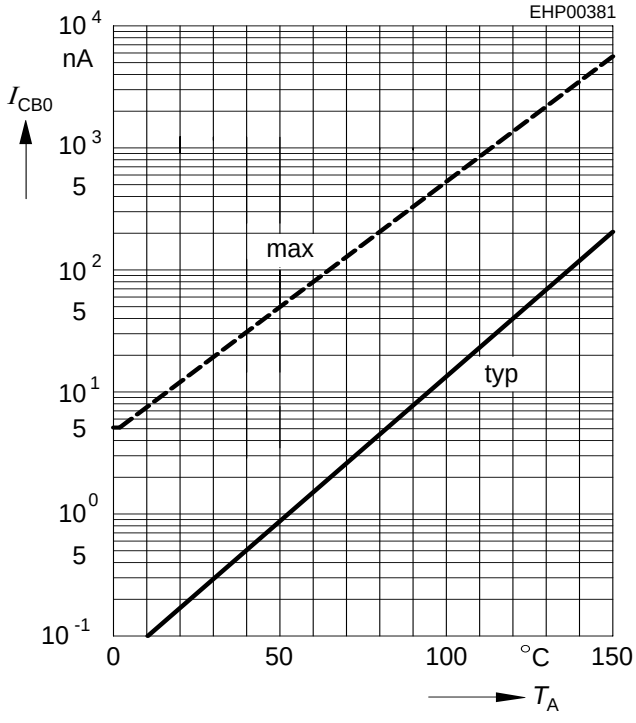

**Base-emitter saturation voltage**

$I_C = f(V_{BEsat})$, $h_{FE}$ = 20



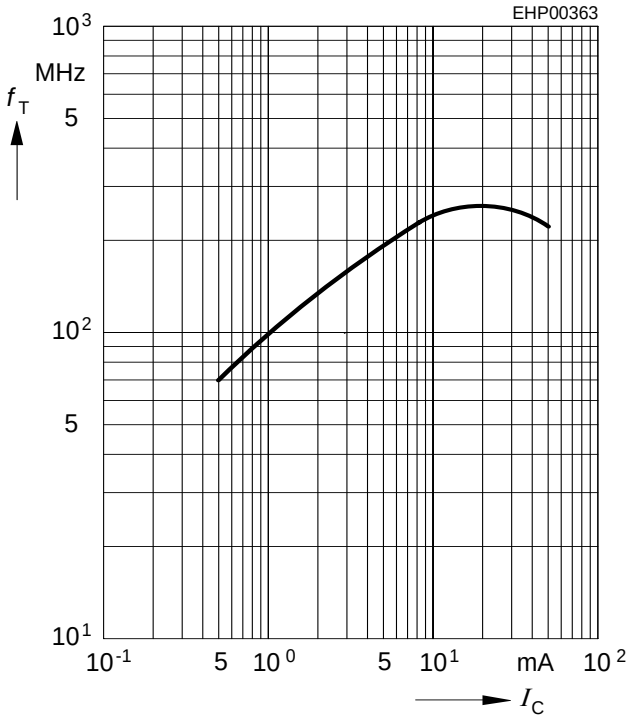

**Collector cutoff current $I_{CBO} = f(T_A)$**

$V_{CBO}$ = 30 V



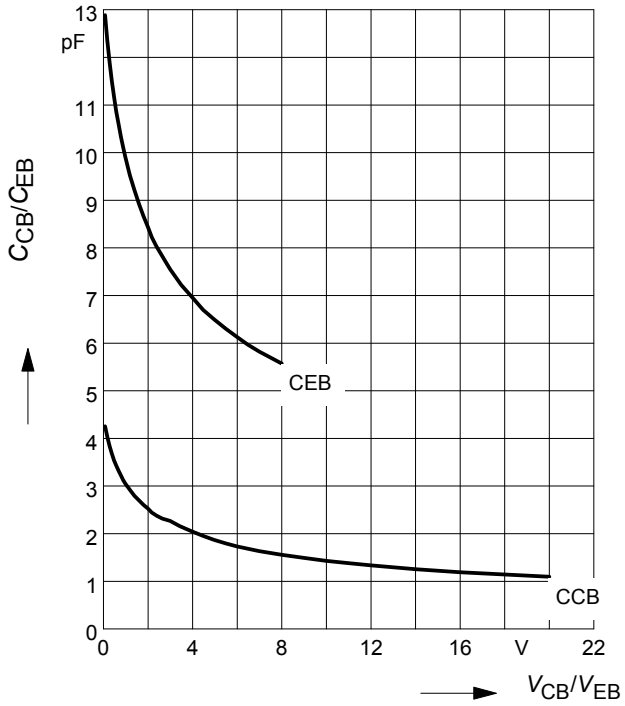
**Transition frequency $f_T = f(I_C)$**

$V_{CE}$ = 5 V



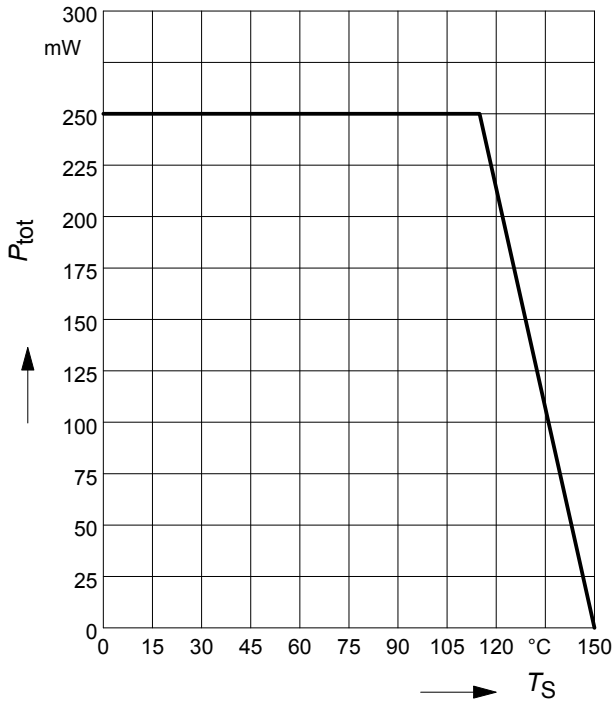

**Collector-base capacitance $C_{cb} = f(V_{CB})$**

**Emitter-base capacitance $C_{eb} = f(V_{EB})$**



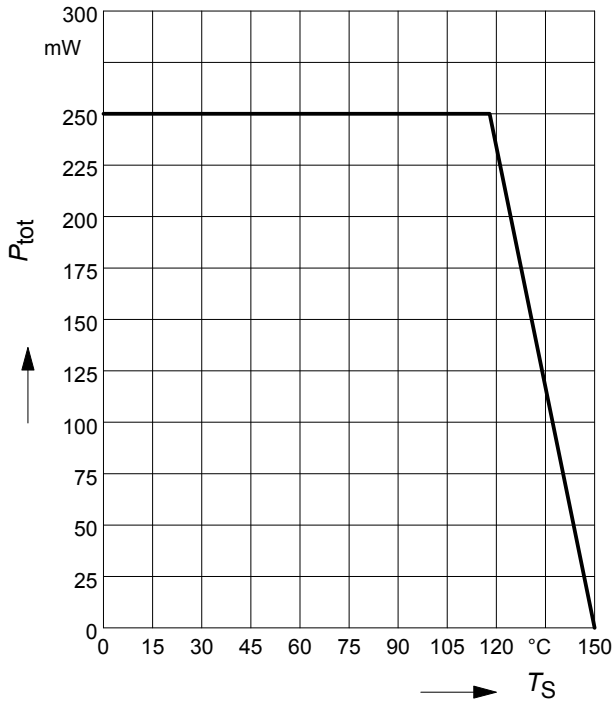

**Total power dissipation $P_{tot} = f(T_S)$**

BC846S, BC847S



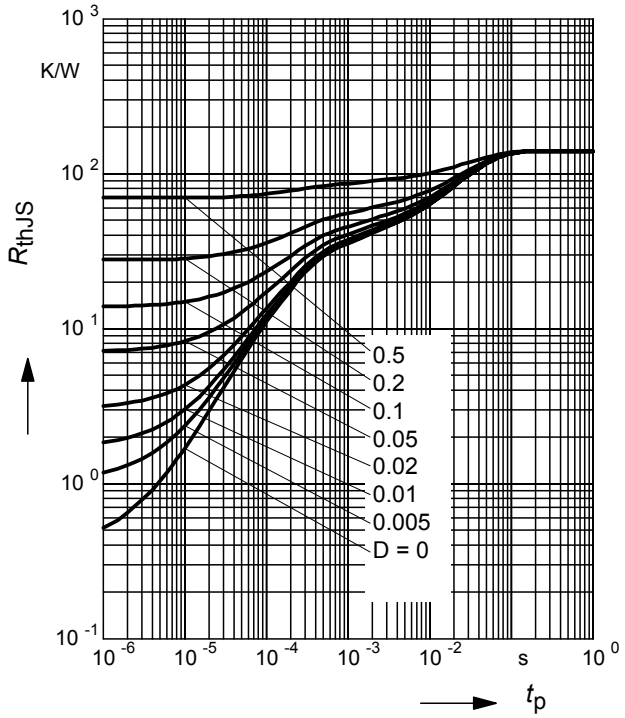

**Total power dissipation $P_{tot} = f(T_S)$**

BC846U



**Permissible Pulse Load** $R_{thJS} = f(t_p)$

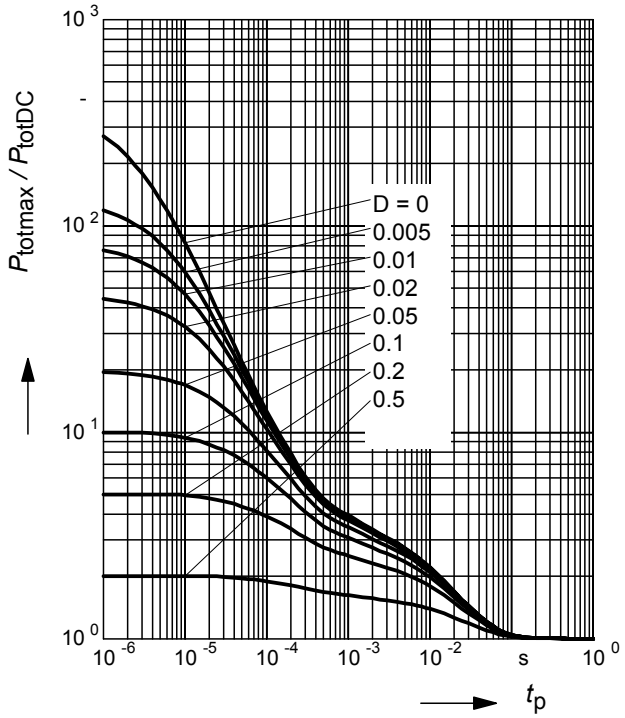
BC846S, BC847S




**Permissible Pulse Load**

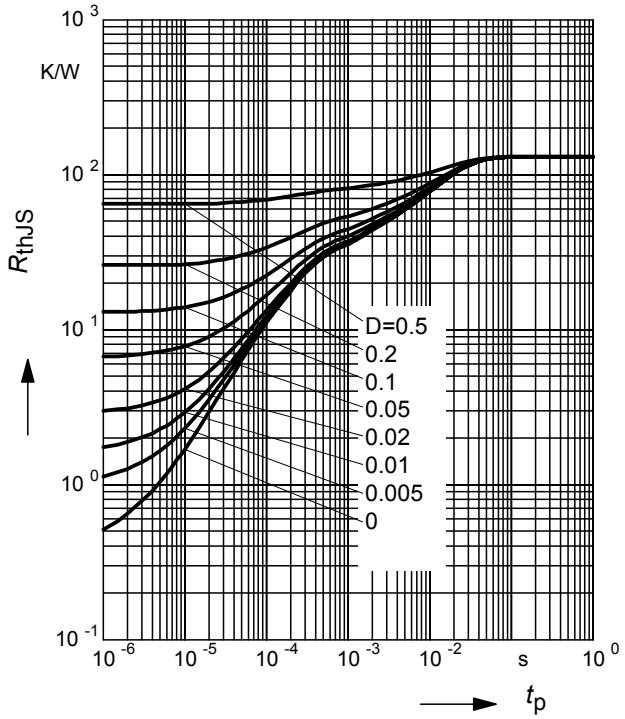
$P_{totmax}/P_{totDC} = f(t_p)$

BC846S, BC847S




**Permissible Puls Load** $R_{thJS} = f(t_p)$

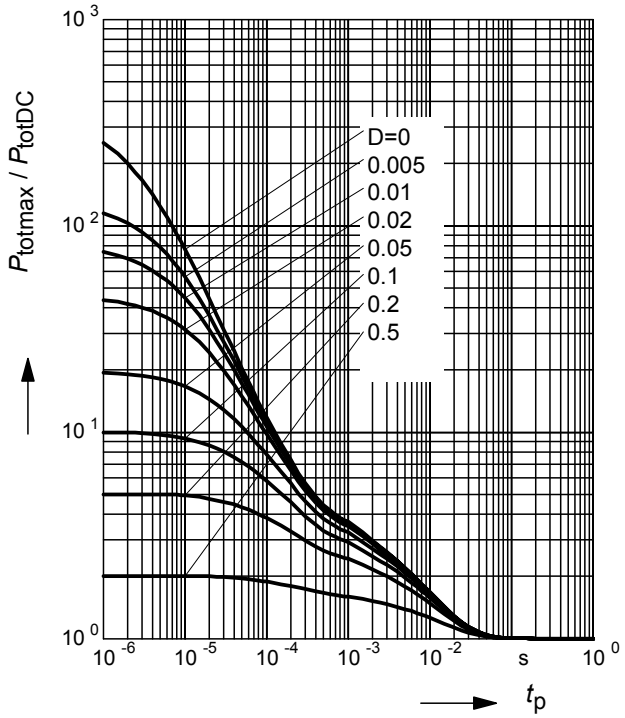
BC846U



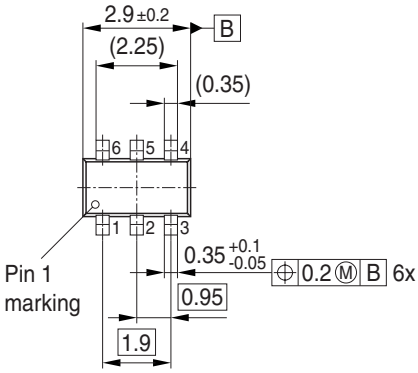

**Permissible Pulse Load**

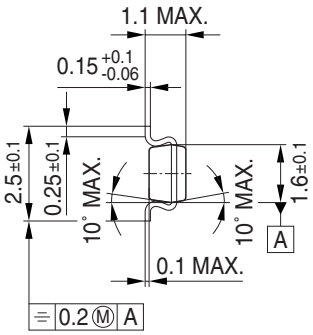
$P_{totmax}/P_{totDC} = f(t_p)$

BC846U

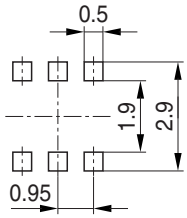


## Package Outline



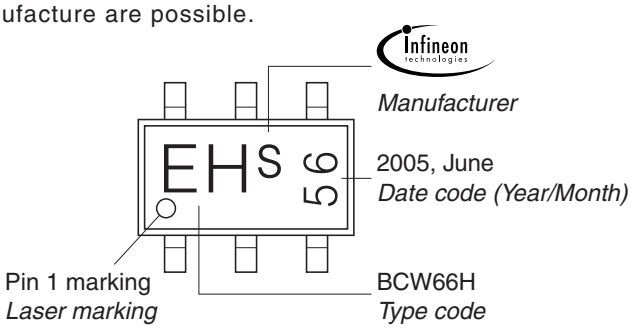




## Foot Print




## Marking Layout (Example)

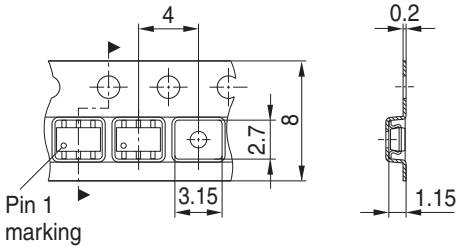
Small variations in positioning of
Date code, Type code and Manufacture are possible.




## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



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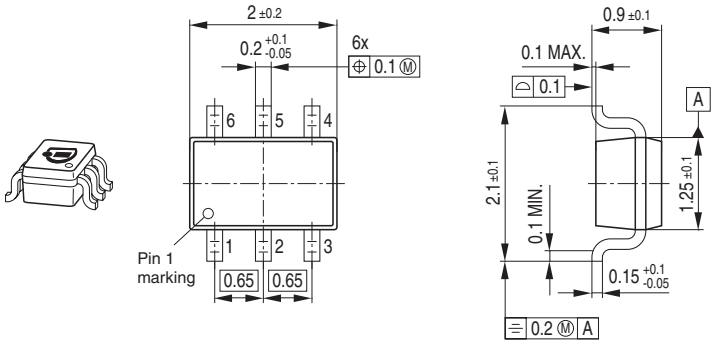


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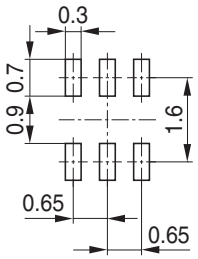


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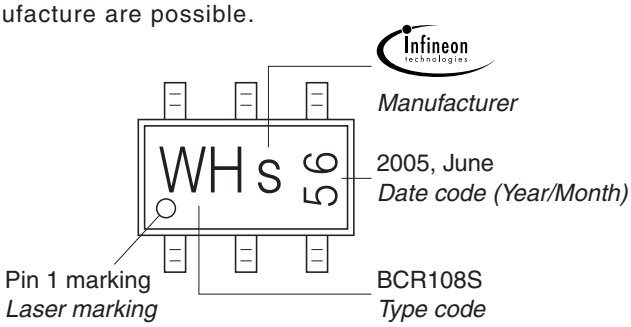


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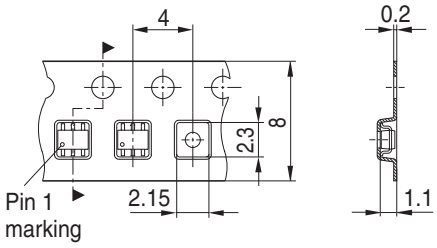

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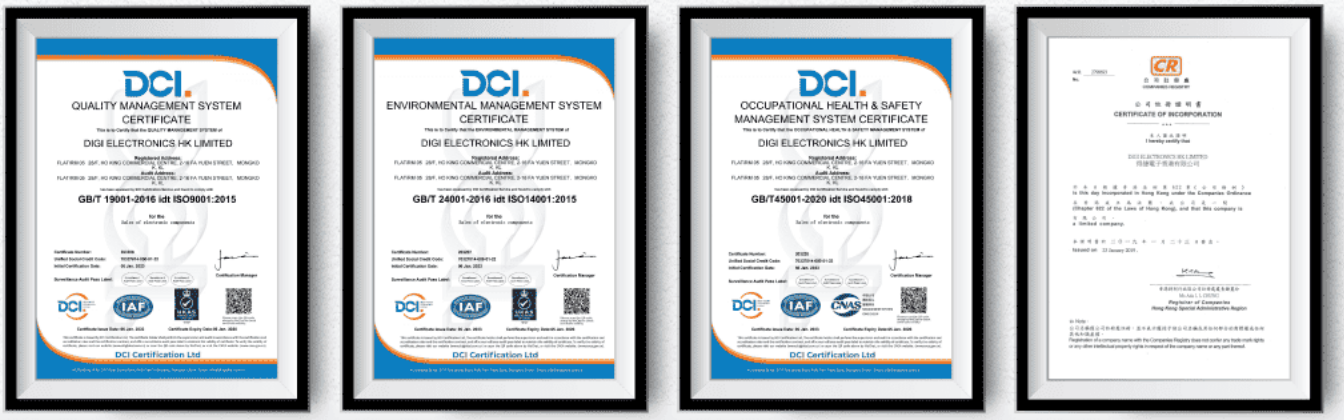



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