

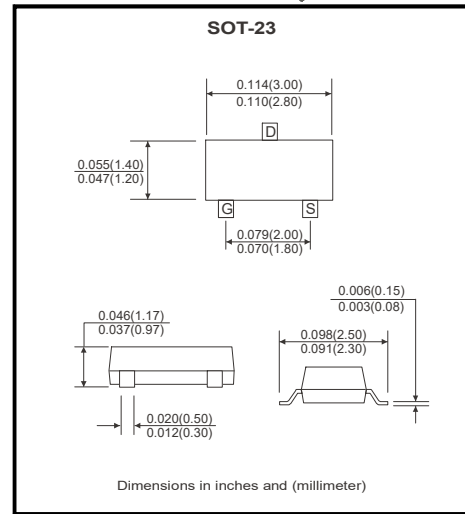
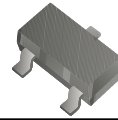
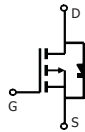
## BSS84-HF

**P-Channel**  
**RoHS Device**  
**Halogen Free**  
**Features**

- V<sub>DS</sub> (V) = -50V
- I<sub>D</sub> = -130 mA
- R<sub>DS(ON)</sub> < 10Ω (V<sub>GS</sub> = -5V)

### Circuit diagram

- G : Gate
- S : Source
- D : Drain



### Maximum Ratings (at T<sub>A</sub>=25°C unless otherwise noted)

| Parameter                                   | Symbol           | Value    | Unit |
|---------------------------------------------|------------------|----------|------|
| Drain-Source Voltage                        | V <sub>DS</sub>  | -50      | V    |
| Gate-Source Voltage                         | V <sub>GS</sub>  | ±20      | V    |
| Continuous Drain Current                    | I <sub>D</sub>   | -0.13    | A    |
| Pulsed Drain Current @t <sub>p</sub> < 10 s | I <sub>DM</sub>  | -0.52    | A    |
| Power Dissipation                           | P <sub>D</sub>   | 225      | mW   |
| Thermal Resistance from Junction to Ambient | R <sub>JA</sub>  | 556      | °C/W |
| Junction Temperature                        | T <sub>J</sub>   | 150      | °C   |
| Storage Temperature                         | T <sub>STG</sub> | -55~+150 | °C   |

### Electrical Characteristics (at T<sub>A</sub>=25°C unless otherwise noted)

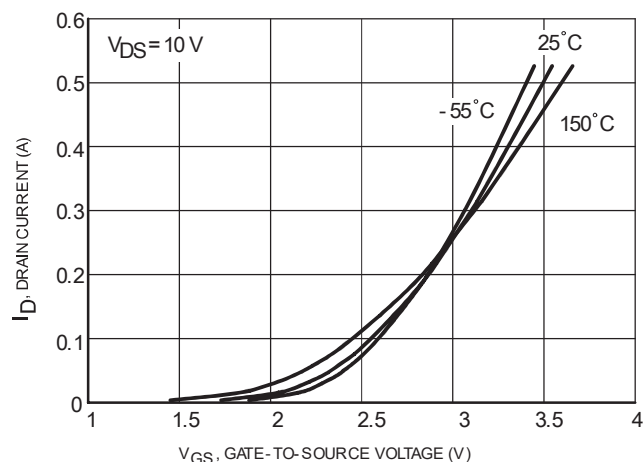
| Parameter                             | Symbol              | Test Conditions                                                                    | Min  | Typ  | Max   | Unit |
|---------------------------------------|---------------------|------------------------------------------------------------------------------------|------|------|-------|------|
| Drain-Source Breakdown Voltage        | V <sub>DSS</sub>    | I <sub>D</sub> = -250μA, V <sub>GS</sub> = 0V                                      | -50  |      |       | V    |
| Zero Gate Voltage Drain Current       | I <sub>DSS</sub>    | V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V                                       |      |      | -0.1  | A    |
|                                       |                     | V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V                                       |      |      | -15   |      |
| Gate-Body Leakage Current             | I <sub>GSS</sub>    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V                                       |      |      | ±10   | A    |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1.0mA                        | -0.8 |      | -2    | V    |
| Static Drain-Source On-Resistance     | R <sub>DS(ON)</sub> | V <sub>GS</sub> = -5V, I <sub>D</sub> = -100mA                                     |      |      | 10    | Ω    |
| Forward Transconductance              | g <sub>FS</sub>     | V <sub>DS</sub> = -25V, I <sub>D</sub> = -100mA, f = 1.0KHz                        | 50   |      |       | mS   |
| Input Capacitance                     | C <sub>iss</sub>    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = -5V, f = 1MHz                              |      | 30   |       | pF   |
| Output Capacitance                    | C <sub>oss</sub>    |                                                                                    |      | 10   |       |      |
| Reverse Transfer Capacitance          | C <sub>rss</sub>    |                                                                                    |      | 5    |       |      |
| Turn-On DelayTime                     | t <sub>d(on)</sub>  | V <sub>DD</sub> = -15V, I <sub>D</sub> = -0.25A, R <sub>L</sub> = 50 <sup>1)</sup> |      | 2.5  |       | ns   |
| Turn-On Rise Time                     | t <sub>r</sub>      |                                                                                    |      | 1    |       |      |
| Turn-Off DelayTime                    | t <sub>d(off)</sub> |                                                                                    |      | 16   |       |      |
| Turn-Off Fall Time                    | t <sub>f</sub>      |                                                                                    |      | 8    |       |      |
| Gate Charge                           | Q <sub>T</sub>      |                                                                                    |      | 6000 |       | PC   |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |                                                                                    |      |      | -0.13 | A    |
| Maximum Body-Diode Pulsed Current     | I <sub>SM</sub>     |                                                                                    |      |      | -0.52 |      |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>SD</sub> = -130mA, V <sub>GS</sub> = 0V                                     |      | -2.5 |       | V    |

Notes : 1) Switching Time is Essentially Independent of Operating Temperature.

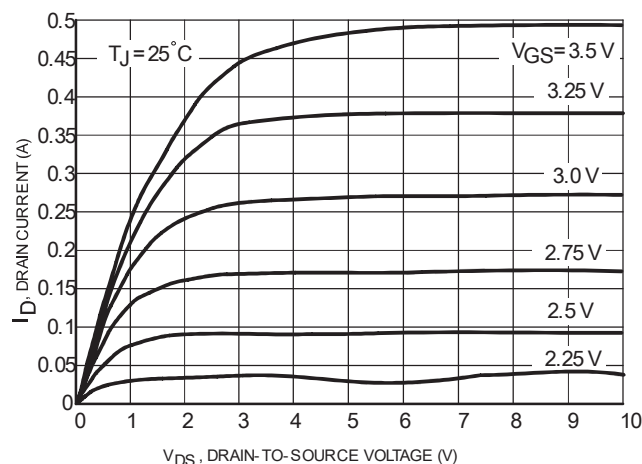
Company reserves the right to improve product design , functions and reliability without notice.

REV:A

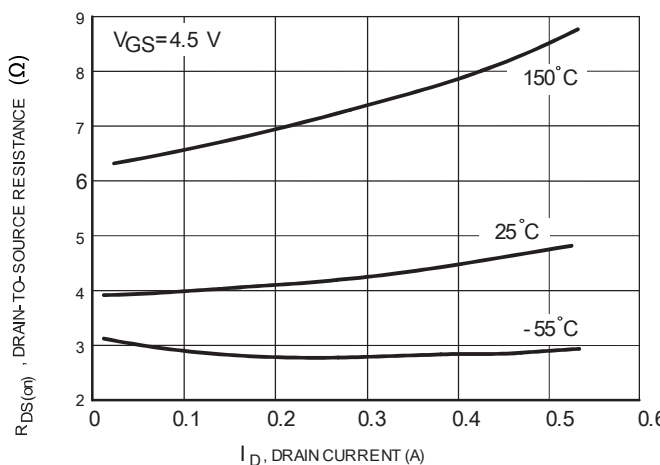
## Typical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)



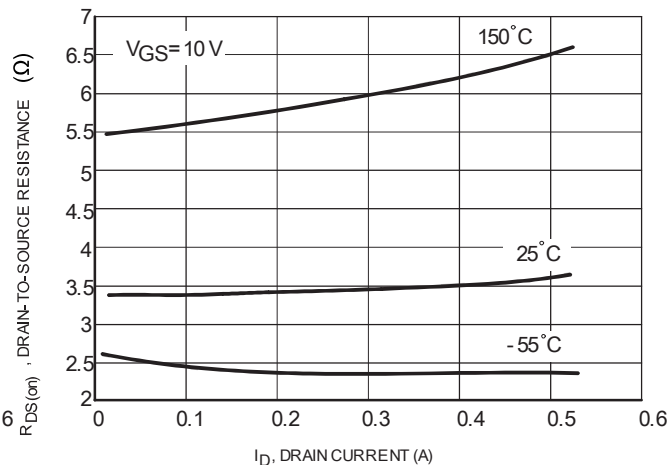
**Fig1. Transfer Characteristics**



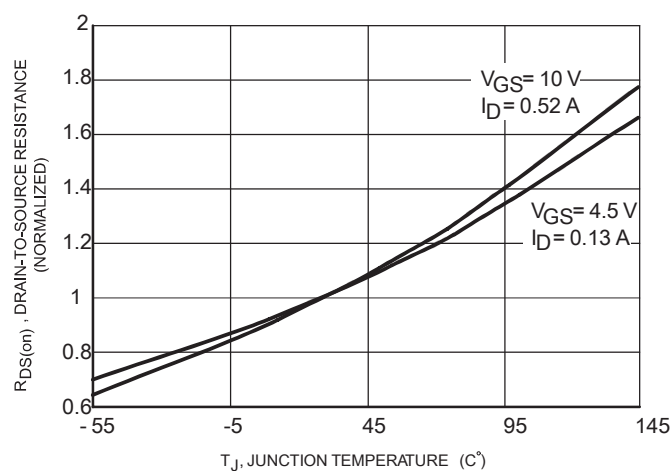
**Fig2. On-Region Characteristics**



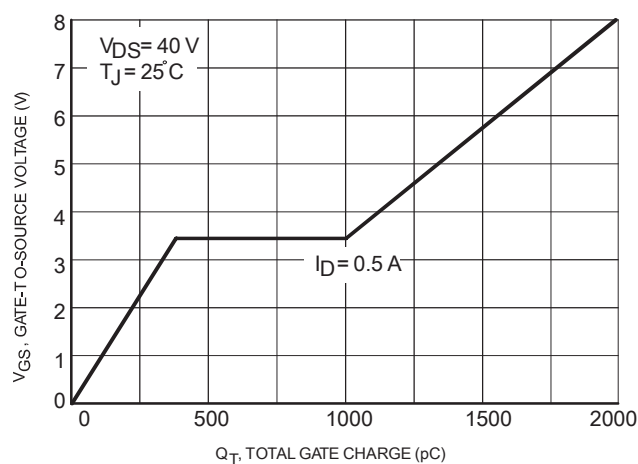
**Fig3. On-Resistance versus Drain Current**



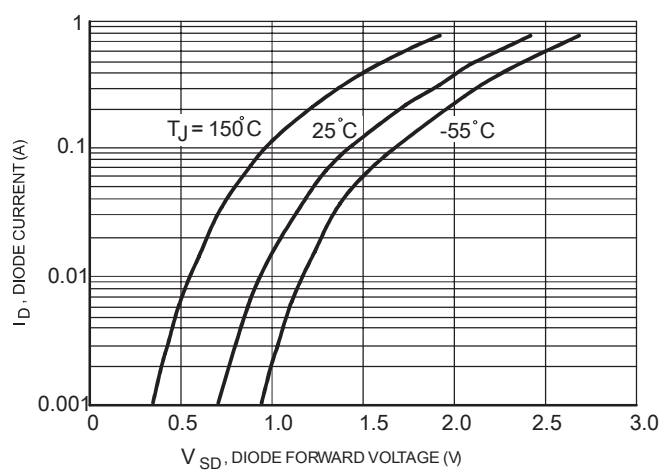
**Fig4. On-Resistance versus Drain Current**



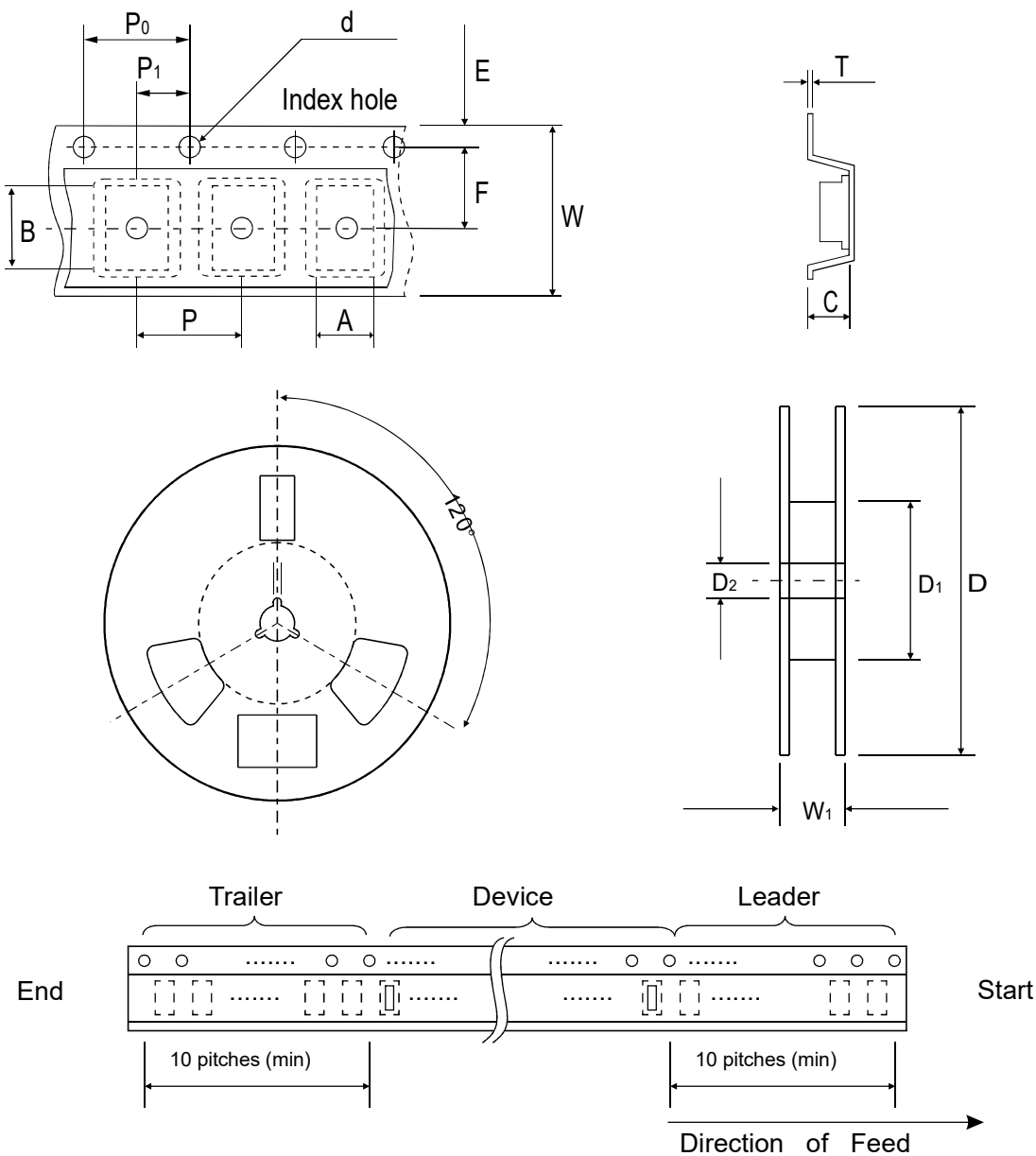
**Fig5. On-Resistance Variation with Temperature**



**Fig6. Gate Charge**



Reel Taping Specification



| SOT-23 | SYMBOL | A             | B             | C             | d             | D            | D <sub>1</sub> | D <sub>2</sub> |
|--------|--------|---------------|---------------|---------------|---------------|--------------|----------------|----------------|
|        | (mm)   | 3.10 ± 0.10   | 2.85 ± 0.10   | 1.40 ± 0.10   | 1.55 ± 0.10   | 178 ± 1      | 50.0 MIN.      | 13.0 ± 0.20    |
|        | (inch) | 0.122 ± 0.004 | 0.112 ± 0.004 | 0.055 ± 0.004 | 0.061 ± 0.004 | 7.008 ± 0.04 | 1.969 MIN.     | 0.512 ± 0.008  |

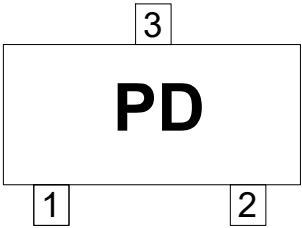
  

| SOT-23 | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W             | W <sub>1</sub> |
|--------|--------|---------------|---------------|---------------|----------------|----------------|---------------|----------------|
|        | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.05    | 8.00 ± 0.30   | 14.4 MAX.      |
|        | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.002  | 0.315 ± 0.012 | 0.567 MAX.     |

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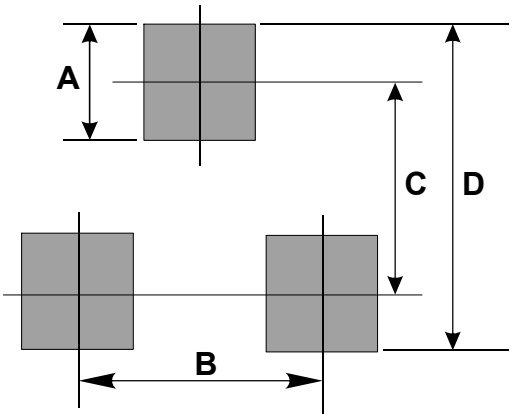
Marking Code

| Part Number | Marking Code |
|-------------|--------------|
| BSS84-HF    | PD           |



Suggested PAD Layout

| SIZE | SOT-23 |        |
|------|--------|--------|
|      | (mm)   | (inch) |
| A    | 0.80   | 0.031  |
| B    | 1.90   | 0.075  |
| C    | 2.02   | 0.080  |
| D    | 2.82   | 0.111  |



Standard Packaging

| Case Type | Qty per Reel | Reel Size |
|-----------|--------------|-----------|
|           | (Pcs)        | (inch)    |
| SOT-23    | 3000         | 7         |