

## POWER MOSFET

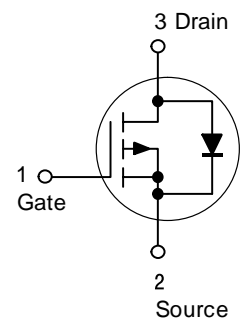
### P-CHANNEL 130mAmps,50Volts

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry. Typical applications are dc–dc converters, load switching , power management in portable and battery–powered products such as computers , printers , cellular and cordless telephones.



#### ● FEATURES

- 1)Energy Efficient
- 2)Miniature SOT–323 Surface Mount Package Saves Board Space
- 3)We declare that the material of product compliant with RoHS requirements and Halogen Free.



#### ● DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping       |
|--------|---------|----------------|
| FTK84U | PD      | 3000/Tape&Reel |

#### ● MAXIMUM RATINGS(Ta = 25°C)

| Parameter  | Symbol                            | Limits   | Unit |
|--|-----------------------------------|----------|------|
| Drain–to–Source Voltage  | V <sub>DSS</sub>                  | 50       | V    |
| Gate–to–Source Voltage – Continuous                            | V <sub>GS</sub>                   | ±20      | V    |
| Drain Current  |                                   |          | mA   |
| – Continuous @ TA = 25°C                                       | I <sub>D</sub>                    | 130      |      |
| – Pulsed Drain Current (t <sub>p</sub> ≤ 10 μs)                | I <sub>DM</sub>                   | 520      |      |
| Total Power Dissipation @ TA = 25°C                            | P <sub>D</sub>                    | 225      | mW   |
| Junction and Storage temperature                               | T <sub>j</sub> , T <sub>stg</sub> | –55~+150 | °C   |
| Thermal Resistance – Junction–to–Ambient                       | R <sub>θJA</sub>                  | 556      | °C/W |
| Maximum Lead Temperature for SolderingPurposes, for 10 seconds | T <sub>L</sub>                    | 260      | °C   |

**● ELECTRICAL CHARACTERISTICS (Ta= 25 °C)**
**OFF CHARACTERISTICS**

| Characteristic   | Symbol               | Min. | Typ. | Max.            | Unit |
|--|----------------------|------|------|-----------------|------|
| Drain-to-Source Breakdown Voltage<br>(V <sub>GS</sub> = 0 Vdc, I <sub>D</sub> = 250μAdc)   | V <sub>BR(DSS)</sub> | 50   | –    | –               | V    |
| Zero Gate Voltage Drain Current<br>(V <sub>DS</sub> = 25 Vdc, V <sub>GS</sub> = 0 Vdc)<br>(V <sub>DS</sub> = 50 Vdc, V <sub>GS</sub> = 0 Vdc)<br>(V <sub>DS</sub> = 50 Vdc, V <sub>GS</sub> = 0 Vdc, T <sub>J</sub> = 125°C) | I <sub>DSS</sub>     | –    | –    | 0.1<br>15<br>60 | μA   |
| Gate-Body Leakage Current<br>(V <sub>GS</sub> = ± 20 Vdc, V <sub>DS</sub> = 0 Vdc)   | I <sub>GSS</sub>     | –    | –    | ±10             | nA   |

**ON CHARACTERISTICS (Note 1.)**

|   |                     |     |     |     |      |
|---|---------------------|-----|-----|-----|------|
| Gate-Source Threshold Voltage<br>(V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μAdc) | V <sub>GS(th)</sub> | 0.8 | –   | 2.0 | V    |
| Static Drain-to-Source On-Resistance<br>(V <sub>GS</sub> = 5.0 Vdc, I <sub>D</sub> = 100 mAdc)  | R <sub>DS(on)</sub> | –   | 5.0 | 10  | Ohms |
| Transfer Admittance<br>(V <sub>DS</sub> = 25Vdc, I <sub>D</sub> = 100mAdc, f = 1.0kHz)          | y <sub>fs</sub>     | 50  | –   | –   | mS   |

**DYNAMIC CHARACTERISTICS**

|   |                  |   |    |   |    |
|---|------------------|---|----|---|----|
| Input Capacitance(V <sub>DS</sub> = 5.0 Vdc)    | C <sub>iss</sub> | – | 30 | – | pF |
| Output Capacitance(V <sub>DS</sub> = 5.0 Vdc)   | C <sub>oss</sub> | – | 10 | – |    |
| Transfer Capacitance(V <sub>DG</sub> = 5.0 Vdc) | C <sub>rss</sub> | – | 5  | – |    |

**SWITCHING CHARACTERISTICS (Note 2.)**

|                     |   |                     |   |      |   |    |
|---------------------|---|---------------------|---|------|---|----|
| Turn-On Delay Time  | (V <sub>DD</sub> = -15Vdc,<br>I <sub>D</sub> = -2.5Adc, R <sub>L</sub> = 50Ω) | t <sub>d(on)</sub>  | – | 2.5  | – | ns |
| Rise Time           |   | t <sub>r</sub>      | – | 1    | – |    |
| Turn-Off Delay Time |   | t <sub>d(off)</sub> | – | 16   | – |    |
| Fall Time           |   | t <sub>f</sub>      | – | 8    | – |    |
| Gate Charge         |   | Q <sub>T</sub>      | – | 6000 | – | pC |

**SOURCE-DRAIN DIODE CHARACTERISTICS**

|                           |                 |   |     |      |   |
|---------------------------|-----------------|---|-----|------|---|
| Continuous Current        | I <sub>S</sub>  | – | –   | 0.13 | A |
| Pulsed Current            | I <sub>SM</sub> | – | –   | 0.52 |   |
| Forward Voltage (Note 2.) | V <sub>SD</sub> | – | 2.5 | –    | V |

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

2. Switching characteristics are independent of operating junction temperature.

## ELECTRICAL CHARACTERISTICS CURVES

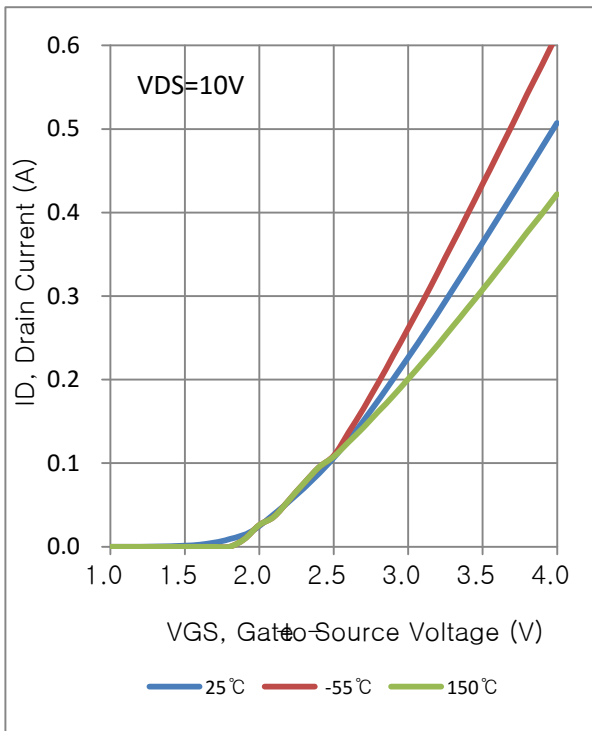


FIG.1 Transfer Characteristics

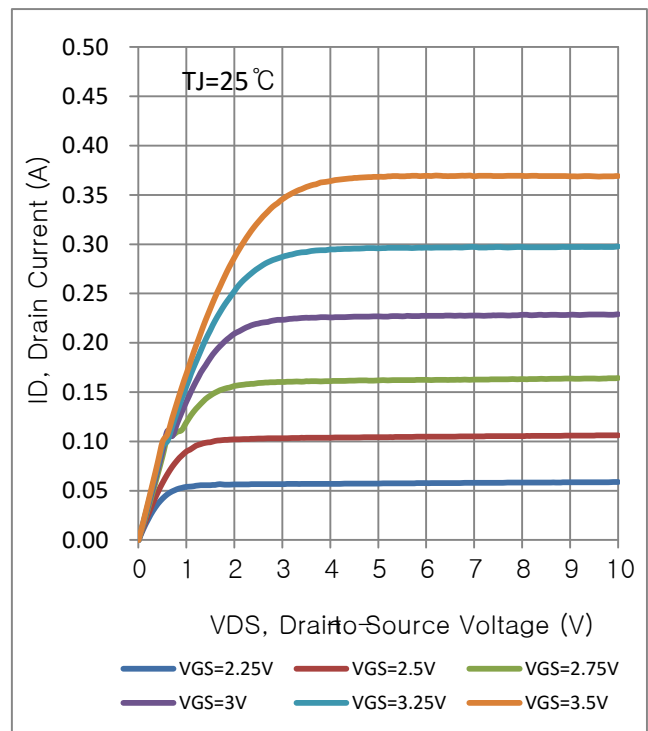


FIG.2 On-Region Characteristics

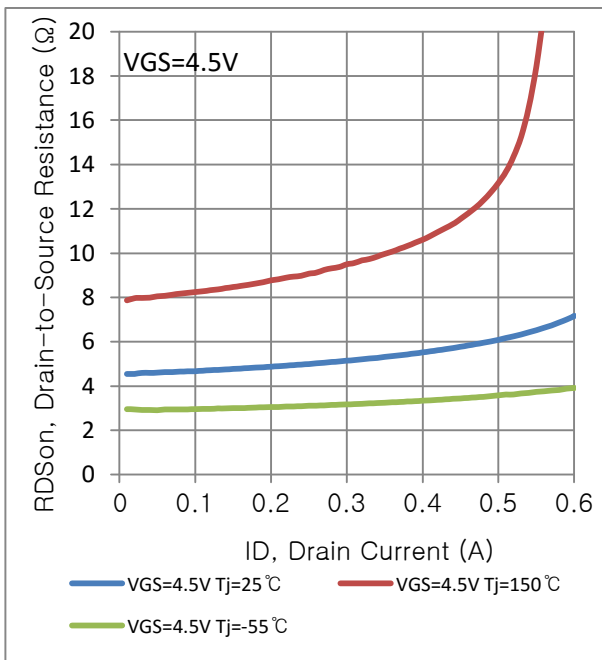


FIG.3 On-Resistance versus Drain Current

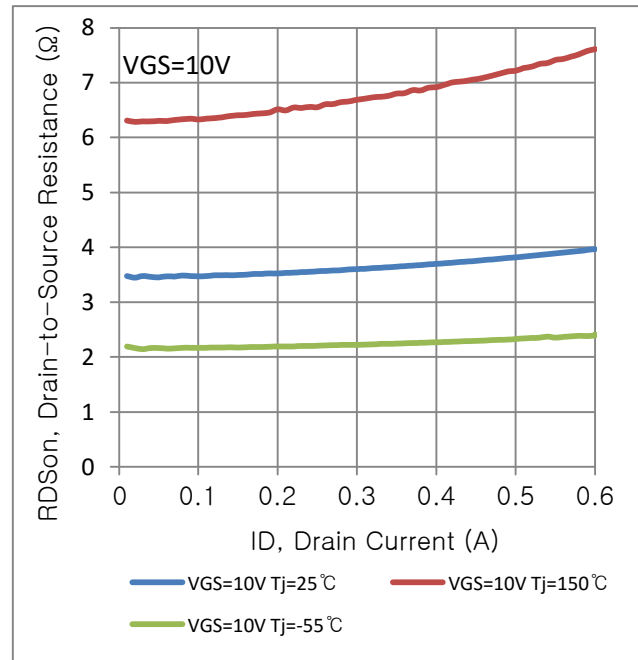


FIG.4 On-Resistance versus Drain Current

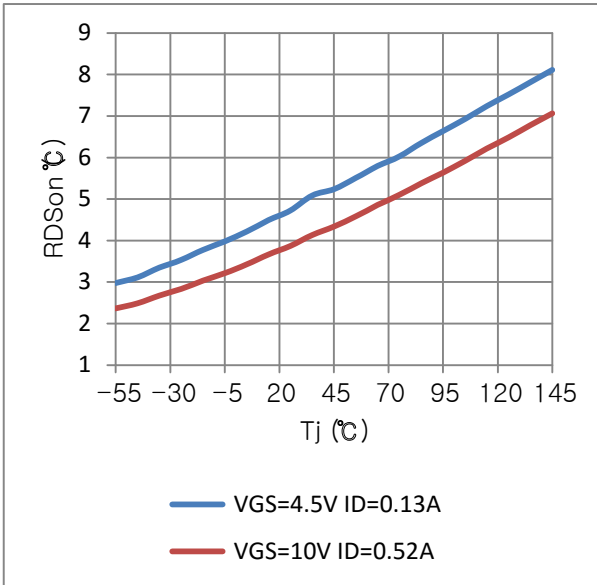


FIG.5 On-Resistance Variation with Temperature

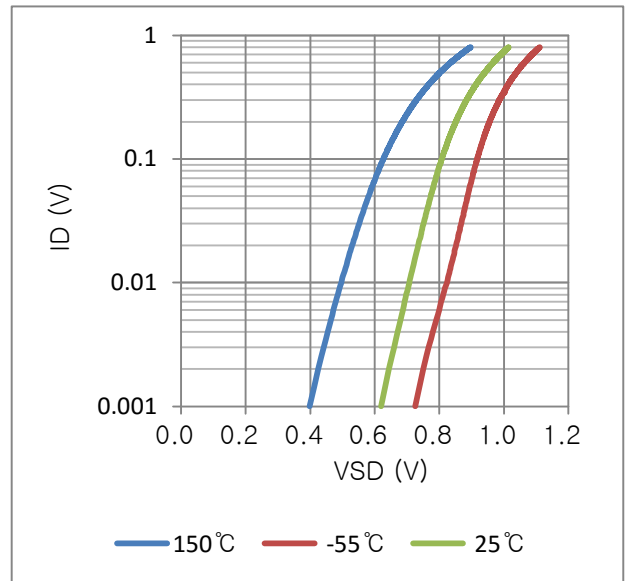
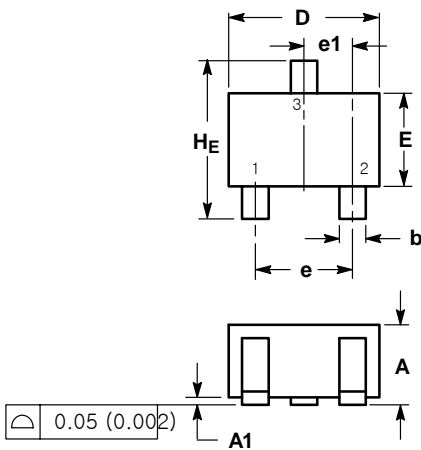


FIG.6 Body Diode Forward Voltage

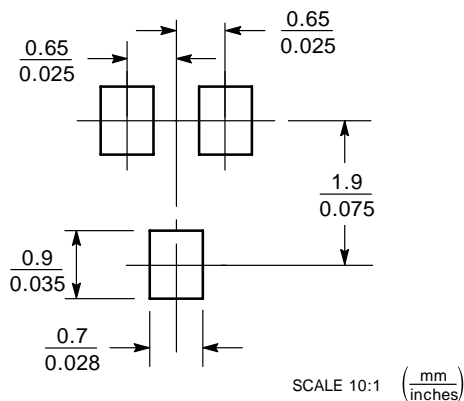
## SOT-323



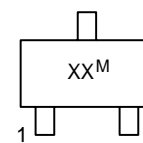
NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| A1  | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A2  | 0.7 REF     |      |      | 0.028 REF |       |       |
| b   | 0.30        | 0.35 | 0.40 | 0.012     | 0.014 | 0.016 |
| c   | 0.10        | 0.18 | 0.25 | 0.004     | 0.007 | 0.010 |
| D   | 1.80        | 2.10 | 2.20 | 0.071     | 0.083 | 0.087 |
| E   | 1.15        | 1.24 | 1.35 | 0.045     | 0.049 | 0.053 |
| e   | 1.20        | 1.30 | 1.40 | 0.047     | 0.051 | 0.055 |
| e1  | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L   | 0.425 REF   |      |      | 0.017 REF |       |       |
| HE  | 2.00        | 2.10 | 2.40 | 0.079     | 0.083 | 0.095 |

### SOLDERING FOOTPRINT\*



### GENERIC MARKING DIAGRAM



XX = Specific Device Code  
 M = Date Code  
 ■ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot may or may not be present.