

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

2SK3857TV

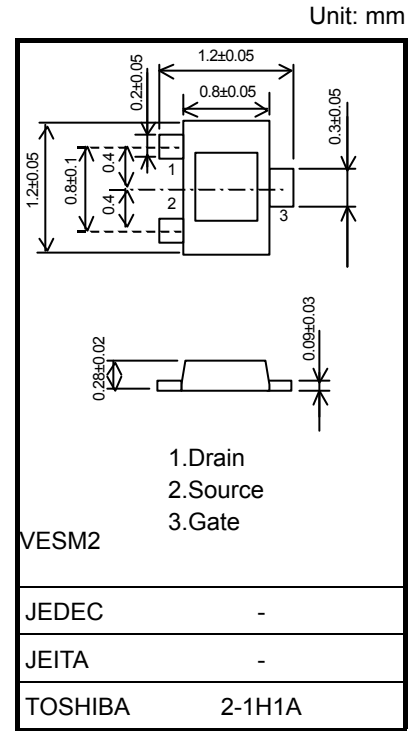
For ECM

- Application for Ultra-compact ECM

Absolute Maximum Ratings (Ta=25°C)

| Characteristic | Symbol | Rating | Unit |
|-------------------------------------|------------------|---------|------|
| Gate-Drain voltage | V _{GD0} | -20 | V |
| Gate Current | I _G | 10 | mA |
| Drain power dissipation (Ta = 25°C) | P _D | 100 | mW |
| Junction Temperature | T _j | 125 | °C |
| Storage temperature range | T _{stg} | -55~125 | °C |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

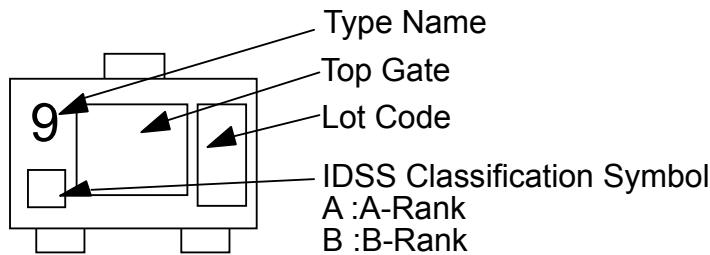


Weight: 0.8mg (typ.)

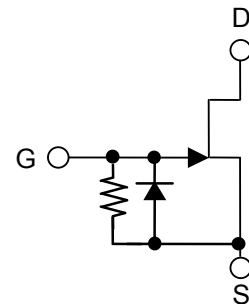
IDSS CLASSIFICATION

- A-Rank 140~240μA
- B-Rank 210~350μA

Marking



Equivalent Circuit



Precaution

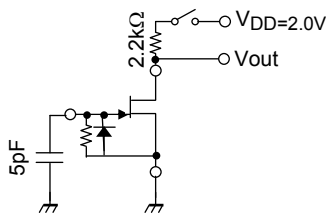
There is a metal plate on the top of package, which has the same electrical potential as the Gate terminal. Don't use it as a terminal.

Electrical Characteristics (Ta=25°C)

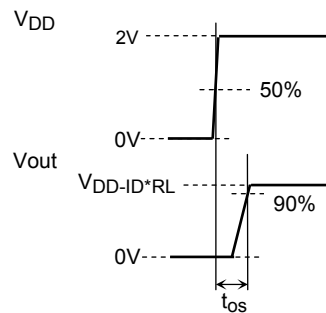
| Characteristic | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-----------------------------|---------------|--|------|------|------|---------------|
| Drain Current | I_{DSS} | $V_{DS} = 2\text{ V}, V_{GS} = 0$ | 140 | — | 350 | μA |
| Drain Current | I_D | $V_{DD} = 2\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}$ | — | — | 370 | μA |
| Gate-Source Cut-off Voltage | $V_{GS(OFF)}$ | $V_{DS} = 2\text{ V}, I_D = 1\mu\text{A}$ | -0.1 | — | -1.0 | V |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 2\text{ V}, V_{GS} = 0\text{ V}$ | 0.9 | 1.3 | — | mS |
| Gate-Drain Voltage | $V_{(BR)GDO}$ | $I_G = -10\mu\text{A}$ | -20 | — | — | V |
| Input capacitance | C_{iss} | $V_{DS} = 2\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$ | — | 3.5 | — | pF |
| Voltage Gain | G_v | $V_{DD} = 2\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}, f = 1\text{ kHz}, v_{in} = 100\text{ mV}$ | -3.0 | -0.5 | — | dB |
| Delta Voltage Gain | $DG_v(f)$ | $V_{DD} = 2\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}, f = 1\text{ kHz to } 100\text{ Hz}, v_{in} = 100\text{ mV}$ | — | 0 | -1 | dB |
| Delta Voltage Gain | $DG_v(V)$ | $V_{DD} = 2\text{ V to } 1.5\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}, f = 1\text{ kHz}, v_{in} = 100\text{ mV}$ | — | -0.8 | -2 | dB |
| Noise Voltage | V_N | $V_{DD} = 2\text{ V}, R_L = 1\text{ k}\Omega, C_g = 10\text{ pF}, G_v = 80\text{ dB}, \text{A-Curve Filter}$ | — | 25 | 55 | mV |
| Total Harmonic Distortion | THD | $V_{DD} = 2\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}, f = 1\text{ kHz}, v_{in} = 50\text{ mV}$ | — | 0.7 | — | % |
| Time Output Stability | t_{os} | $V_{DD} = 2\text{ V}, R_L = 2.2\text{ k}\Omega, C_g = 5\text{ pF}$ | — | 100 | 200 | ms |

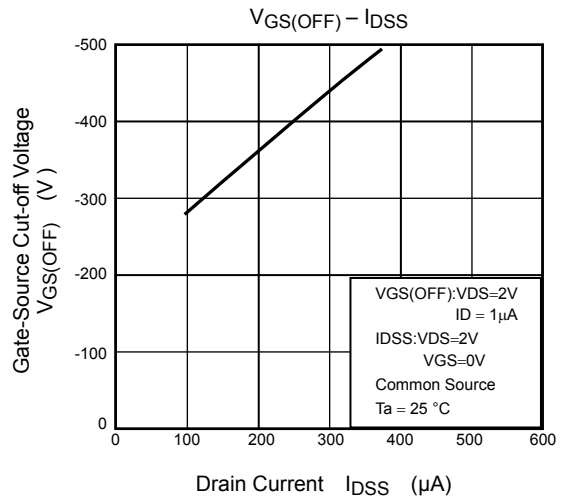
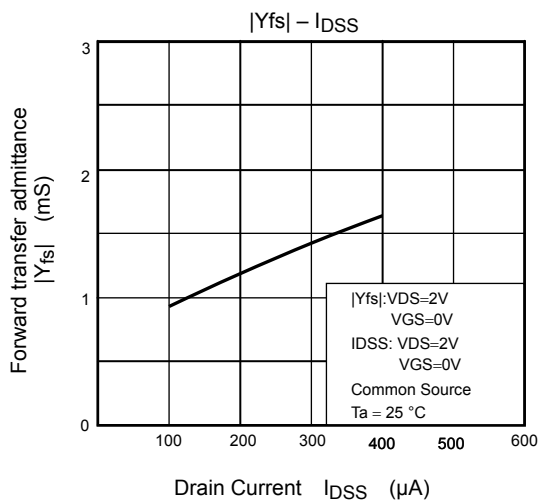
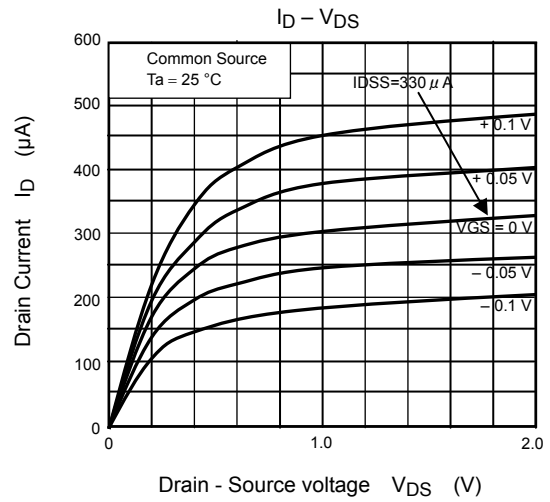
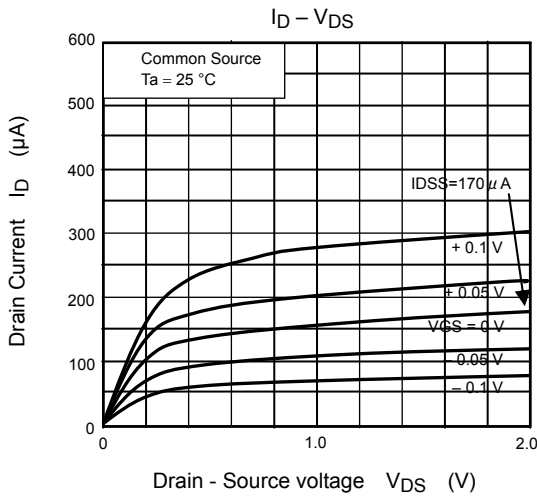
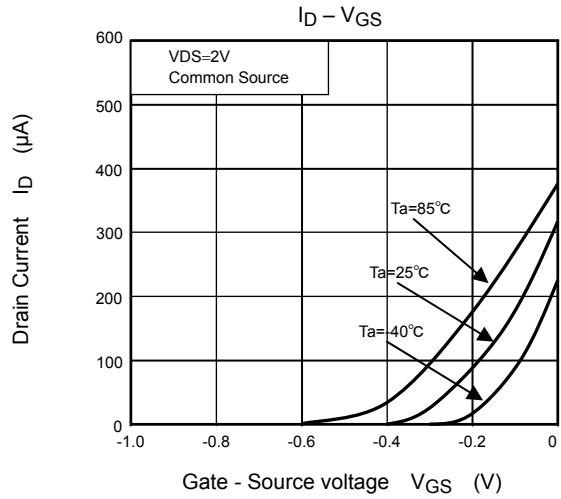
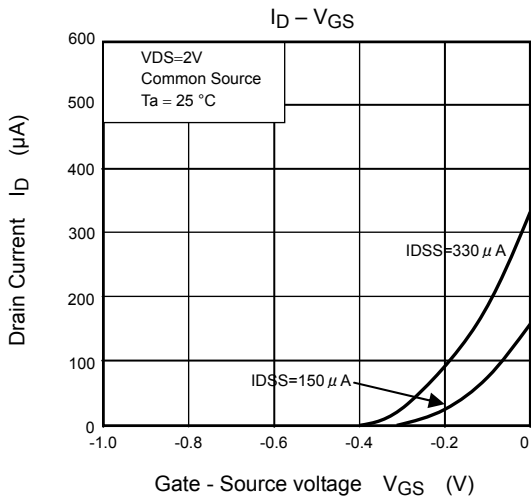
Time Output Stability Test Method

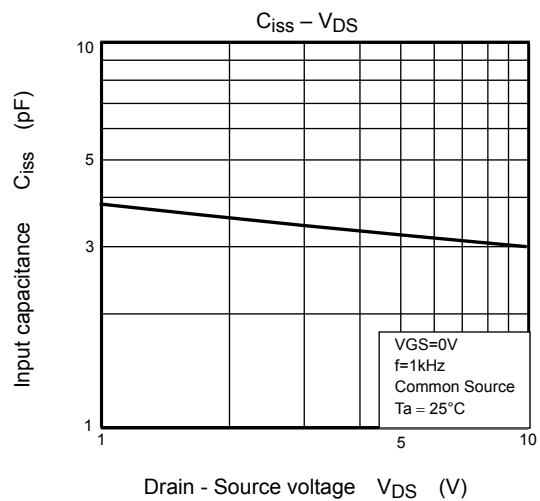
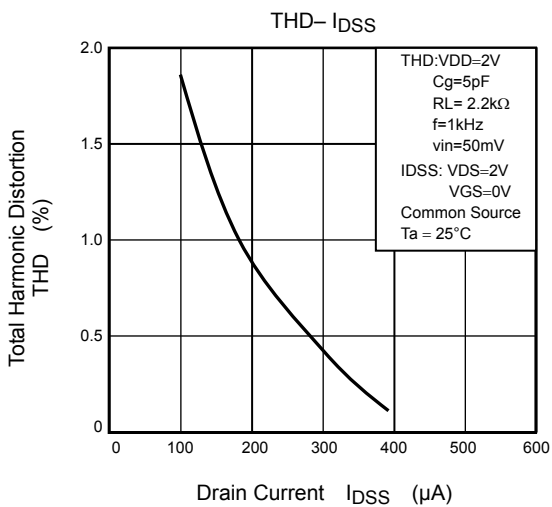
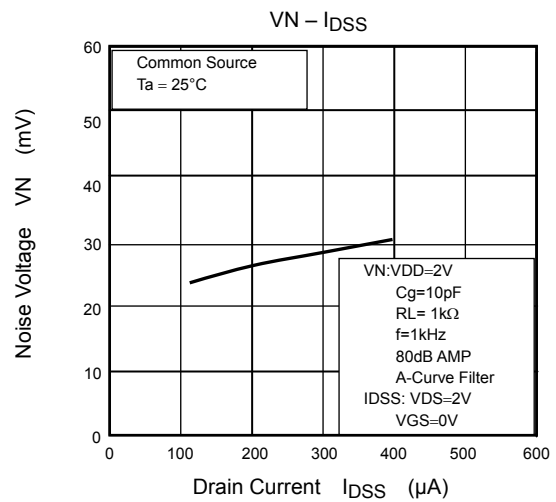
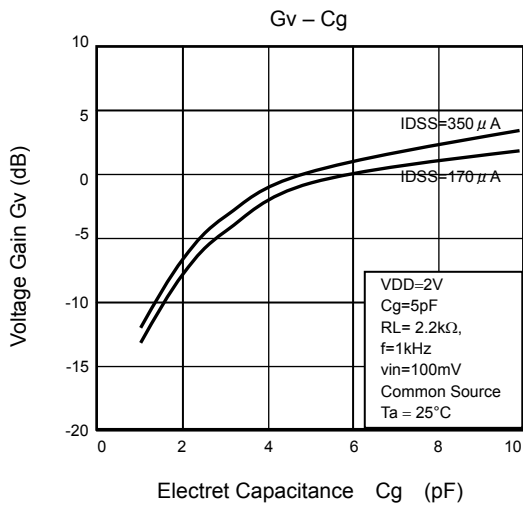
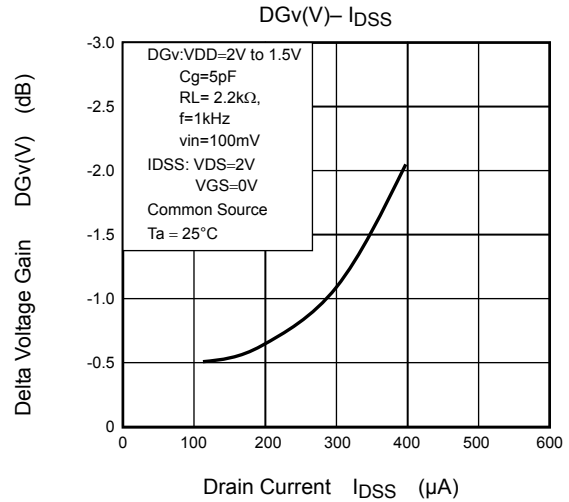
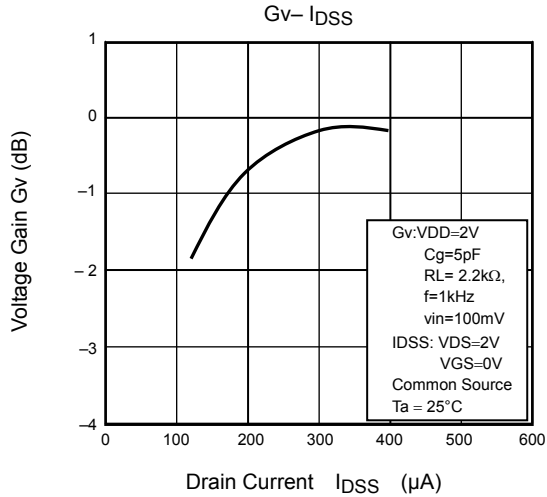
a) TEST CIRCUIT



b) TEST SIGNAL







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20070701-EN GENERAL

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