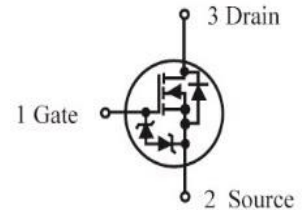
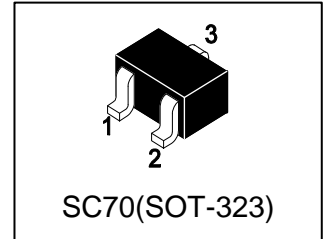


LBSS139WT1G

S-LBSS139WT1G

Power MOSFET

200 mA, 60V N-Channel SC-70



1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- Low threshold voltage ($V_{GS(th)}$: 0.5V...1.5V) makes it ideal for low voltage applications.
- ESD Protected:1500V
- MSL:Level 1

2. DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|-------------|---------|-----------------|
| LBSS139WT1G | J2 | 3000/Tape&Reel |
| LBSS139WT3G | J2 | 10000/Tape&Reel |

3. MAXIMUM RATINGS($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Limits | Unit |
|---------------------------------------|-----------|----------|------|
| Drain-Source Voltage | V_{DSS} | 60 | V |
| Gate-to-Source Voltage – Continuous | V_{GS} | ± 20 | V |
| Drain Current | | | mA |
| – Continuous $T_A = 25^\circ\text{C}$ | I_D | 200 | |
| – Pulsed ($t_p \leq 10\mu\text{s}$) | I_{DM} | 800 | |

4. THERMAL CHARACTERISTICS

| Parameter | Symbol | Limits | Unit |
|--|-----------------|-----------------|---------------------------|
| Total Device Dissipation, FR-4 Board (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above 25°C | PD | 150 | mW |
| | | 1.2 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient(Note 1) | $R_{\theta JA}$ | 833 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage temperature | T_J, T_{stg} | $-55 \sim +150$ | $^\circ\text{C}$ |
| Maximum Lead Temperature for Solde Purposes, for 10 seconds | TL | 260 | $^\circ\text{C}$ |

1. FR-4 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)
OFF CHARACTERISTICS

| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|---|--------|--------|--------|------------|------|
| Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA) | VBRDSS | 60 | - | - | V |
| Zero Gate Voltage Drain Current (VGS = 0, VDS = 25 V) (VGS = 0, VDS = 50 V) | IDSS | - - | - - | 0.1 0.5 | μA |
| Gate–Body Leakage Current, Forward (VGS = 20 V) | IGSSF | - | - | 10 | μA |
| Gate–Body Leakage Current, Reverse (VGS = - 20 V) | IGSSR | - | - | -10 | μA |

ON CHARACTERISTICS (Note 2)

| | | | | | |
|--|---------|--------|----------|-----------|------|
| Gate Threshold Voltage (VDS = VGS, ID = 1.0mA) | VGS(th) | 0.5 | - | 1.5 | V |
| Static Drain–Source On–State Resistance (VGS = 2.75 V, ID < 200 mA, TA = -40°C to +85°C) (VGS = 5.0 V, ID = 200 mA) | RDS(on) | - - | 5.6 - | 10 3.5 | Ohms |
| Forward Transconductance (VDS = 25 V, ID = 200 mA, f = 1.0 MHz) | gfs | 100 | - | - | mS |

DYNAMIC CHARACTERISTICS

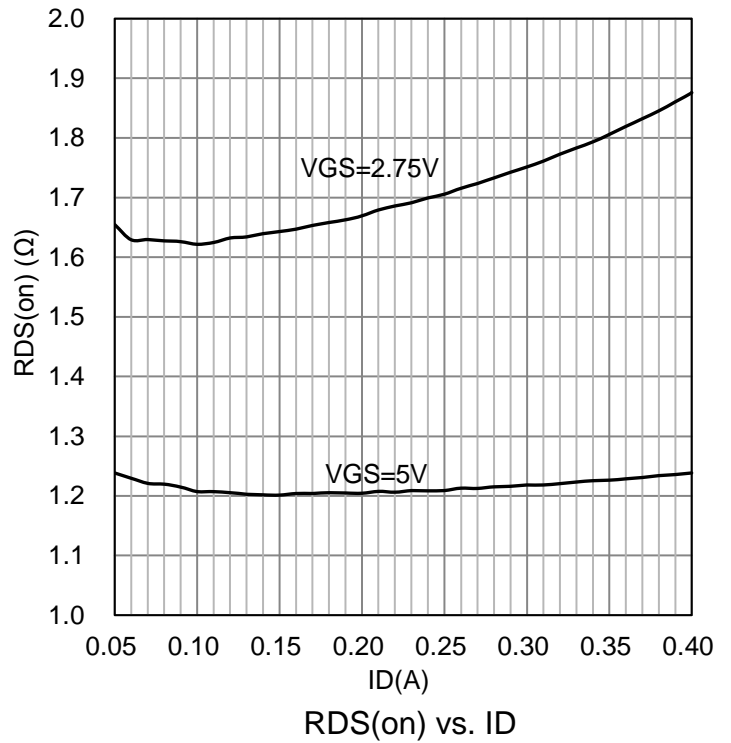
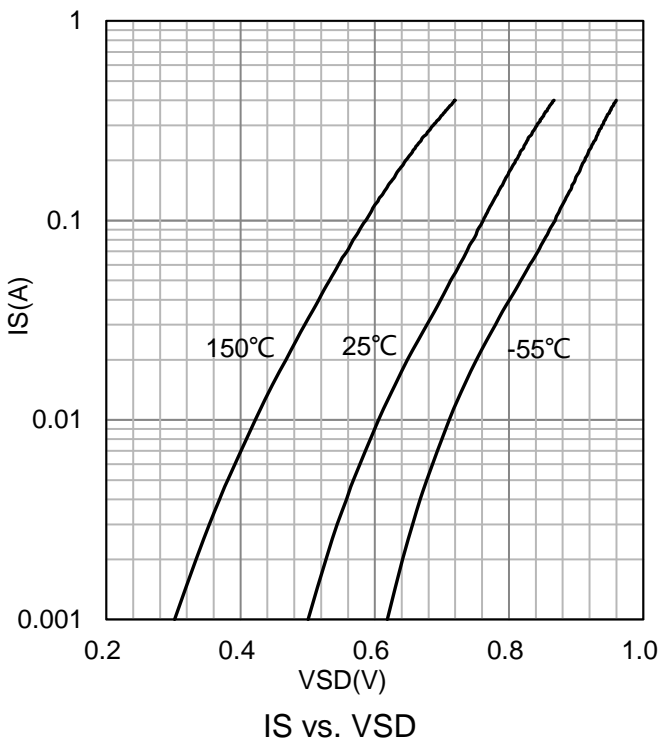
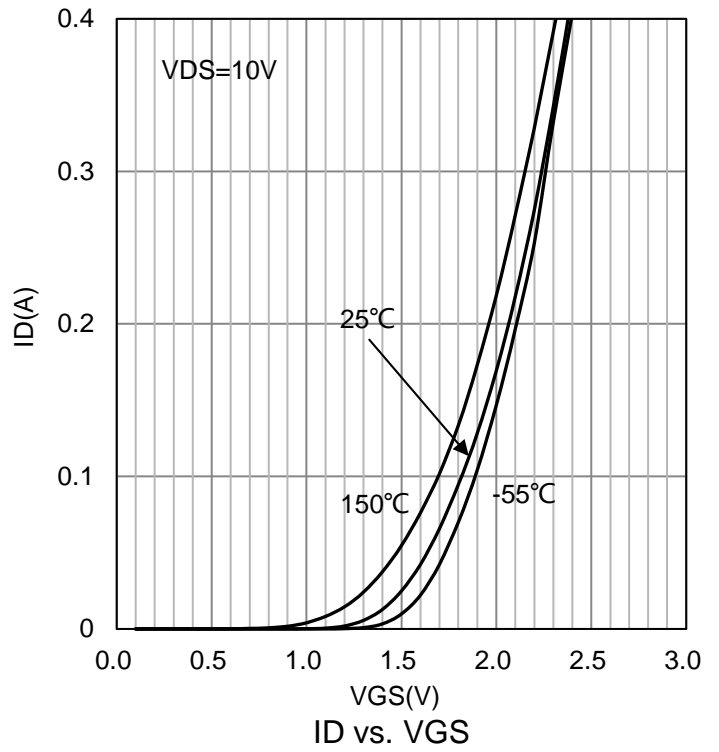
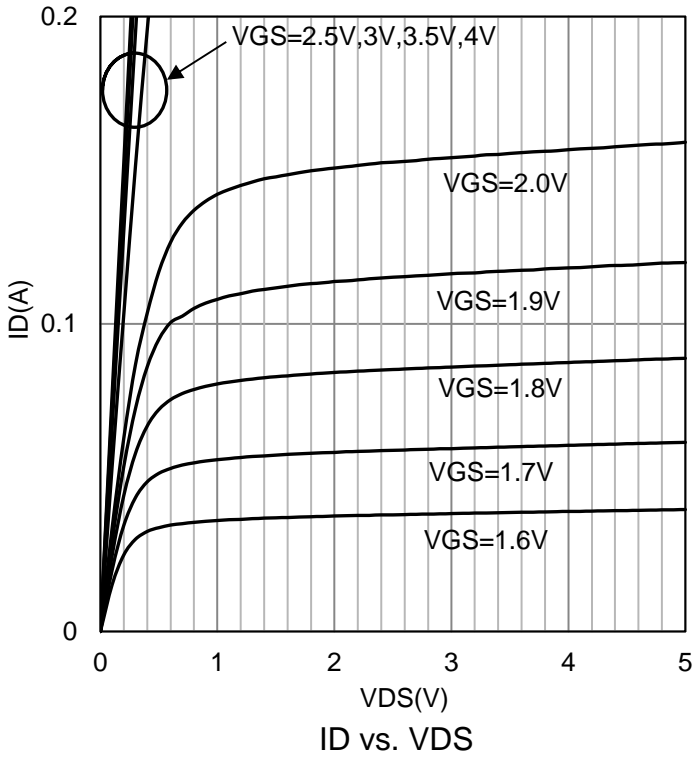
| | | | | | |
|--|------|---|------|---|----|
| Input Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz) | Ciss | - | 22.8 | - | pF |
| Output Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz) | Coss | - | 3.5 | - | pF |
| Reverse Transfer Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz) | Crss | - | 2.9 | - | pF |

SWITCHING CHARACTERISTICS

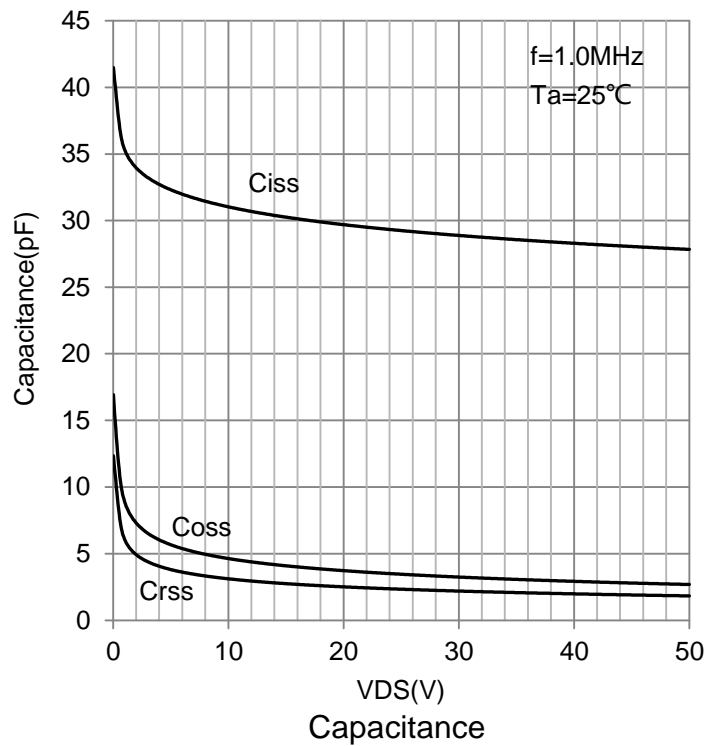
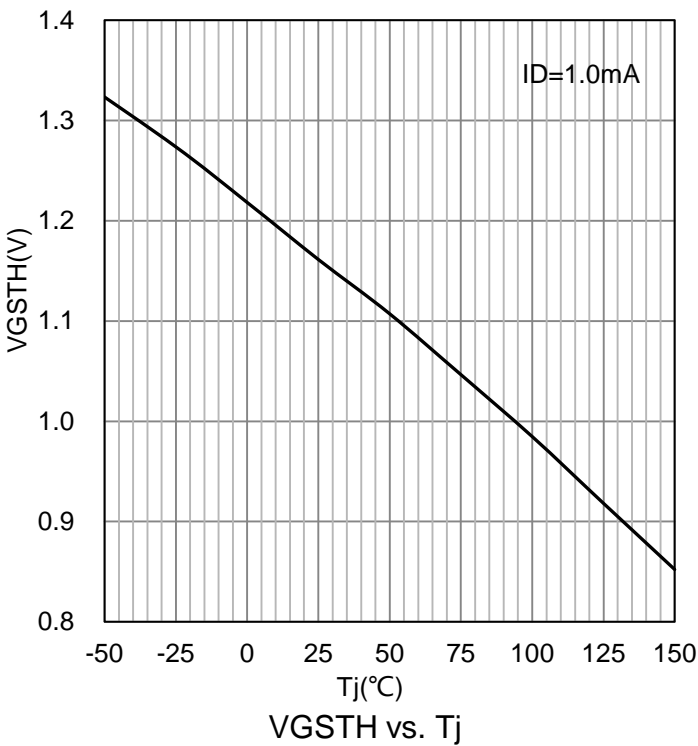
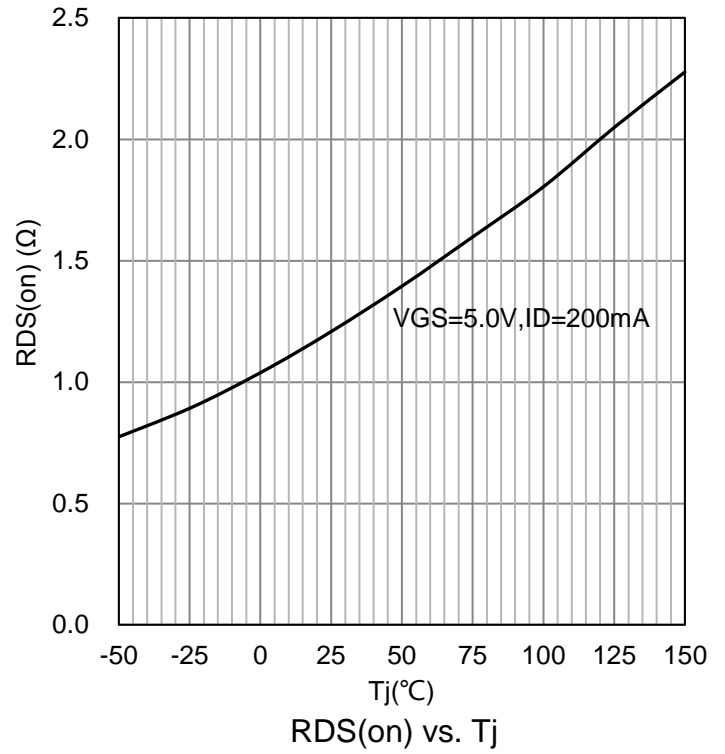
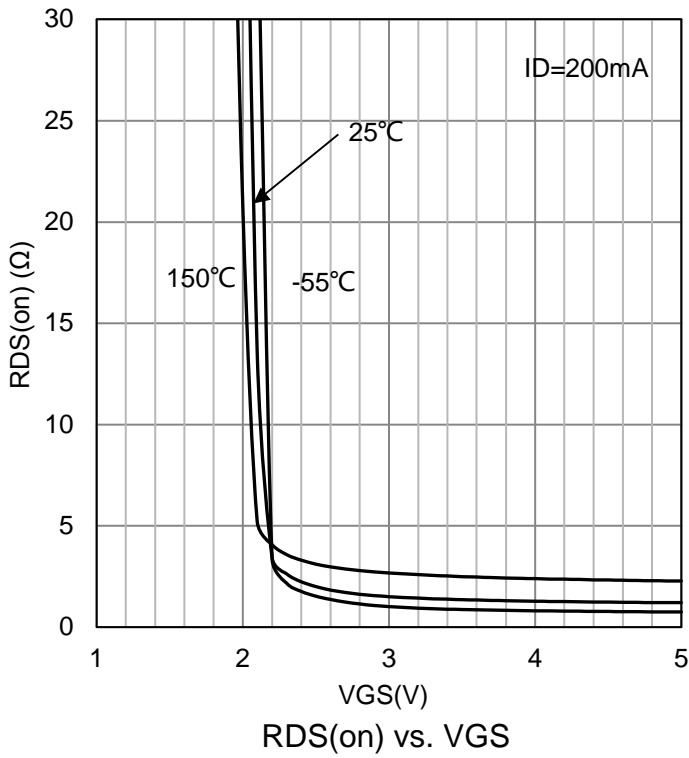
| | | | | | | |
|---------------------|---|---------|---|-----|---|----|
| Turn-On Delay Time | (VDD = 30 V , VGEN = 10 V, RG =25Ω ,RL =60 Ω, ID =500 mA) | td(on) | - | 3.8 | - | ns |
| Turn-Off Delay Time | | td(off) | - | 19 | - | |

 2.Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

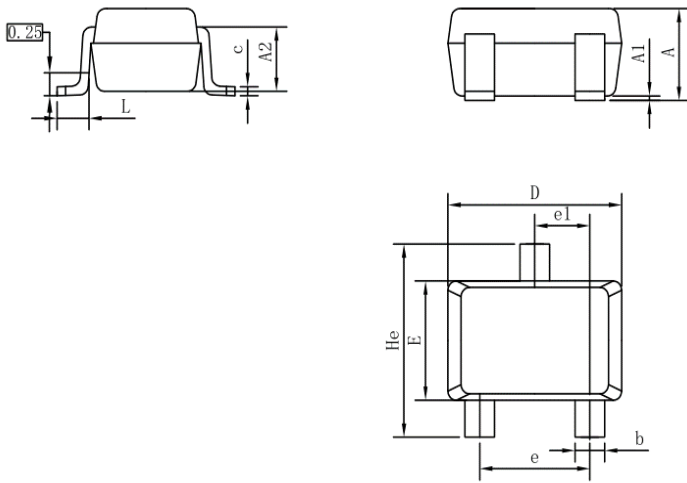
6. ELECTRICAL CHARACTERISTICS CURVES



6.ELECTRICAL CHARACTERISTICS CURVES(Con.)

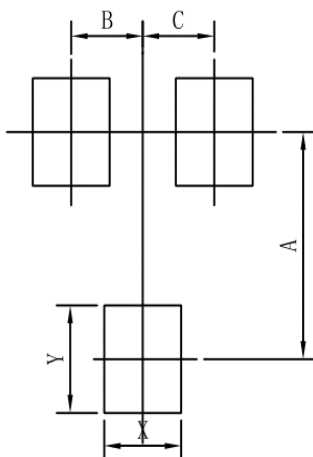


7. OUTLINE AND DIMENSIONS



| SC70 | | | |
|---------------------|----------|------|------|
| DIM | MIN | NOR | MAX |
| A | 0.80 | 0.95 | 1.00 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 0.7 REF | | |
| b | 0.30 | 0.35 | 0.40 |
| c | 0.10 | 0.15 | 0.25 |
| D | 1.80 | 2.05 | 2.20 |
| E | 1.15 | 1.30 | 1.35 |
| e | 1.20 | 1.30 | 1.40 |
| e1 | 0.65 BSC | | |
| L | 0.20 | 0.35 | 0.56 |
| He | 2.00 | 2.10 | 2.40 |
| ALL Dimension in mm | | | |

8. SOLDERING FOOTPRINT



| SC70 | |
|------|------|
| DIM | MIN |
| A | 1.90 |
| B | 0.65 |
| C | 0.65 |
| X | 0.70 |
| Y | 0.90 |

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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