

LBSS139LT1G

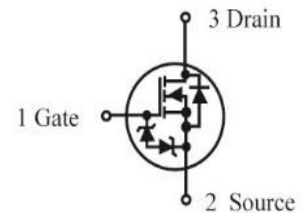
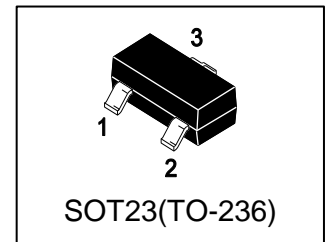
S-LBSS139LT1G

Power MOSFET

200 mAmps, 50 Volts N-Channel SOT-23

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



2. DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|-------------|---------|-----------------|
| LBSS139LT1G | J2 | 3000/Tape&Reel |
| LBSS139LT3G | J2 | 10000/Tape&Reel |

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

| Parameter | Symbol | Limits | Unit |
|---------------------------------------|-----------|----------|------|
| Drain-Source Voltage | V_{DSS} | 50 | Vdc |
| Gate-to-Source Voltage – Continuous | V_{GS} | ± 20 | Vdc |
| Drain Current | | | mAdc |
| – 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 | 225 | mW |
| | | 1.8 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient(Note 1) | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| 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 = 250μAdc) | VBRDSS | 50 | - | - | Vdc |
| Zero Gate Voltage Drain Current (VGS = 0, VDS = 25 Vdc) (VGS = 0, VDS = 50 Vdc) | IDSS | - | - | 0.1 0.5 | μAdc |
| Gate–Body Leakage Current, Forward (VGS = 20 Vdc) | IGSSF | - | - | 10.0 | μAdc |
| Gate–Body Leakage Current, Reverse (VGS = - 20 Vdc) | IGSSR | - | - | -10 | μAdc |

ON CHARACTERISTICS (Note 2)

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

DYNAMIC CHARACTERISTICS

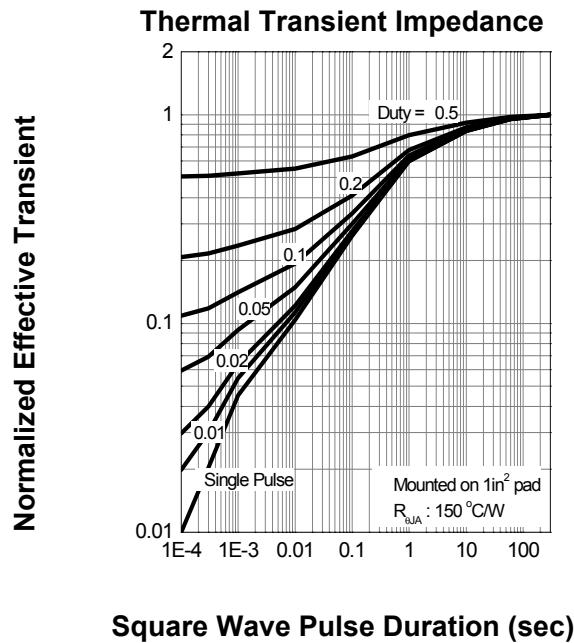
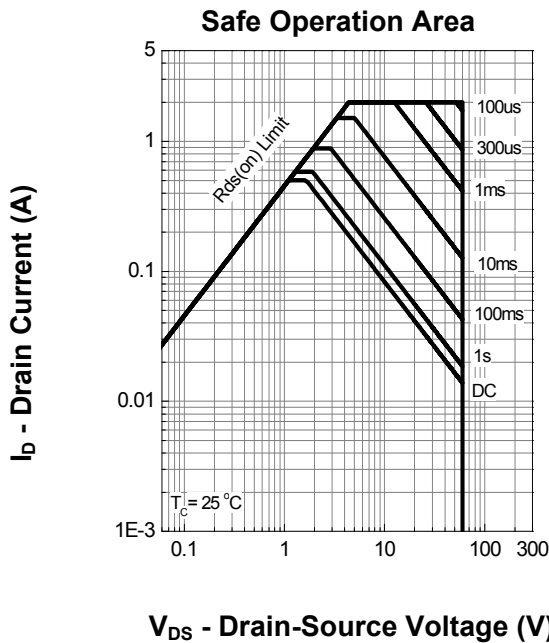
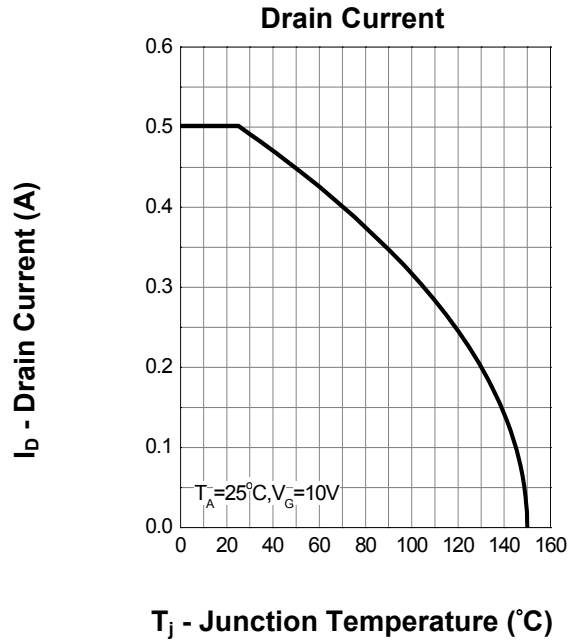
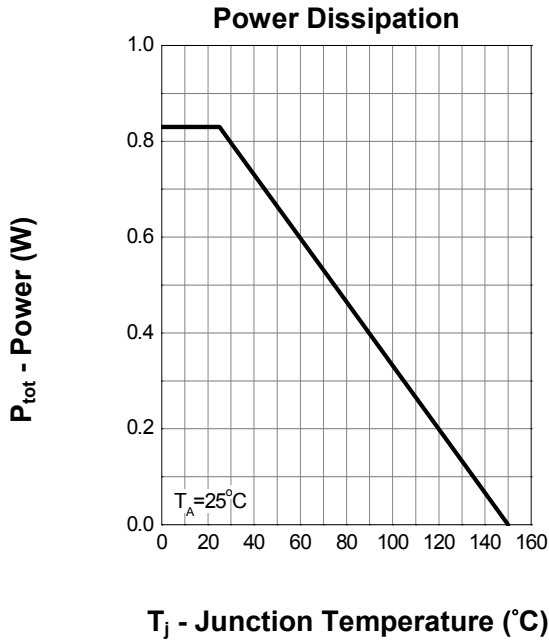
| | | | | | |
|--|------|---|------|---|----|
| Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Ciss | - | 22.8 | - | pF |
| Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Coss | - | 3.5 | - | pF |
| Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Crss | - | 2.9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

SWITCHING CHARACTERISTICS

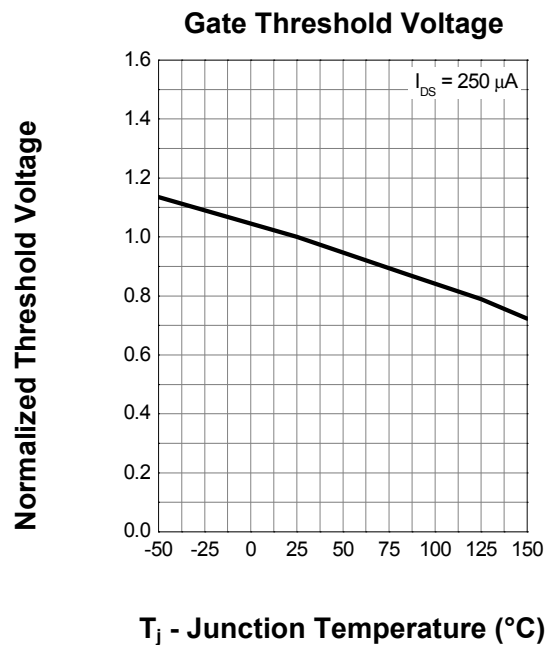
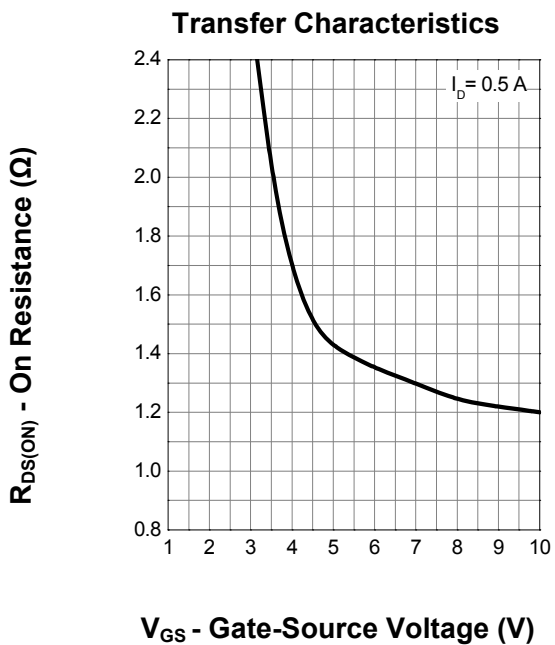
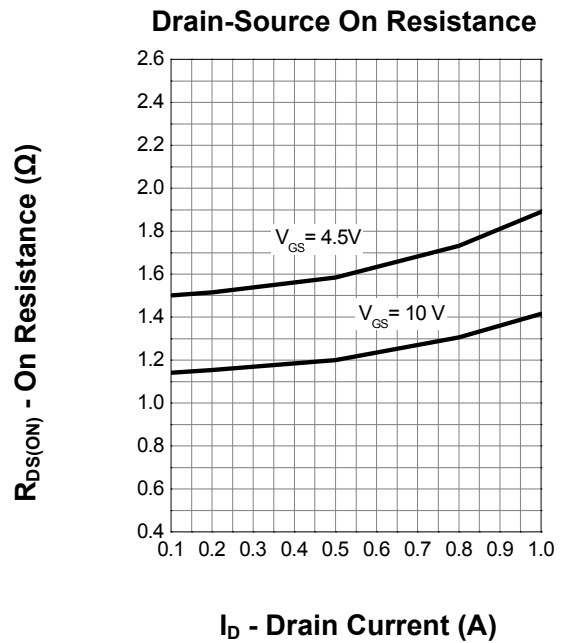
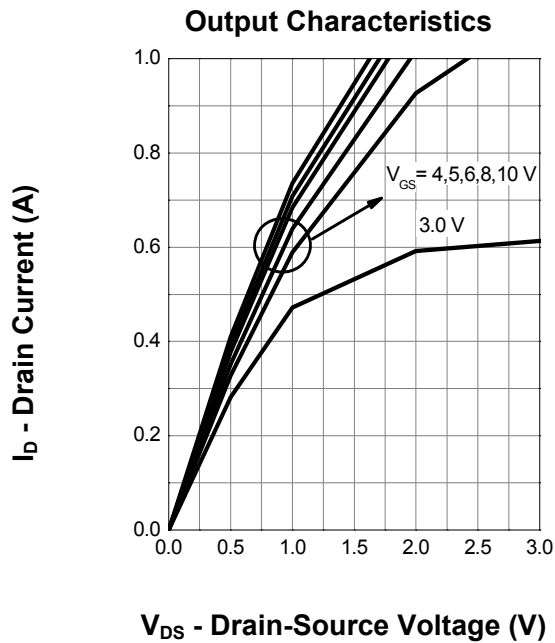
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|---------------------|---|---------|---|-----|---|----|
| Turn-On Delay Time | (VDD = 30 Vdc , VGEN = 10 V, RG =25Ω ,RL =60 Ω, ID =500 mAdc) | td(on) | - | 3.8 | - | ns |
| Turn-Off Delay Time | | td(off) | - | 19 | - | |

2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

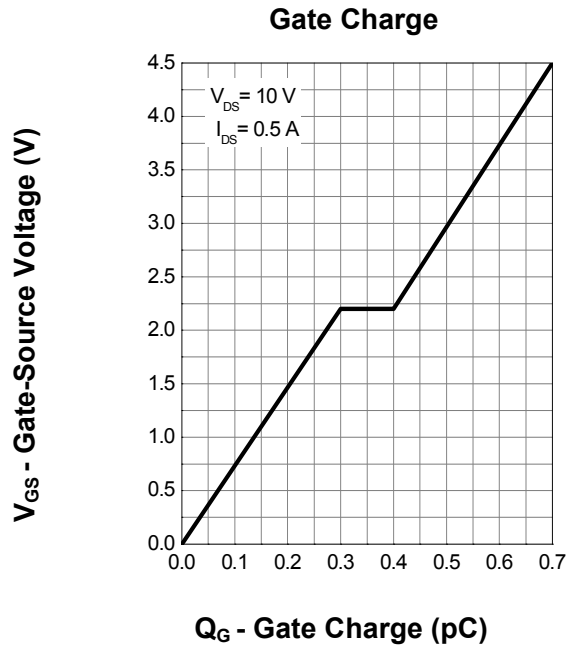
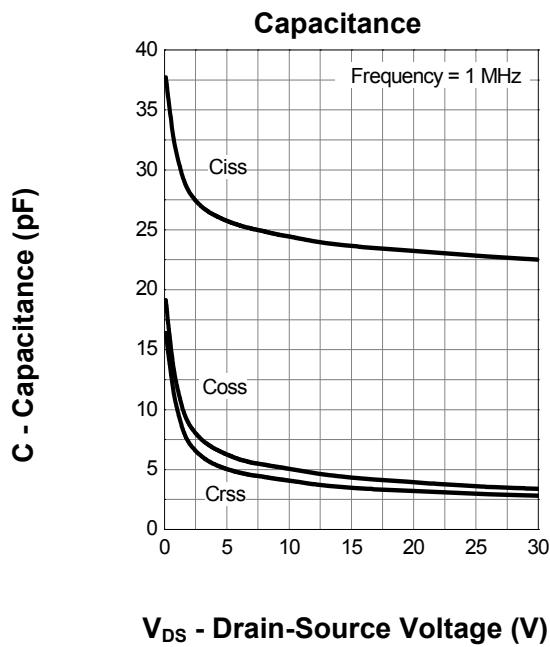
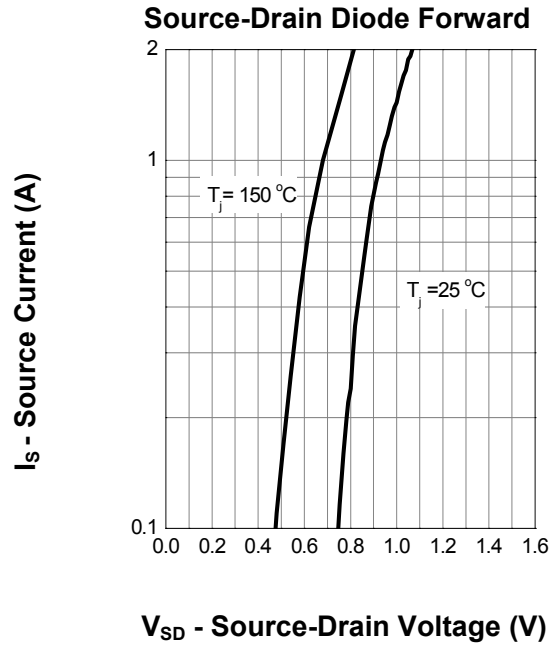
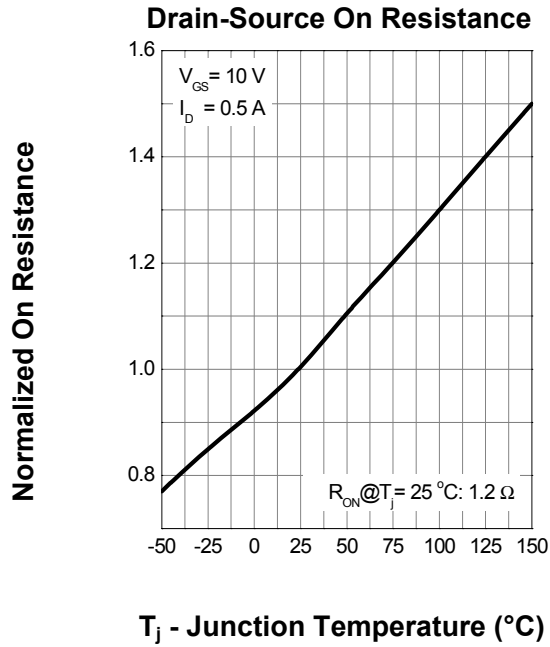
6. ELECTRICAL CHARACTERISTICS CURVES



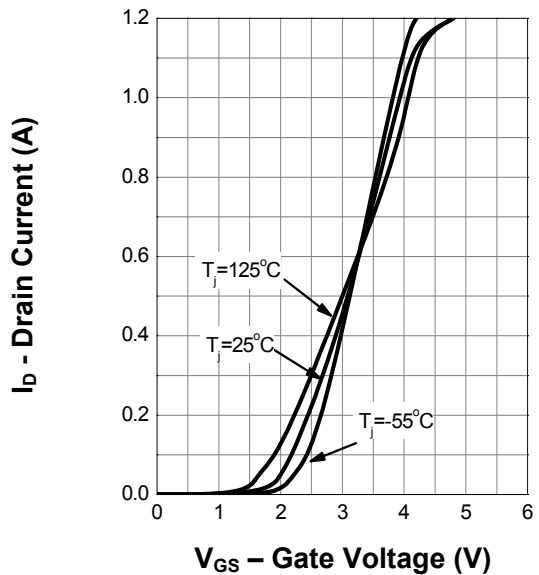
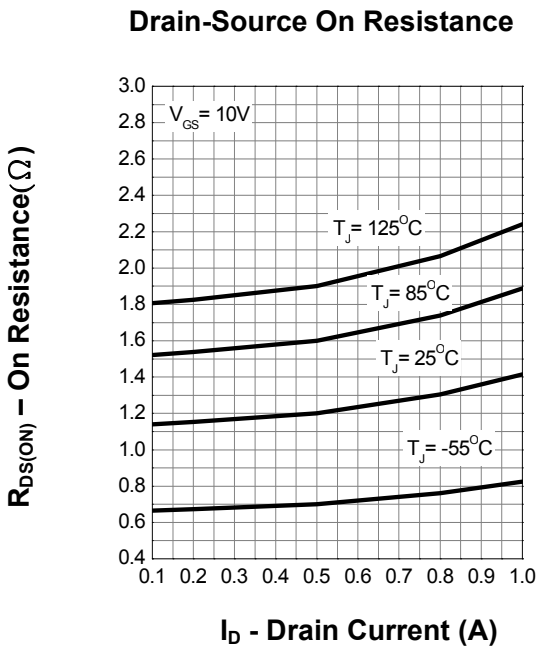
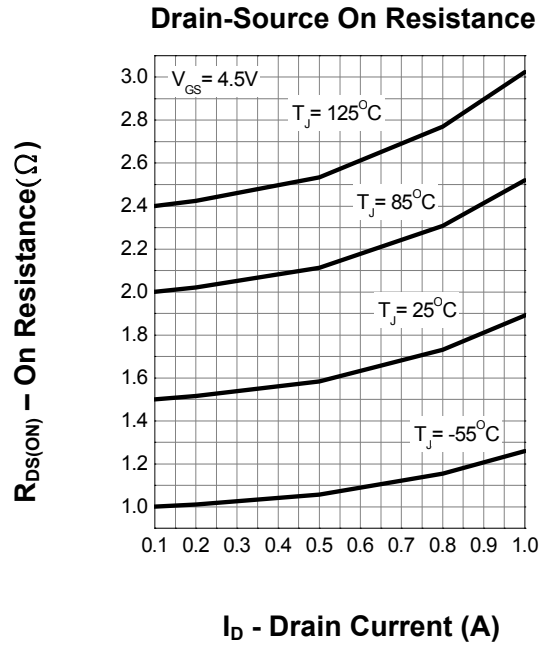
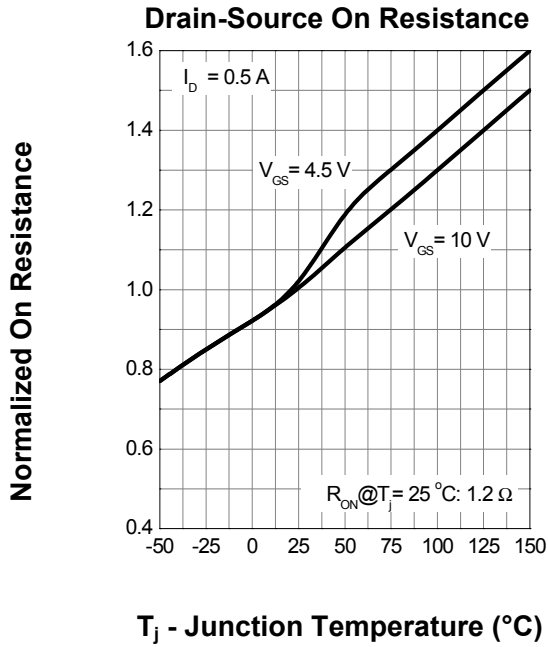
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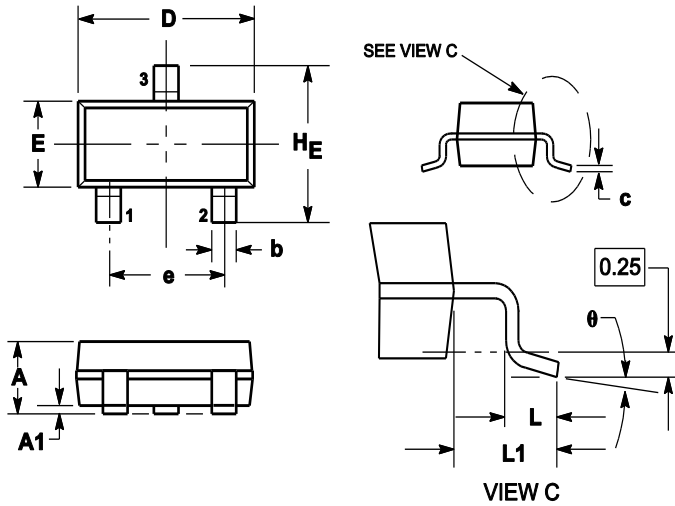
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7.OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1 | 1.11 | 0.035 | 0.04 | 0.044 |
| A1 | 0.01 | 0.06 | 0.1 | 0.001 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.5 | 0.015 | 0.018 | 0.02 |
| c | 0.09 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 2.80 | 2.9 | 3.04 | 0.11 | 0.114 | 0.12 |
| E | 1.20 | 1.3 | 1.4 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.9 | 2.04 | 0.07 | 0.075 | 0.081 |
| L | 0.10 | 0.2 | 0.3 | 0.004 | 0.008 | 0.012 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.029 |
| HE | 2.10 | 2.4 | 2.64 | 0.083 | 0.094 | 0.104 |
| θ | 0° | --- | 10° | 0° | --- | 10° |

8.SOLDERING FOOTPRINT
