



DESCRIPTION

The AM4435 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V.

The AM4435 is available in SOP8 Package

ORDERING INFORMATION

| Package Type | Part Number | |
|---|---|------------|
| SOP8 | M8 | AM4435M8R |
| | | AM4435M8VR |
| Note | V: Halogen free Package R: Tape & Reel | |
| AiT provides all RoHS products Suffix " V " means Halogen free Package | | |

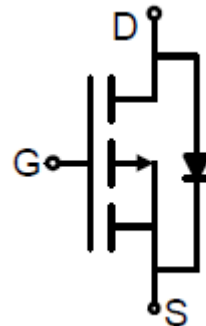
FEATURES

- $V_{DS} = -30V, I_D = -9.1A$
 $R_{DS(ON)} < 35m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 20m\Omega @ V_{GS} = -10V$
- High Power and current handling capability
- Surface Mount Package
- Available in SOP8 Package

APPLICATION

- Battery Switch
- Load switch
- Power management

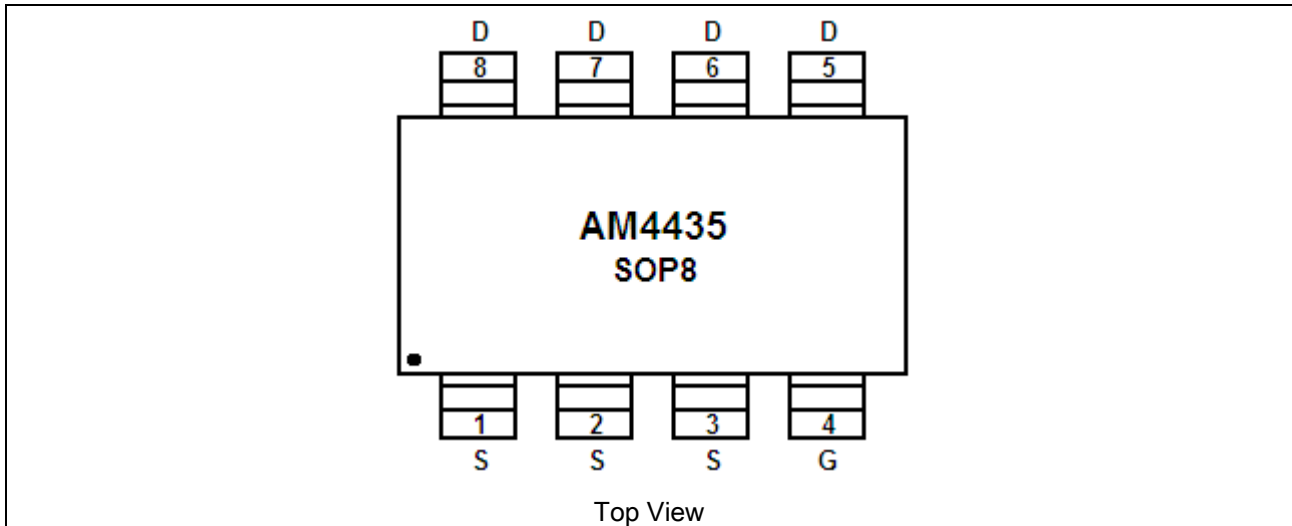
P-CHANNEL MOSFET



Schematic diagram



PIN DESCRIPTION



| Pin # | Symbol | Function |
|-------|--------|----------|
| 1 | S | Source |
| 2 | S | Source |
| 3 | S | Source |
| 4 | G | Gate |
| 5 | D | Drain |
| 6 | D | Drain |
| 7 | D | Drain |
| 8 | D | Drain |



ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified

| | |
|--|--------------|
| V _{DS} , Drain-Source Voltage | -30V |
| V _{GS} , Gate-Source Voltage | ±20V |
| I _D , Drain Current-Continuous | -9.1A |
| I _{DM} , Drain Current-Pulsed ^{NOTE1} | -50A |
| P _D , Maximum Power Dissipation | 3.1W |
| T _J , T _{STG} , Operating Junction and Storage Temperature Range | -55°C ~150°C |

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL INFORMATION

| Parameter | Symbol | Limit | Units |
|--|------------------|-------|-------|
| Thermal Resistance, Junction-to-Ambient ^{NOTE2} | R _{θJA} | 40 | °C/W |



ELECTRICAL CHARACTERISTICS

T_A=25°C, unless otherwise noted

| Parameter | Symbol | Conditions | Min | Typ. | Max | Units |
|---|---------------------|--|-----|------|------|-------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | B _{VDS} | V _{GS} =0V, I _D =-250μA | -30 | -33 | - | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-30V, V _{GS} =0V | - | - | -1 | μA |
| Gate-Body Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | - | ±100 | nA |
| On Characteristics NOTE 3 | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =-250μA | -1 | -1.5 | -3 | V |
| Drain-Source On-State Resistance | R _{DS(ON)} | V _{GS} =-10V, I _D =-9.1A | - | 15 | 20 | mΩ |
| | | V _{GS} =-4.5V, I _D =-6.9A | - | 21 | 35 | |
| Forward Transconductance | g _{FS} | V _{DS} =-15V, I _D =-9.1A | 10 | - | - | S |
| Dynamic Characteristics NOTE 4 | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =-15V, V _{GS} =0V, F=1.0MHz | - | 1600 | - | pF |
| Output Capacitance | C _{oss} | | - | 350 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 300 | - | |
| Switching Characteristics NOTE 4 | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{DD} =-15V, I _D =-1A V _G =-10V, R _{GEN} =6Ω | - | 10 | - | ns |
| Turn-on Rise Time | t _r | | - | 15 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 110 | - | |
| Turn-Off Fall Time | t _f | | - | 70 | - | |
| Total Gate Charge | Q _g | V _{DS} =-15V, I _D =-9.1A, V _{GS} =-10V | - | 30 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 5.5 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 8 | - | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage ^{NOTE3} | V _{SD} | V _{GS} =0V, I _S =-2.1A | - | - | -1.2 | V |

NOTE1: Repetitive Rating: Pulse width limited by maximum junction temperature.

NOTE2: Surface Mounted on FR4 Board, t ≤ 10 sec.

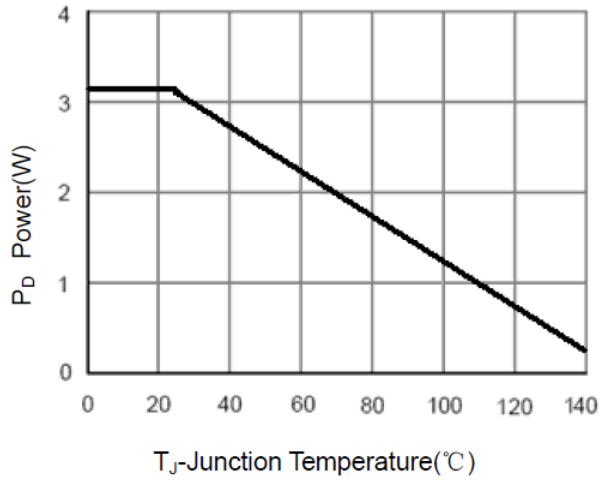
NOTE3: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

NOTE4: Guaranteed by design, not subject to production

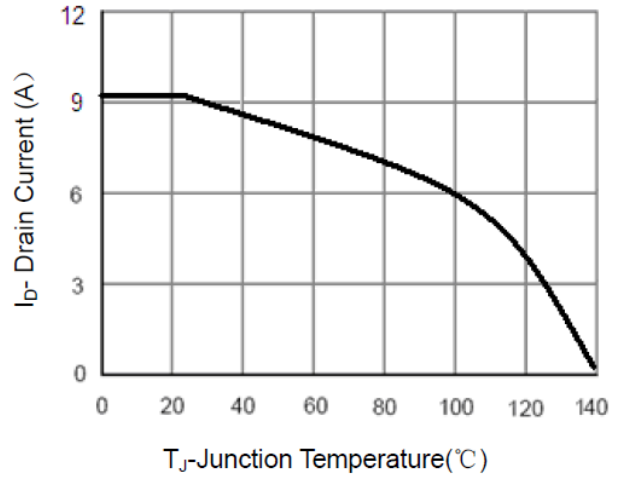


TYPICAL CHARACTERISTICS

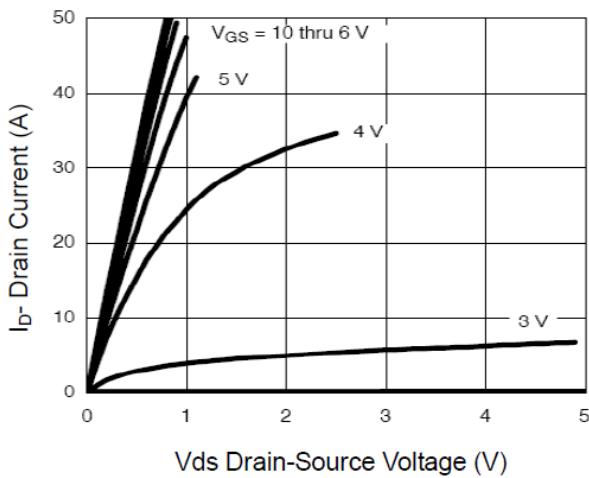
1. Power Dissipation



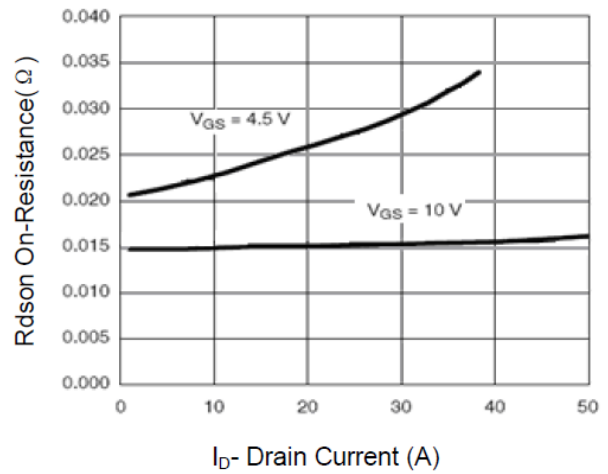
2. Drain Current



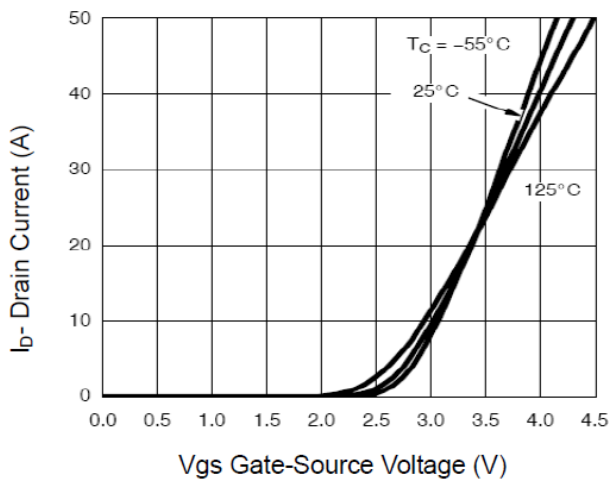
3. Output Characteristics



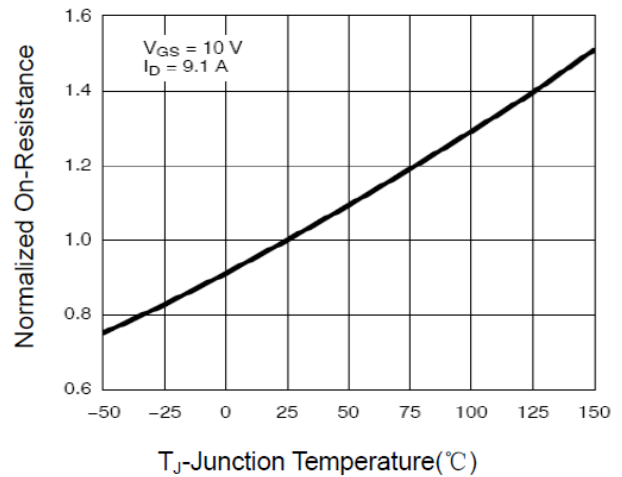
4. Drain-Source On-Resistance



5. Transfer Characteristics

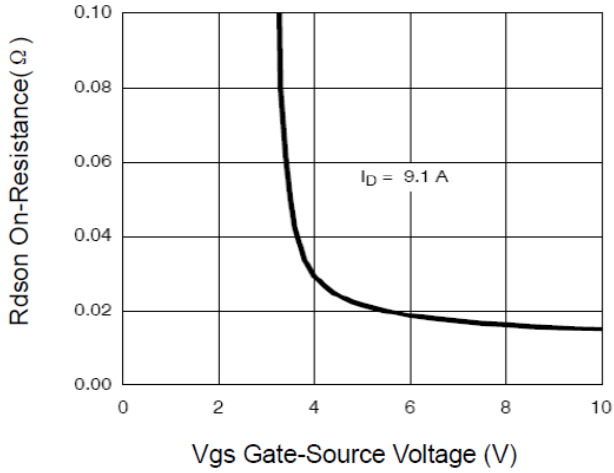


6. Drain-Source On-Resistance

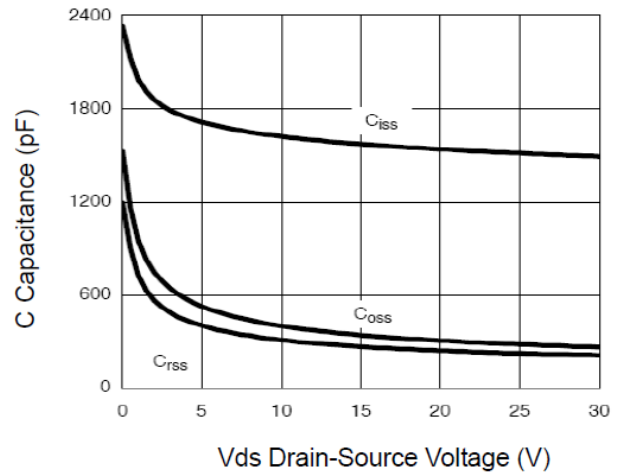




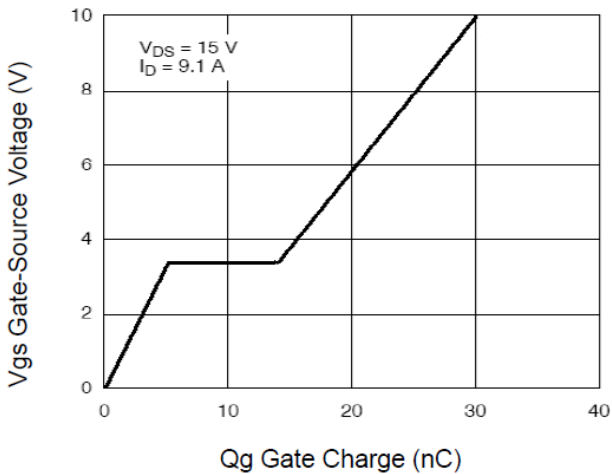
7. $R_{ds(on)}$ vs. V_{gs}



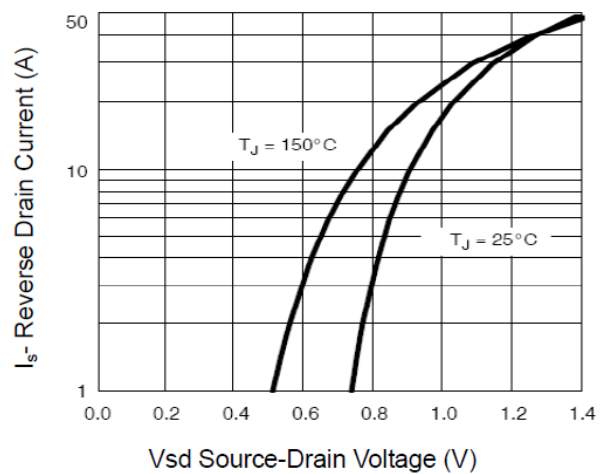
8. Capacitance vs. V_{ds}



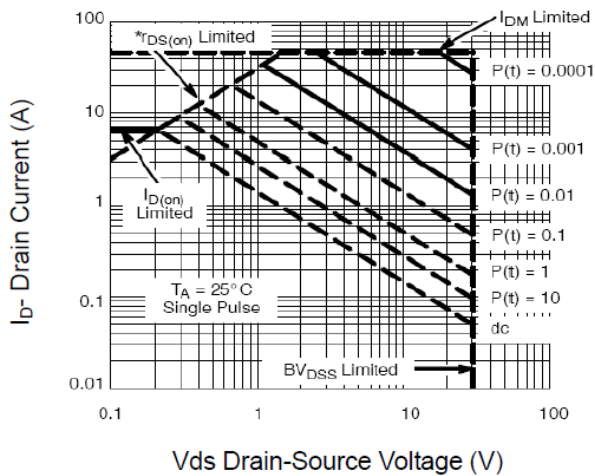
9. Gate Charge



10. Source- Drain Diode Forward

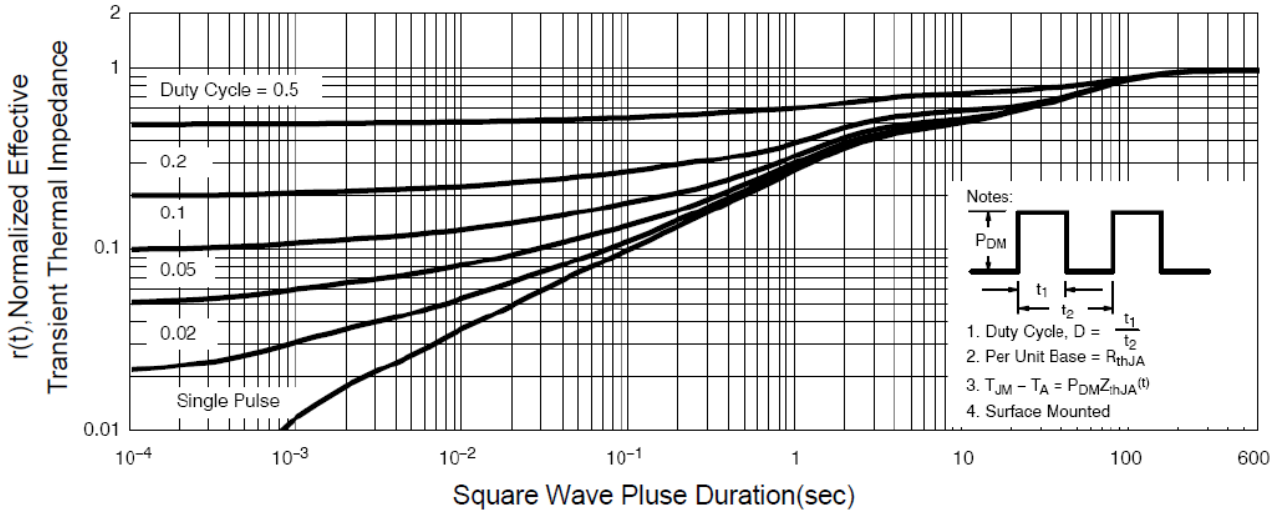


11. Safe Operation Area



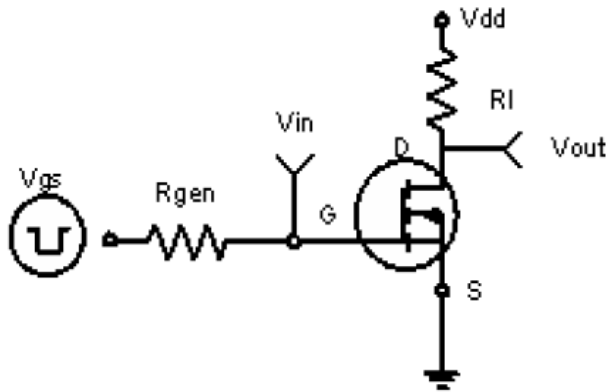


12. Normalized Maximum Transient Thermal Impedance

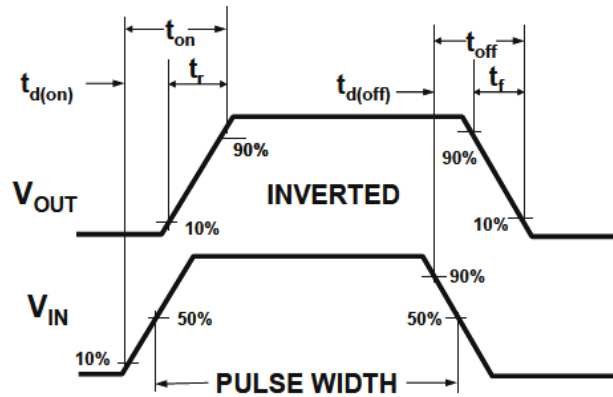


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

1. Switching Test Circuit



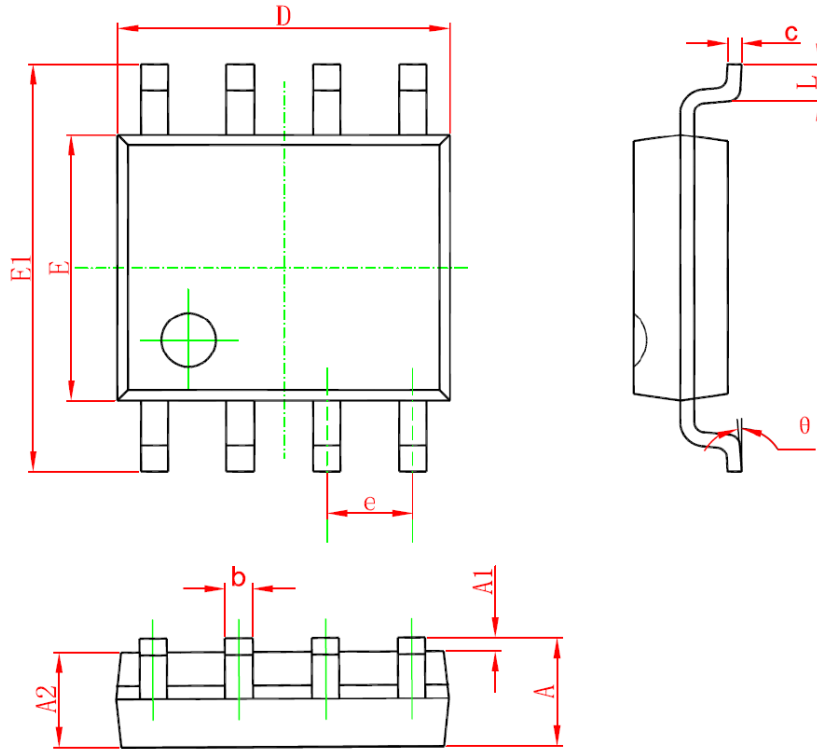
2. Switching Waveforms





PACKAGE INFORMATION

Dimension in SOP8 Package (Unit: mm)



| Symbol | Millimeters | | Inches | |
|--------|-------------|-------|------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |



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