

GSM8452

30V P-Channel Enhancement Mode MOSFET

Product Description

GSM8452, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge. These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

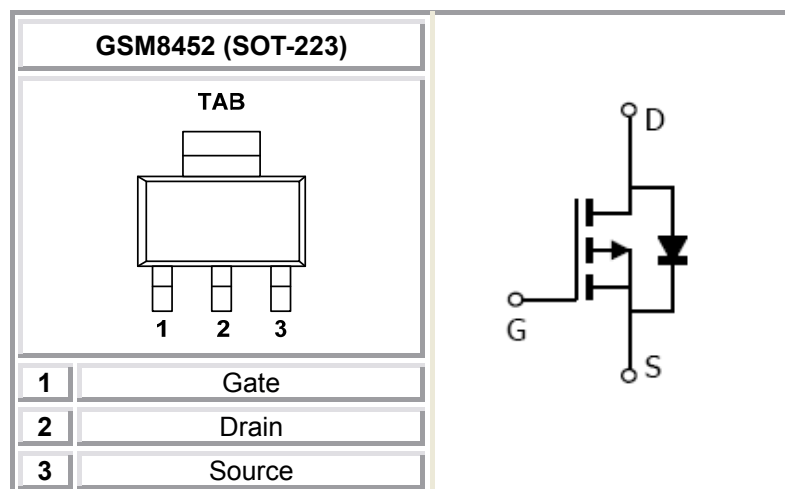
Features

- $-30V/-5.0A, R_{DS(ON)}=70m\Omega@V_{GS}=-10V$
- $-30V/-4.2A, R_{DS(ON)}=90m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-223 package design

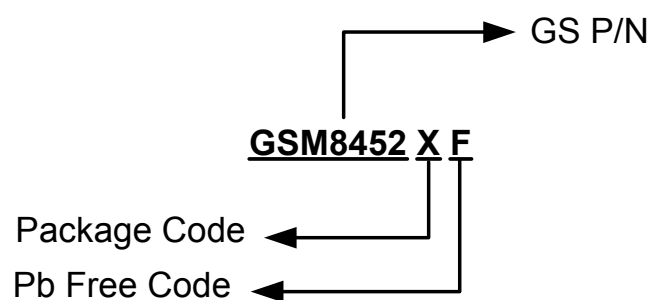
Applications

- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

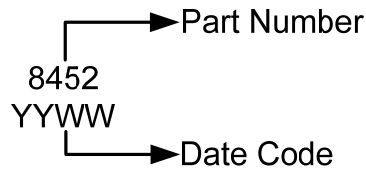
Packages & Pin Assignments



Ordering Information



Marking Information



| Part Number | Package | Part Marking | Quantity Reel |
|-------------|---------|--------------|---------------|
| GSM8452XF | SOT-223 | 8452YYWW | 2500PCS |

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

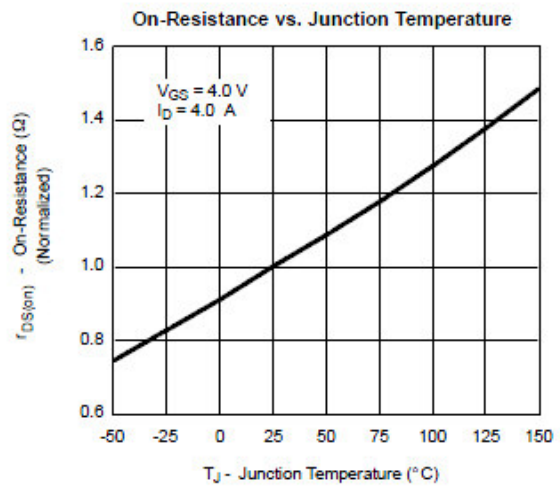
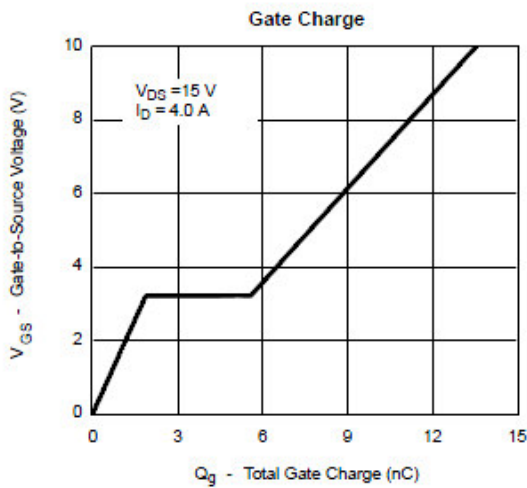
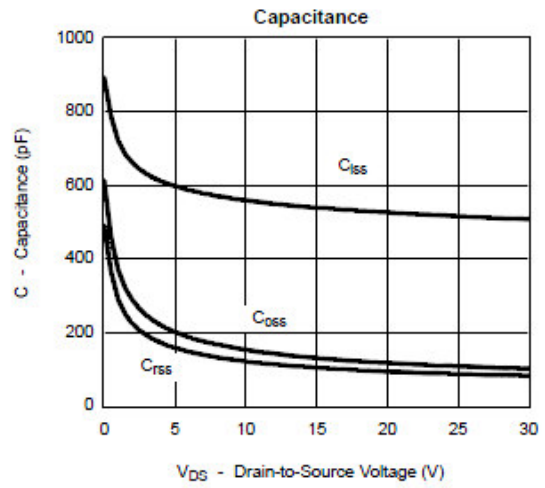
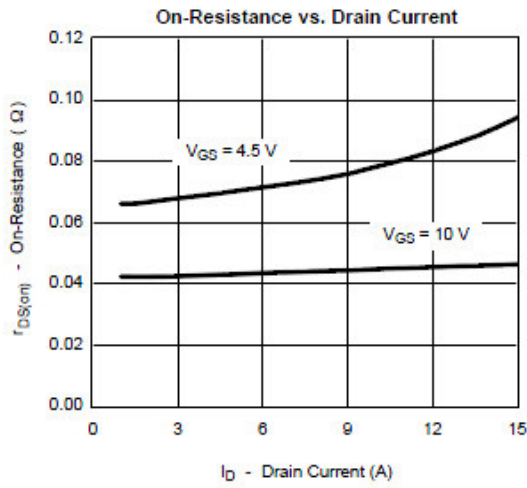
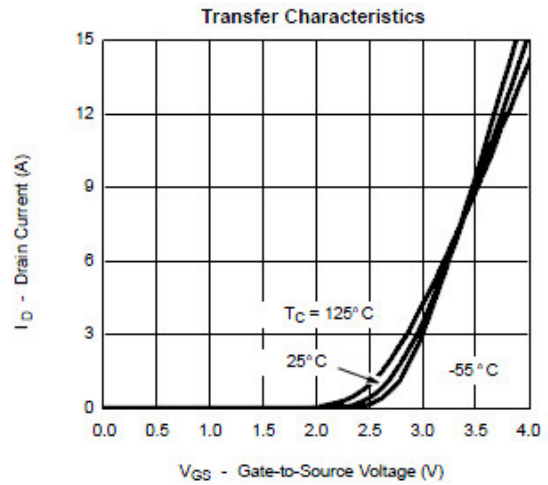
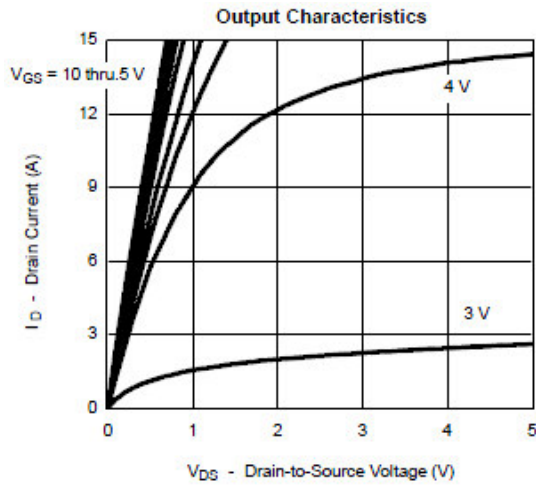
| Symbol | Parameter | Typical | Unit | |
|------------------|---|----------------------|------|---|
| V _{DSS} | Drain-Source Voltage | -30 | V | |
| V _{GSS} | Gate -Source Voltage | ±20 | V | |
| I _D | Continuous Drain Current(T _J =150°C) | T _A =25°C | -5.0 | A |
| | | T _A =70°C | -4.2 | |
| I _{DM} | Pulsed Drain Current | -15 | A | |
| I _S | Continuous Source Current(Diode Conduction) | -1.5 | A | |
| P _D | Power Dissipation | T _A =25°C | 2.8 | W |
| | | T _A =70°C | 1.2 | |
| T _J | Operating Junction Temperature | 150 | °C | |
| T _{STG} | Storage Temperature Range | -55/150 | °C | |
| R _{θJA} | Thermal Resistance-Junction to Ambient | 120 | °C/W | |

Electrical Characteristics

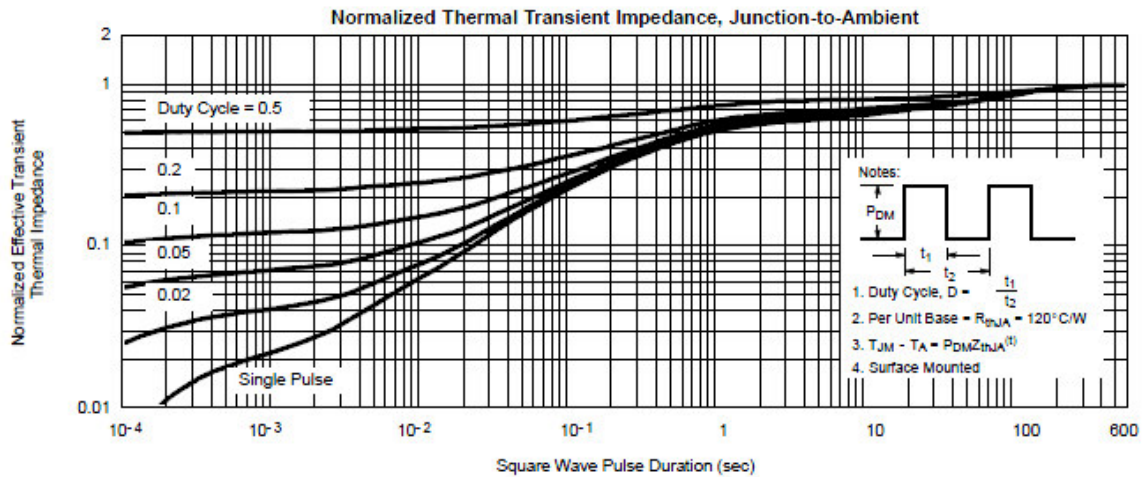
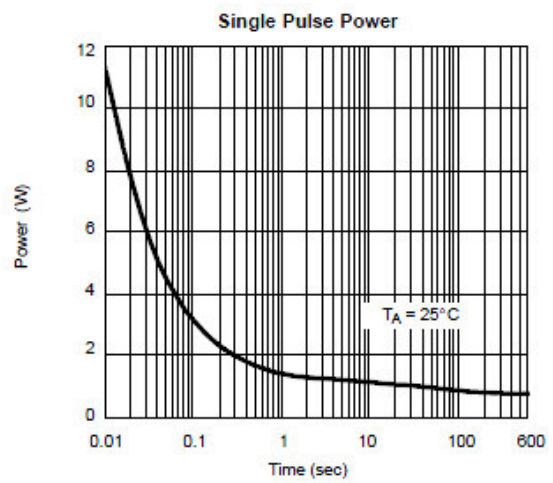
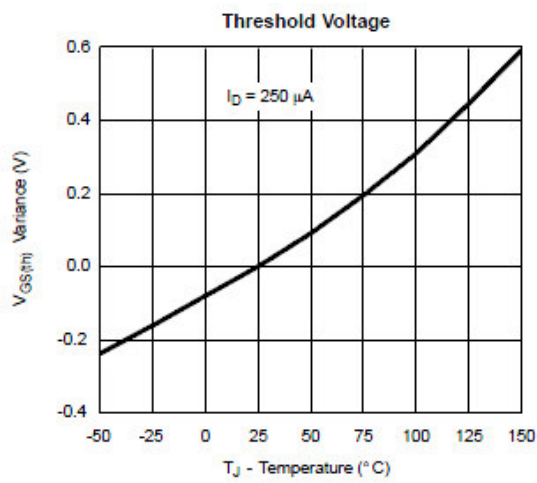
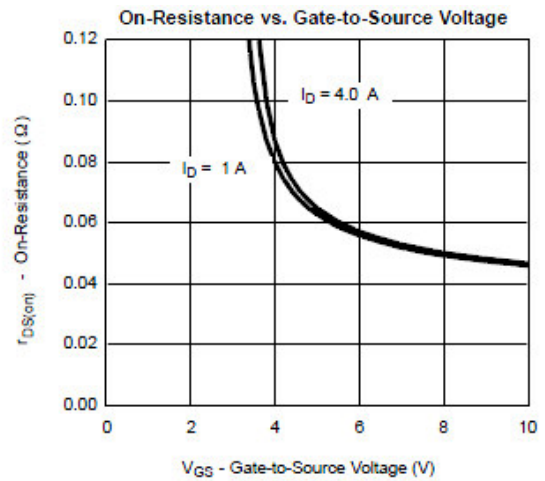
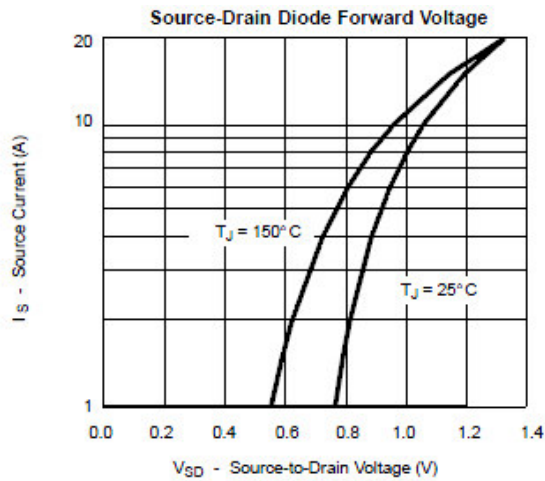
($T_A=25^\circ\text{C}$ Unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ | Max. | Unit |
|----------------|---------------------------------|---|------|------|-----------|------------|
| Static | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\mu A$ | -30 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1.0 | | -2.5 | |
| I_{GSS} | Gate Leakage Current | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=-24V, V_{GS}=0V$ | | | -1 | uA |
| | | $V_{DS}=-24V, V_{GS}=0V, T_J=85^\circ\text{C}$ | | | -30 | |
| $I_{D(on)}$ | On-State Drain Current | $V_{DS} \leq -5V, V_{GS}=-10V$ | -10 | | | A |
| $R_{DS(on)}$ | Drain-Source On-Resistance | $V_{GS}=-10V, I_D=-5.0A$ | | 58 | 70 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-4.2A$ | | 74 | 90 | |
| g_{FS} | Forward Transconductance | $V_{DS}=-5V, I_D=-4.0A$ | | 10 | | S |
| V_{SD} | Diode Forward Voltage | $I_S=-1.7A, V_{GS}=0V$ | | -0.7 | -1.3 | V |
| Dynamic | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=-15V, V_{GS}=-10V, I_D=-3.5A$ | | 10 | 18 | nC |
| Q_{gs} | Gate-Source Charge | | | 1.6 | | |
| Q_{gd} | Gate-Drain Charge | | | 3.0 | | |
| C_{ISS} | Input Capacitance | $V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$ | | 450 | | pF |
| C_{OSS} | Output Capacitance | | | 95 | | |
| C_{RSS} | Reverse Transfer Capacitance | | | 55 | | |
| $t_{d(on)}$ | Turn-On Time | $V_{DD}=-15V, R_L=15\Omega, I_D=-1.0A, V_{GEN}=-10V, R_G=6.0\Omega$ | | 8 | 18 | ns |
| t_r | | | | 8 | 18 | |
| $t_{d(off)}$ | Turn-Off Time | | | 25 | 50 | |
| t_f | | | | 25 | 35 | |

Typical Performance Characteristics

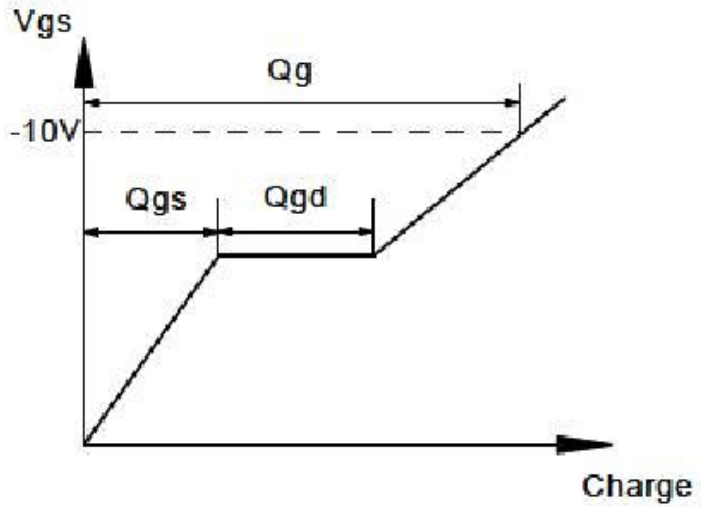
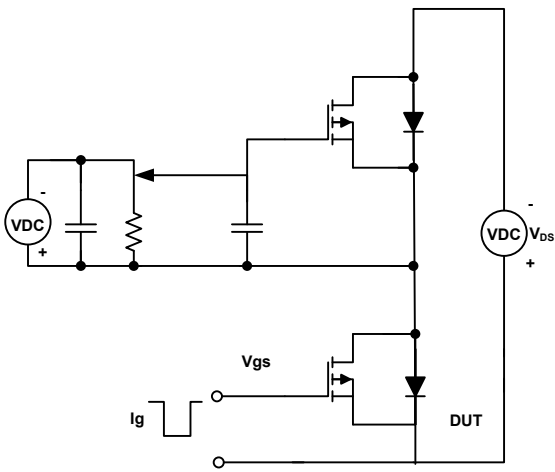


Typical Performance Characteristics(continue)

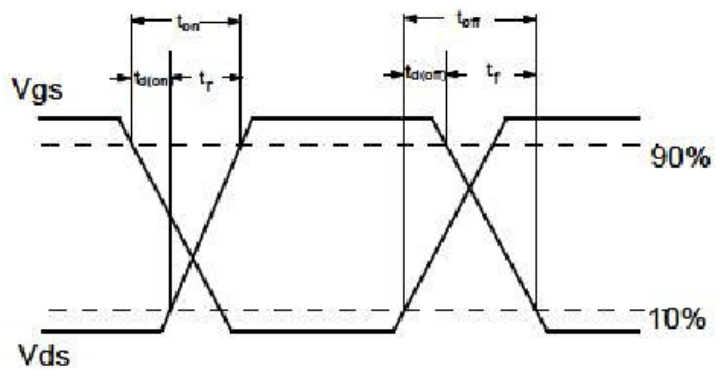
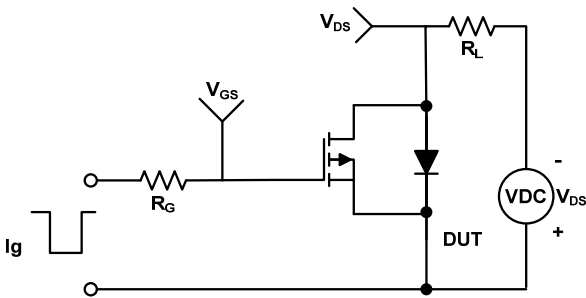


Typical Performance Characteristics(continue)

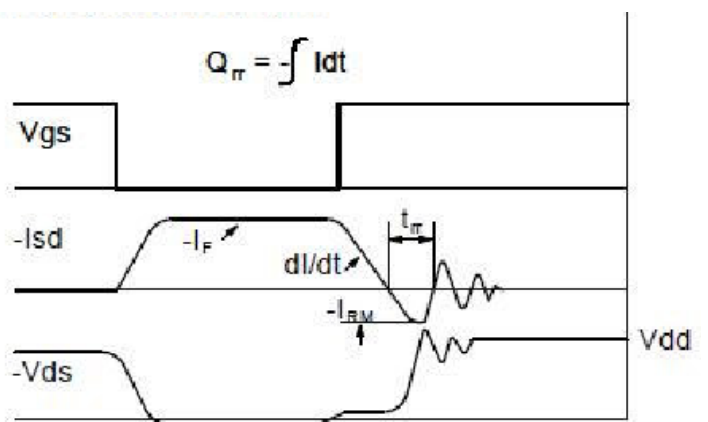
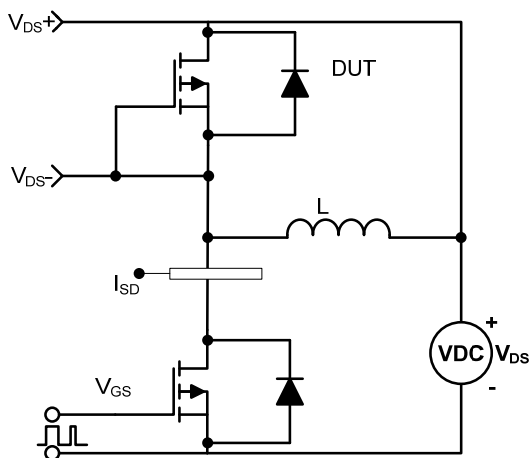
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

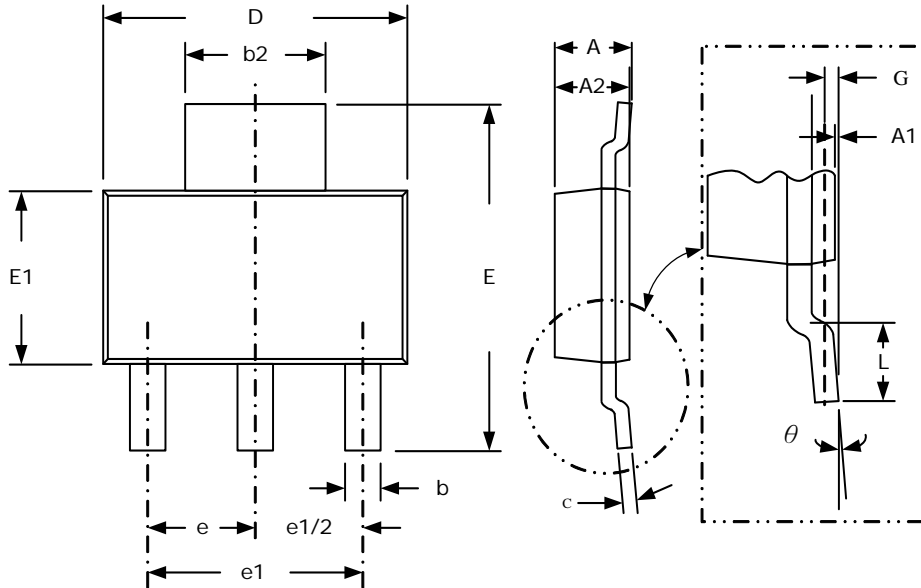


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-223 PLASTIC PACKAGE











| Dimensions | | | | |
|------------|-------------|------|------------|------|
| SYMBOL | Millimeters | | Inches | |
| | MIN | MAX | MIN | MAX |
| A | - | 1.80 | - | .071 |
| A1 | 0.02 | 0.10 | .001 | .004 |
| A2 | 1.55 | 1.65 | .061 | .065 |
| b | 0.66 | 0.84 | .026 | .033 |
| b2 | 2.90 | 3.10 | .114 | .122 |
| c | 0.23 | 0.33 | .009 | .013 |
| D | 6.30 | 6.70 | .248 | .264 |
| E | 6.70 | 7.30 | .264 | .288 |
| E1 | 3.30 | 3.70 | .130 | .146 |
| e | 2.30 (TYP) | | .091 (TYP) | |
| e1 | 4.60 (TYP) | | .181 (TYP) | |
| L | 0.90 | - | .035 | - |
| G | 0.25 (TYP) | | .010 (TYP) | |
| θ | 0° | 8° | 0° | 8° |



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