

GSM3030

30V N-Channel Enhancement Mode MOSFET

Product Description

GSM3030, N-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.

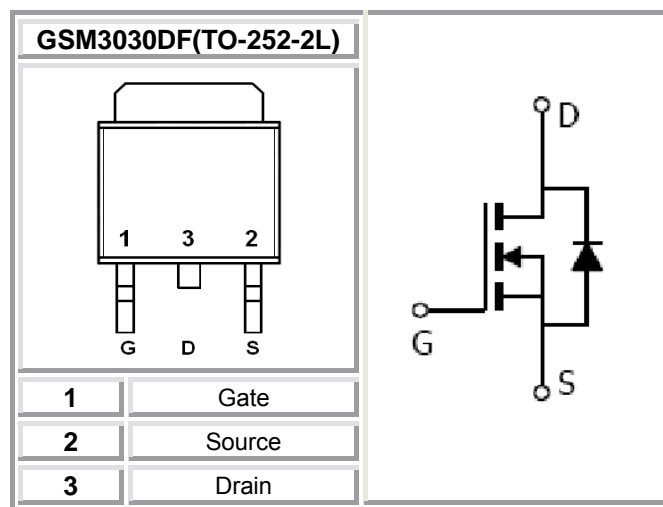
Features

- 30V/12A, $R_{DS(ON)} = 30m\Omega @ V_{GS} = 10V$
- 30V/10A, $R_{DS(ON)} = 40m\Omega @ V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

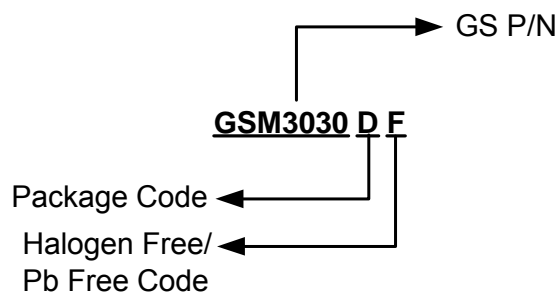
Applications

- Power Management in Desktop Computer
- DC/DC Converter
- LCD Display inverter

Packages & Pin Assignments

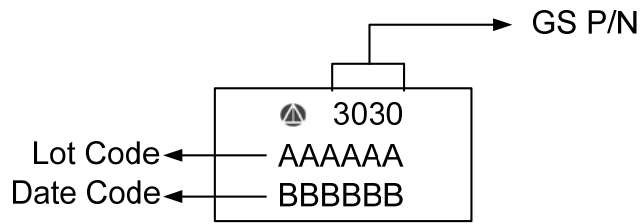


Ordering Information



| Part Number | Package | Quantity Reel |
|-------------|-----------|---------------|
| GSM3030DF | TO-252-2L | 2500 PCS |

Marking Information



Absolute Maximum Ratings

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

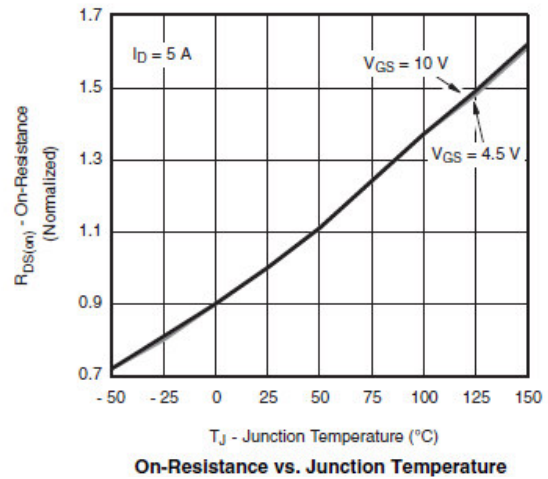
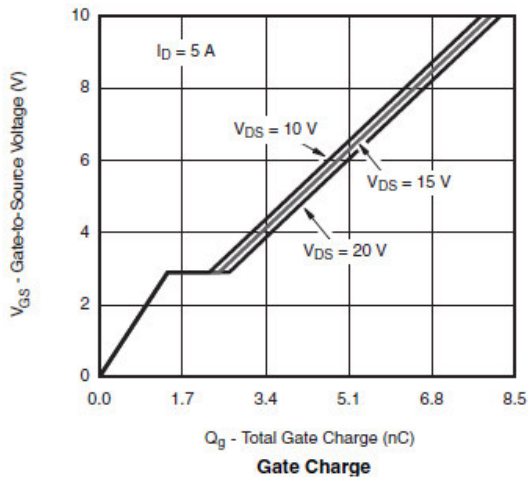
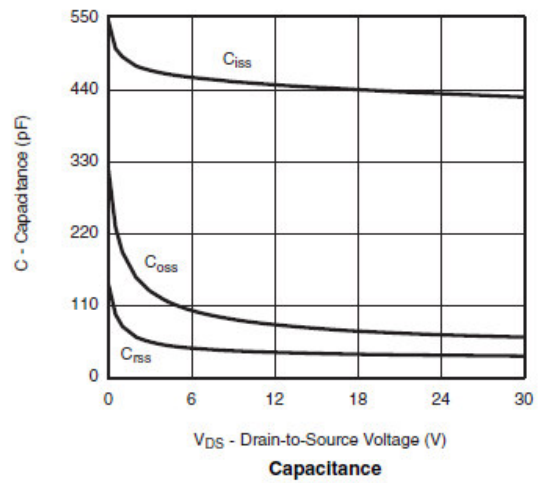
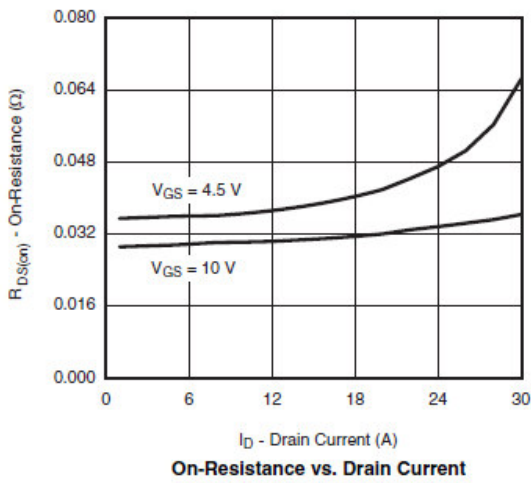
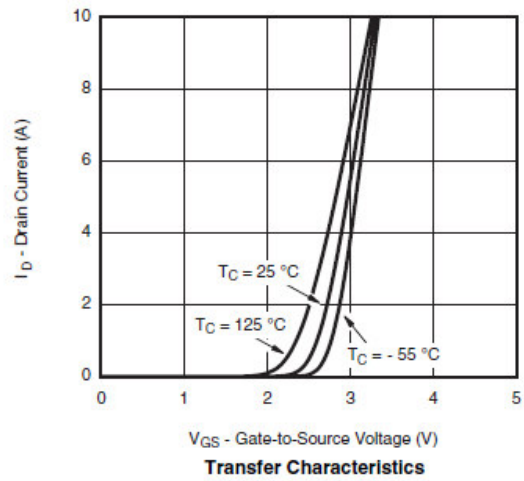
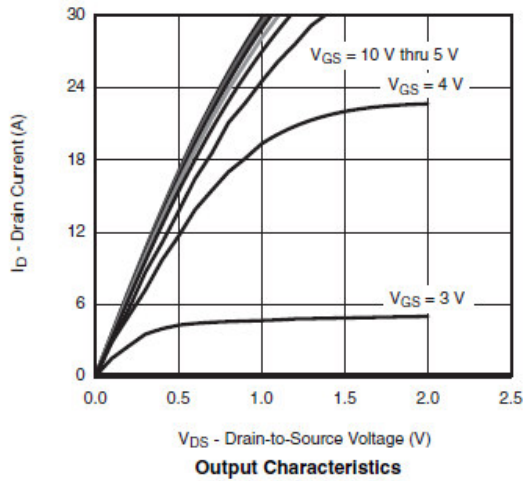
| Symbol | Parameter | Typical | Unit | |
|-----------------|-----------------------------------------------------|------------------------|---------------------------|---|
| V_{DSS} | Drain-Source Voltage | 30 | V | |
| V_{GSS} | Gate -Source Voltage | ± 20 | V | |
| I_D | Continuous Drain Current($T_J=150^\circ\text{C}$) | $T_A=25^\circ\text{C}$ | 22 | A |
| | | $T_A=70^\circ\text{C}$ | 16 | |
| I_{DM} | Pulsed Drain Current | 20 | A | |
| I_S | Continuous Source Current(Diode Conduction) | 9.0 | A | |
| P_D | Power Dissipation | $T_A=25^\circ\text{C}$ | 40 | W |
| | | $T_A=70^\circ\text{C}$ | 15 | |
| T_J | Operating Junction Temperature | 150 | $^\circ\text{C}$ | |
| T_{STG} | Storage Temperature Range | -55/150 | $^\circ\text{C}$ | |
| $R_{\theta JA}$ | Thermal Resistance-Junction to Ambient | 62.5 | $^\circ\text{C}/\text{W}$ | |

Electrical Characteristics

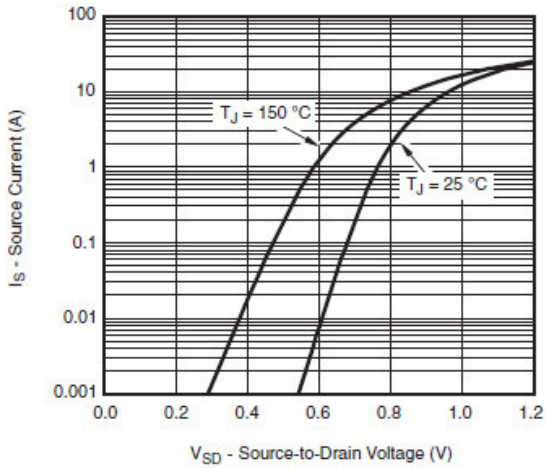
($T_A=25^\circ\text{C}$ unless otherwise noted)

| 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 | | 2.0 | |
| I_{GSS} | Gate Leakage Current | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=24V, V_{GS}=0V$ | | | 1 | uA |
| | | $V_{DS}=24V, V_{GS}=0V, T_J=85^\circ\text{C}$ | | | 10 | |
| $I_{D(on)}$ | On-State Drain Current | $V_{DS}\geq 5V, V_{GS}=10V$ | 10 | | | A |
| $R_{DS(on)}$ | Drain-Source On-Resistance | $V_{GS}=10V, I_D=12A$ | | 26 | 30 | m Ω |
| | | $V_{GS}=4.5V, I_D=10A$ | | 35 | 40 | |
| g_{fs} | Forward Transconductance | $V_{DS}=10V, I_D=5.0A$ | | 16 | | S |
| V_{SD} | Diode Forward Voltage | $I_S=3.4A, V_{GS}=0V$ | | 0.85 | 1.2 | V |
| Dynamic | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$ | | 520 | | pF |
| C_{oss} | Output Capacitance | | | 80 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 40 | | |
| Q_g | Total Gate Charge | $V_{DS}=15V, V_{GS}=4.5V, I_D\equiv 5A$ | | 4 | 8 | nC |
| Q_{gs} | Gate-Source Charge | | | 2 | | |
| Q_{gd} | Gate-Drain Charge | | | 1.2 | | |
| $t_{d(on)}$ | Turn-On Time | $V_{DD}=15V, R_L=3\Omega, I_D\equiv 5A, V_{GEN}=10V, R_G=1\Omega$ | | 5 | 10 | ns |
| t_r | | | | 10 | 18 | |
| $t_{d(off)}$ | Turn-Off Time | | | 10 | 20 | |
| t_f | | | | 6 | 12 | |

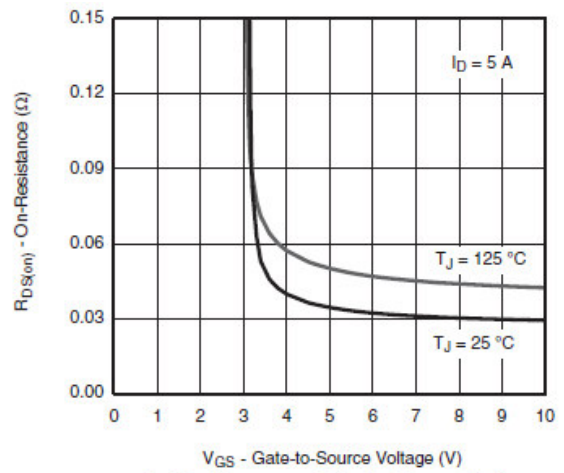
Typical Performance Characteristics



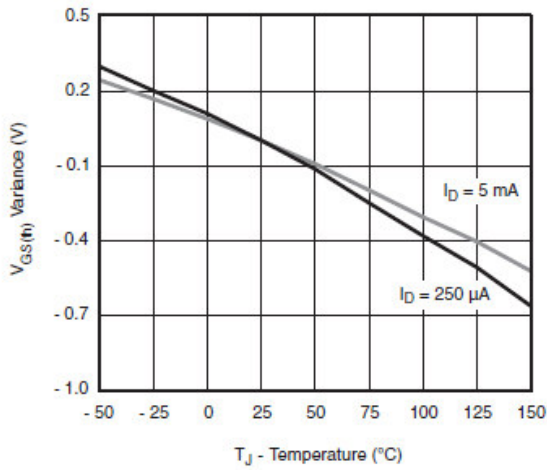
Typical Performance Characteristics (continue)



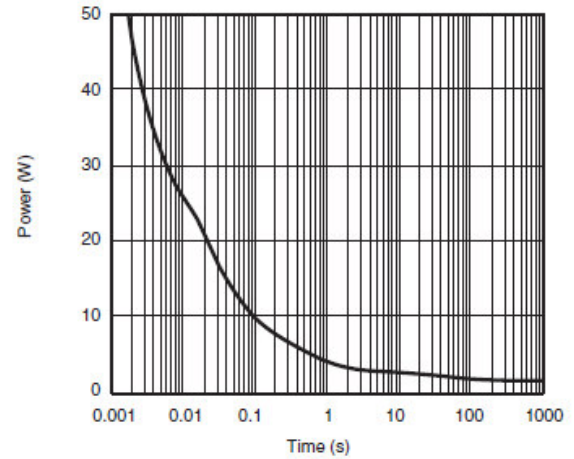
Source-Drain Diode Forward Voltage



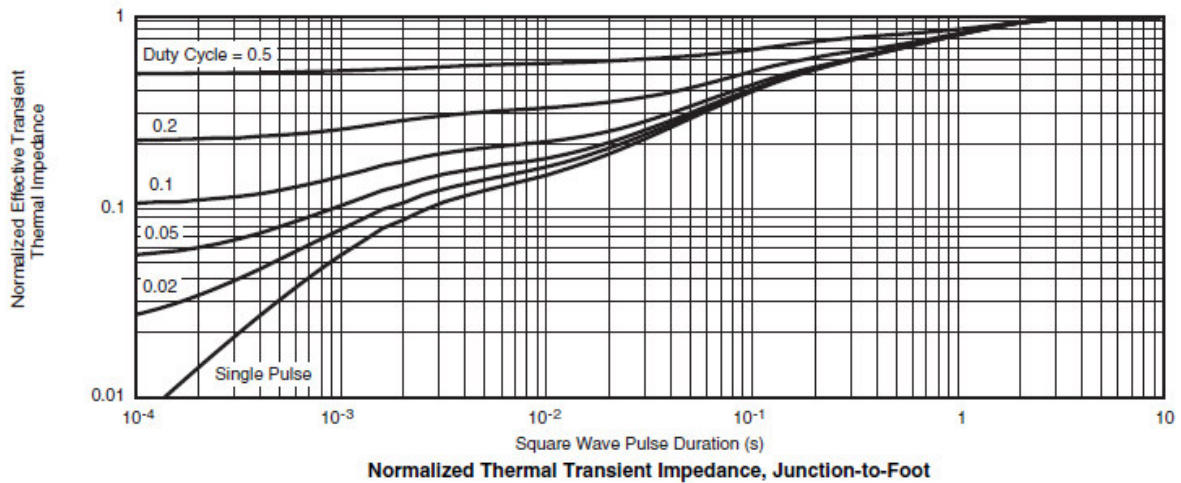
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



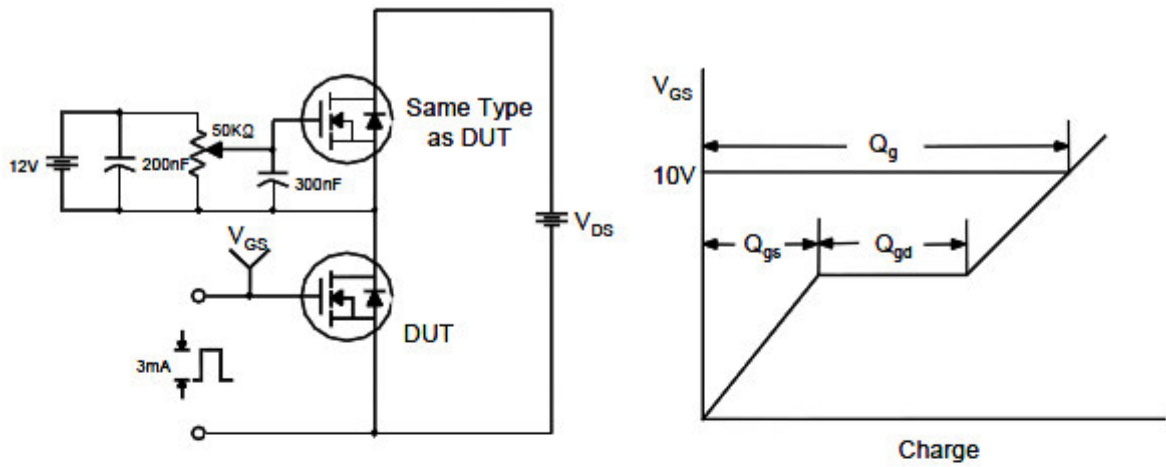
Single Pulse Power



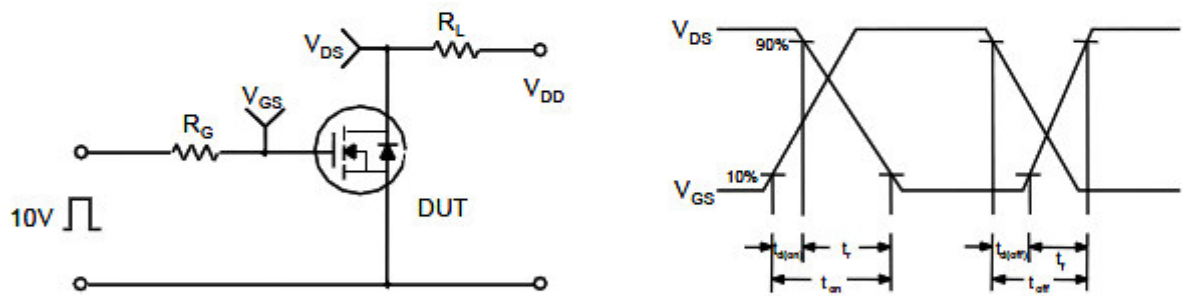
Normalized Thermal Transient Impedance, Junction-to-Foot

Typical Characteristics

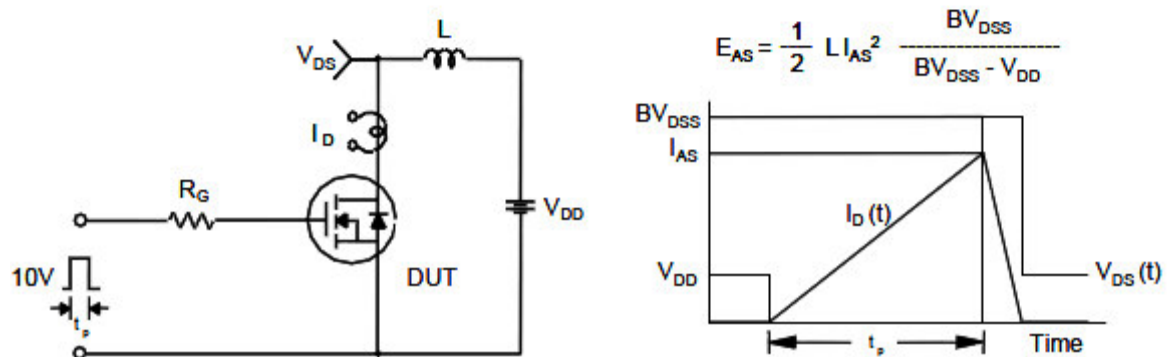
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

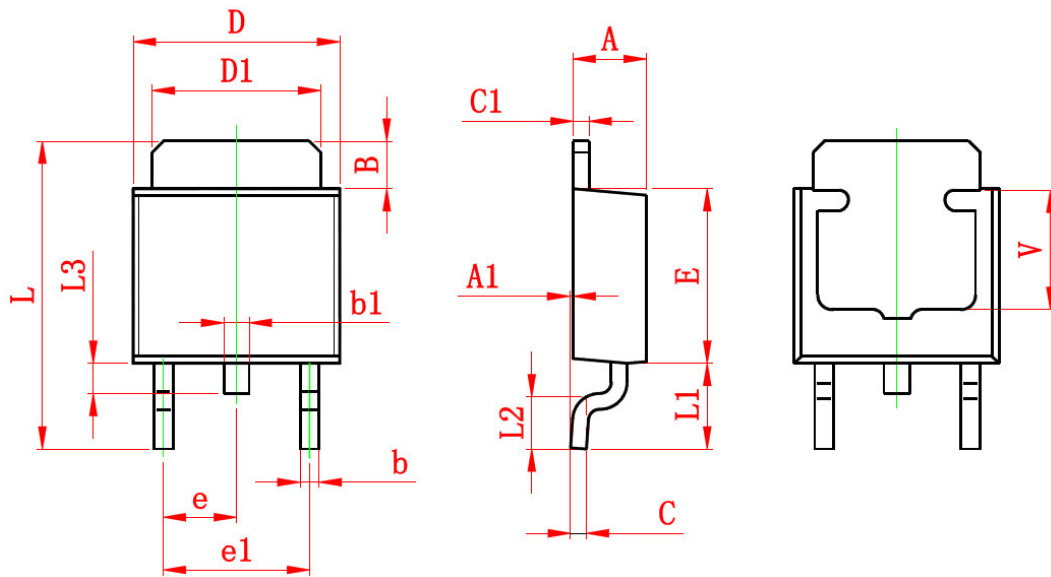


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

TO-252-2L PLASTIC PACKAGE




Dimensions

| SYMBOL | Millimeters | | Inches | |
|--------|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| B | 1.350 | 1.650 | 0.053 | 0.065 |
| b | 0.500 | 0.700 | 0.020 | 0.028 |
| b1 | 0.700 | 0.900 | 0.028 | 0.035 |
| c | 0.430 | 0.580 | 0.017 | 0.023 |
| c1 | 0.430 | 0.580 | 0.017 | 0.023 |
| D | 6.350 | 6.650 | 0.250 | 0.262 |
| D1 | 5.200 | 5.400 | 0.205 | 0.213 |
| E | 5.400 | 5.700 | 0.213 | 0.224 |
| e | 2.300 TYP | | 0.091 TYP | |
| e1 | 4.500 | 4.700 | 0.177 | 0.185 |
| L | 9.500 | 9.900 | 0.374 | 0.390 |
| L1 | 2.550 | 2.900 | 0.100 | 0.114 |
| L2 | 1.400 | 1.780 | 0.055 | 0.070 |
| L3 | 0.600 | 0.900 | 0.024 | 0.035 |
| V | 3.800 REF | | 0.150 REF | |

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