

LMN3660ETF 30V N-Channel Enhancement Mode MOSFET

Features

- Low Gate Charge
- ESD Protected
- DFN1006-3L package design

Product Description

LMN3660E, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

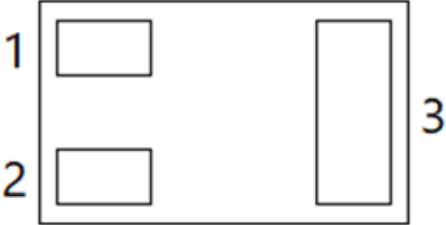
These devices are particularly suited for low

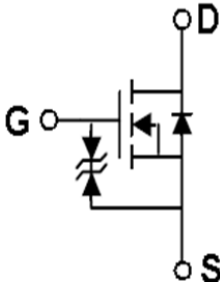
voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

- Power Management in Note book
- Portable Equipment
- Load Switch
- Switching circuits

Pin Configuration

| LMN3660 ETF (DFN1006-3L) | |
|--|-------------|
|  | |
| Transparent top view | |
| Pin | Description |
| 1 | Gate |
| 2 | Source |
| 3 | Drain |

| |
|--|
|  |
|--|

Ordering Information

| Ordering Information | | | | | |
|----------------------|----------|----------|--------------|------------|-----------|
| Part Number | P/N | PKG code | Pb Free code | Package | Quantity |
| LMN3660ETF | LMN3660E | T | F | DFN1006-3L | 10000 PCS |

Marking Information

| Marking Information | | |
|---------------------|-------------|----------|
| Part Marking | Part Number | LFC code |
| 0XWM | 0 | XWM |

Absolute Maximum Ratings

(T_C=25°C Unless otherwise noted)

| Symbol | Parameter | Typical | Unit |
|------------------|---|-------------|------|
| V _{DSS} | Drain-Source Voltage | 30 | V |
| V _{GSS} | Gate-Source Voltage | ±12 | V |
| I _D | Continuous Drain Current T _A =25°C | 0.6 | A |
| I _{DM} | Pulsed Drain Current ¹ | 2.4 | A |
| P _D | Power Dissipation | 0.41 | W |
| T _J | Operating Junction Temperature | -55 to +150 | °C |
| T _{STG} | Storage Temperature Range | -55 to +150 | °C |
| R _{θJA} | Thermal Resistance-Junction to Ambient ¹ | 305 | °C/W |

Electrical Characteristics

(T_C=25°C Unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|---------------------------------|---|-----|------|------|------|
| Static | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 30 | | | V |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250Ua | 0.5 | | 1.5 | |
| I _{GSS} | Gate Leakage Current | V _{DS} =0V, V _{GS} =±12V | | | 10 | uA |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =24V, V _{GS} =0V | | | 100 | nA |
| | | V _{DS} =24V, V _{GS} =0V T _J =85°C | | | 30 | uA |
| R _{DS(on)} | Drain-Source On-Resistance | V _{GS} =10V, I _D =0.5A | | 325 | 600 | mΩ |
| | | V _{GS} =4.5V, I _D =0.4A | | 400 | 650 | |
| | | V _{GS} =2.5V, I _D =0.3A | | 650 | 1200 | |
| | | V _{GS} =1.8V, I _D =0.08A | | 1250 | 1500 | |
| g _{FS} | Forward Transconductance | V _{DS} =10V, I _D =0.4A | | 0.85 | | S |
| V _{SD} | Diode Forward Voltage | I _S =0.5A, V _{GS} =0V | | | 1.35 | V |
| Dynamic | | | | | | |
| Q _g | Total Gate Charge | V _{DS} =15V, V _{GS} =10V, I _D =0.5A | | 1.5 | | nC |
| Q _{gs} | Gate-Source Charge | | | 0.2 | | |
| Q _{gd} | Gate-Drain Charge | | | 0.2 | | |
| C _{iSS} | Input Capacitance | V _{DS} =15V, V _{GS} =0V, f=1MHz | | 39 | | pF |
| C _{oSS} | Output Capacitance | | | 9 | | |
| C _{rSS} | Reverse Transfer Capacitance | | | 6 | | |
| t _{d(on)} | Turn-On Time | V _{DD} =15V, I _D =0.5A, V _{GS} =10V, R _G =2.5Ω | | 5.3 | | ns |
| t _r | | | | 16 | | |
| t _{d(off)} | Turn-Off Time | | | 20 | | |
| t _f | | | | 18 | | |

Typical Performance Characteristics

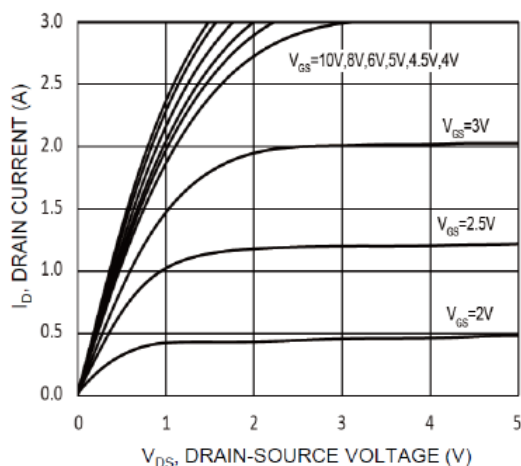


Fig. 1 Typical Output Characteristics

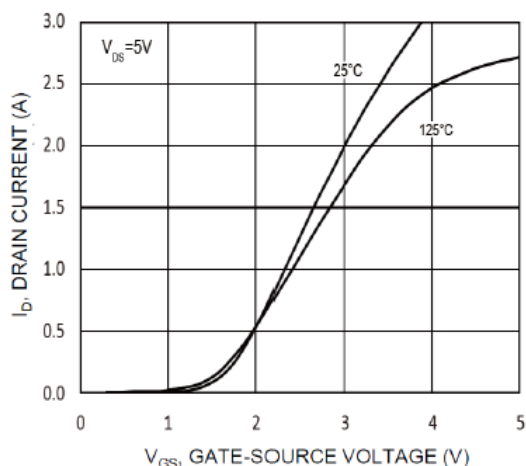


Fig. 2 Typical Transfer Characteristics

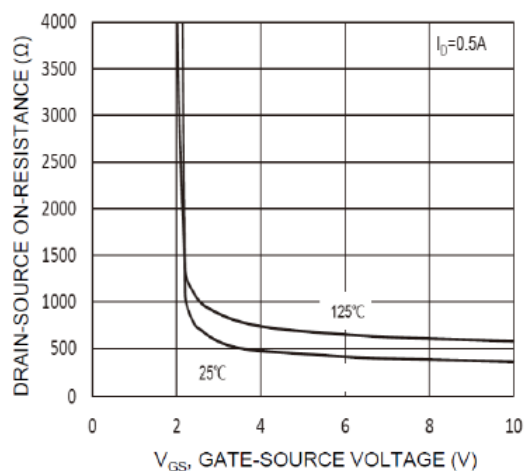


Fig. 3 Typical On-Resistance vs. V_{GS}

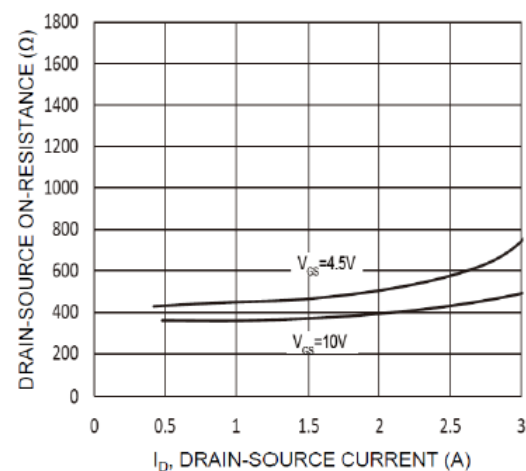


Fig. 4 Typical On-Resistance vs. I_D

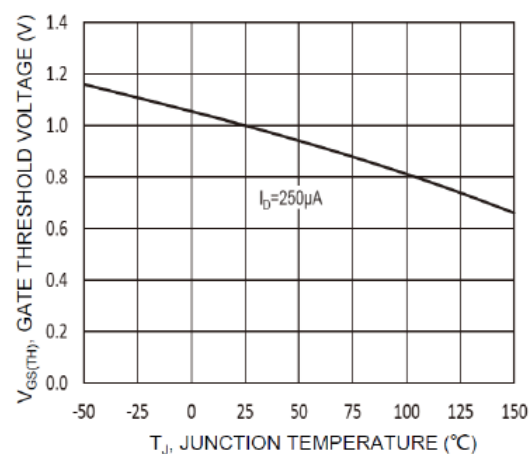


Fig. 5 Normalized Threshold Voltage

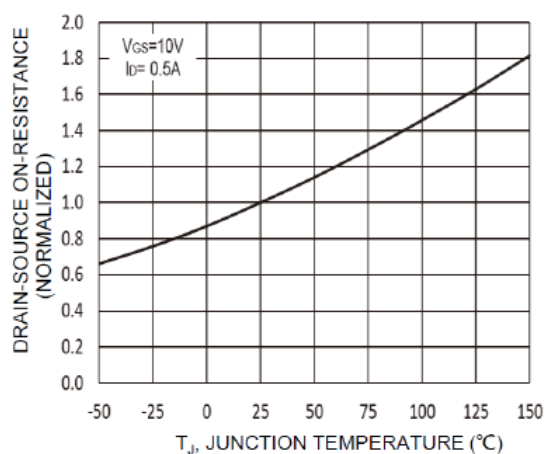
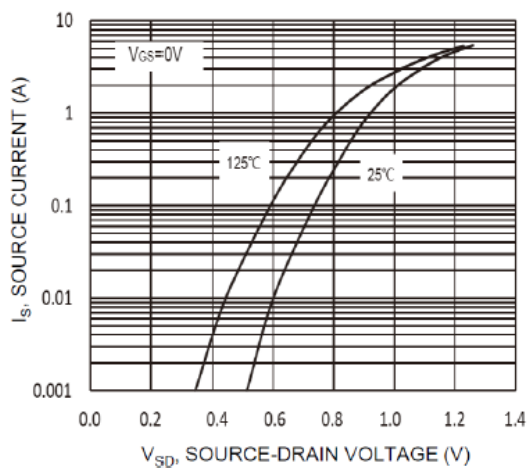
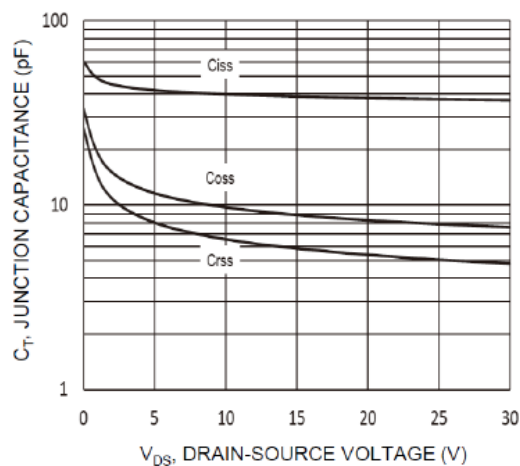
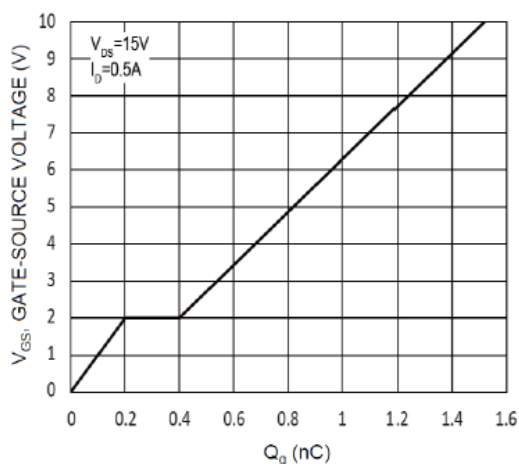
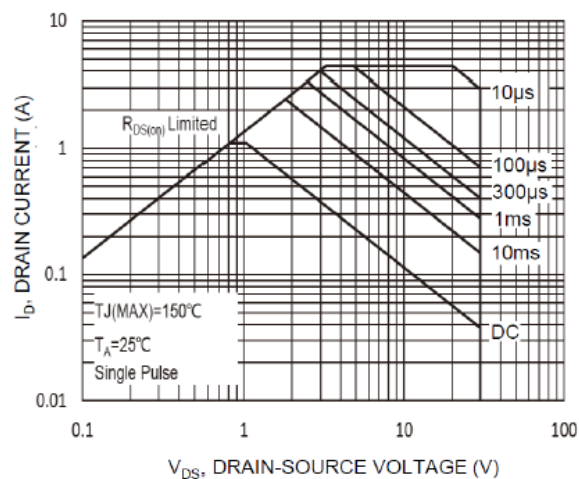
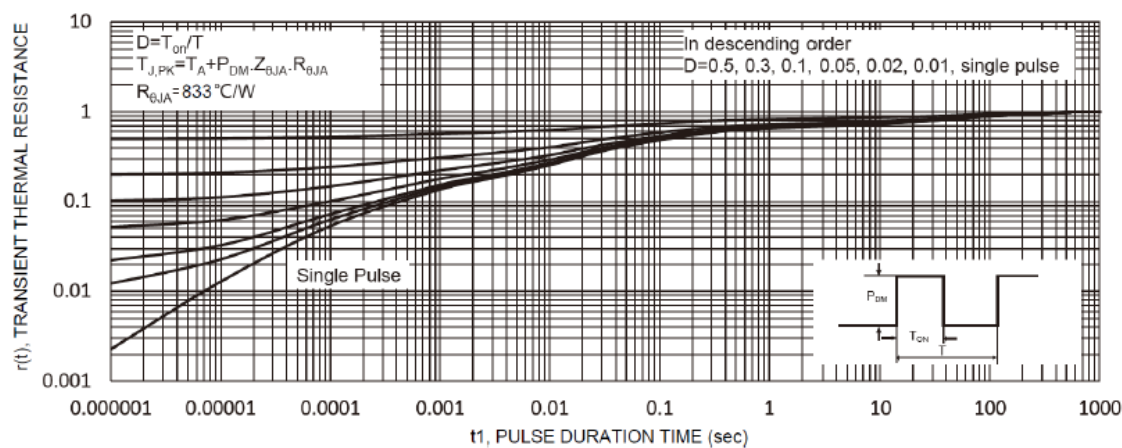
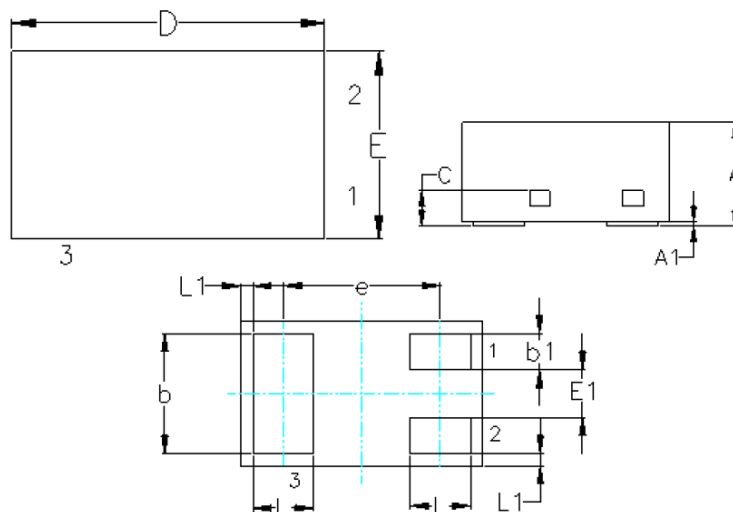


Fig. 6. On-Resistance Variation with T_J

Typical Performance Characteristics(continue)

Fig. 7 Diode Forward Voltage vs. Current

Fig. 8 Typical Capacitance

Fig. 9 Gate Charge

Fig. 10 Safe Operation Area

Fig. 11 Transient Thermal Response

Package Dimension:
DFN1006-3L


| Dimensions | | | | |
|------------|-------------|------|-----------|-------|
| Symbol | Millimeters | | Inches | |
| | Min | Max | Min | Max |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.00 | 0.50 | 0.000 | 0.004 |
| b | 0.45 | 0.55 | 0.018 | 0.022 |
| b1 | 0.10 | 0.20 | 0.004 | 0.008 |
| C | 0.12 | 0.18 | 0.005 | 0.007 |
| D | 0.95 | 1.05 | 0.037 | 0.041 |
| E | 0.55 | 0.65 | 0.022 | 0.026 |
| E1 | 0.15 | 0.25 | 0.006 | 0.010 |
| e | 0.65 BSC | | 0.026 BSC | |
| L | 0.20 | 0.30 | 0.008 | 0.012 |
| L1 | 0.05 REF | | 0.002 REF | |

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