

## LMN3660EAF 30V N-Channel Enhancement Mode MOSFET

### Features

- Low Gate Charge
- ESD Protected
- SOT-723 package design

### Product Description

LMN3660E, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent RDS(ON), low gate charge.

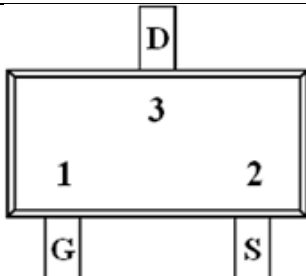
These devices are particularly suited for low

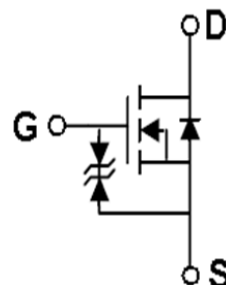
voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

### Applications

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

### Pin Configuration

LMN3660EAF (SOT-723)	
	
Pin	Description
1	Gate
2	Source
3	Drain



## Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN3660EAF	LMN3660E	A	F	SOT-723	8000 PCS

## Marking Information

Marking Information		
Part Marking	Part Number	LFC code
0XW	0	XW

## Absolute Maximum Ratings

(T<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	30	V
V <sub>GSS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current T <sub>A</sub> =25°C	0.37	A
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	1.0	A
P <sub>D</sub>	Power Dissipation	0.15	W
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient <sup>1</sup>	833	°C/W

## Electrical Characteristics

(T<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250Ua	0.5		1.5	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			10	uA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			100	nA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			30	uA
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A		350	600	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.4A		400	650	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.3A		650	1200	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A		1.2		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =0.5A, V <sub>GS</sub> =0V			1.35	V
Dynamic						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A		1.5		nC
Q <sub>gs</sub>	Gate-Source Charge			0.2		
Q <sub>gd</sub>	Gate-Drain Charge			0.2		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		39		pF
C <sub>oss</sub>	Output Capacitance			9		
C <sub>rss</sub>	Reverse Transfer Capacitance			6		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =15V, I <sub>D</sub> =0.5A, V <sub>GS</sub> =10V, R <sub>G</sub> =2.5Ω		5.3		ns
t <sub>r</sub>				16		
t <sub>d(off)</sub>	Turn-Off Time			20		
t <sub>f</sub>				18		

## Typical Performance Characteristics

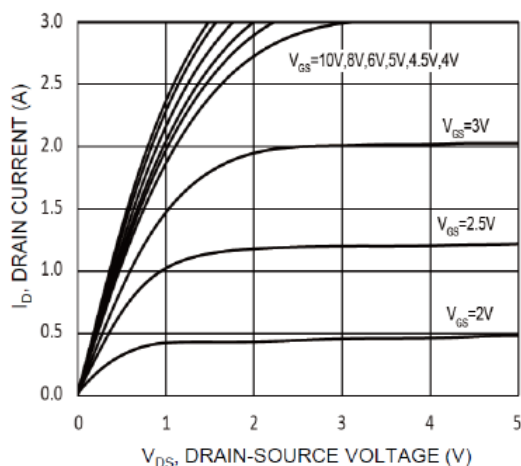


Fig. 1 Typical Output Characteristics

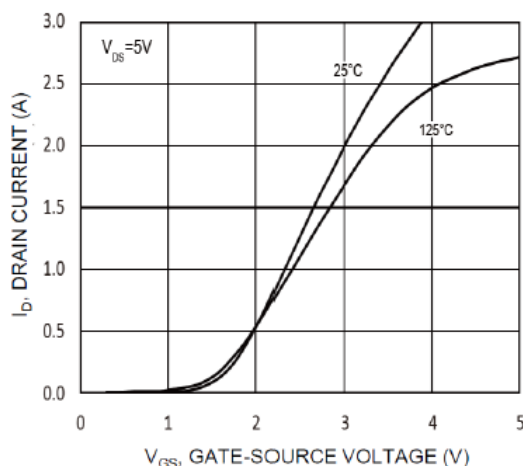


Fig. 2 Typical Transfer Characteristics

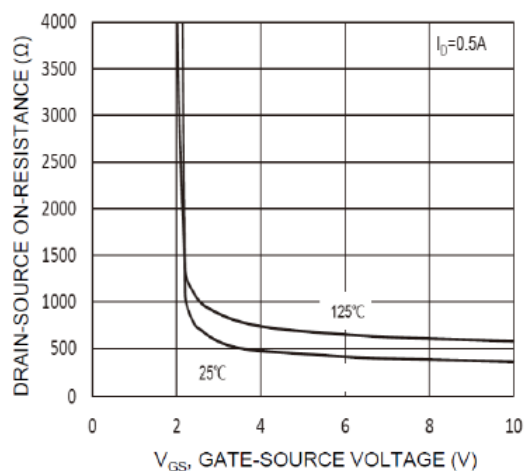


Fig. 3 Typical On-Resistance vs.  $V_{GS}$

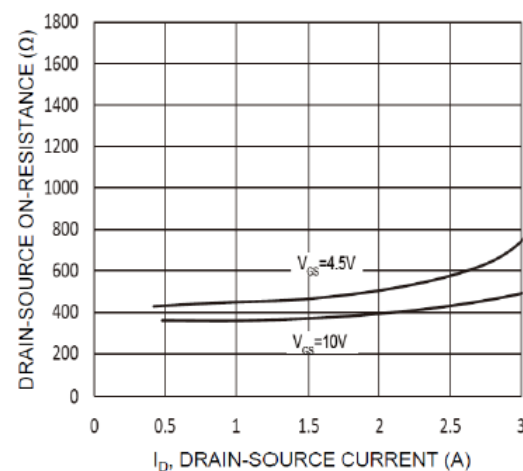


Fig. 4 Typical On-Resistance vs.  $I_D$

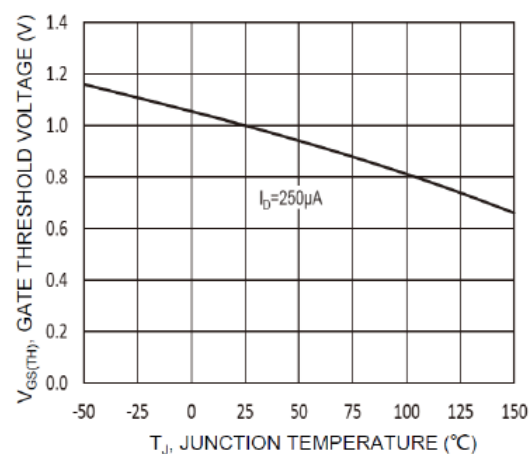


Fig. 5 Normalized Threshold Voltage

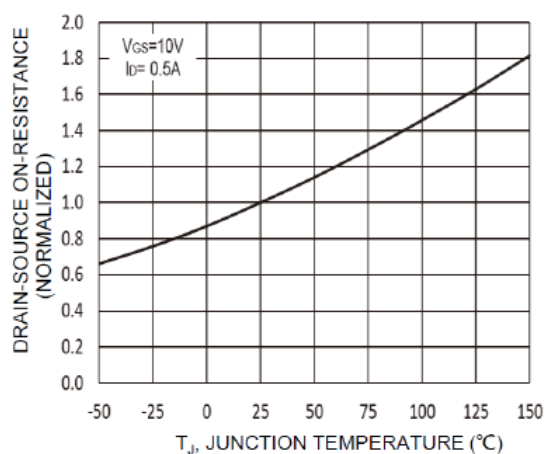
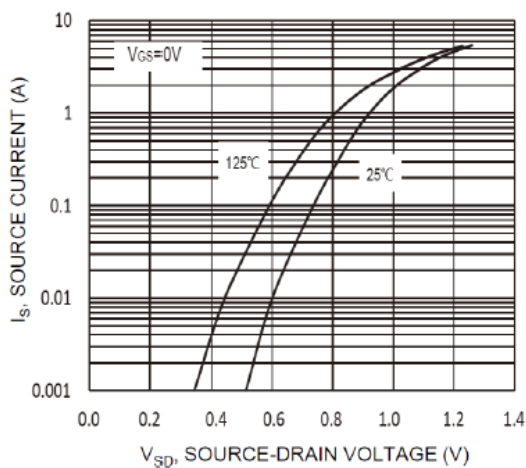
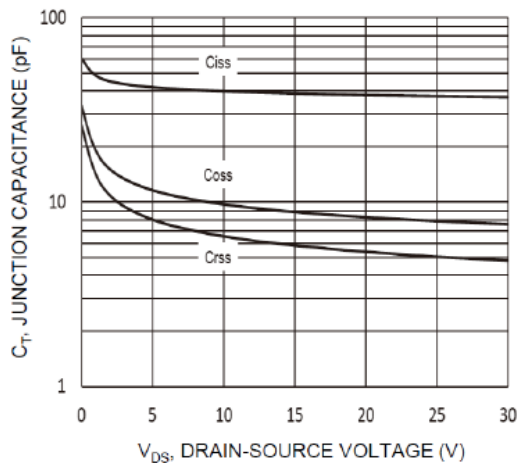
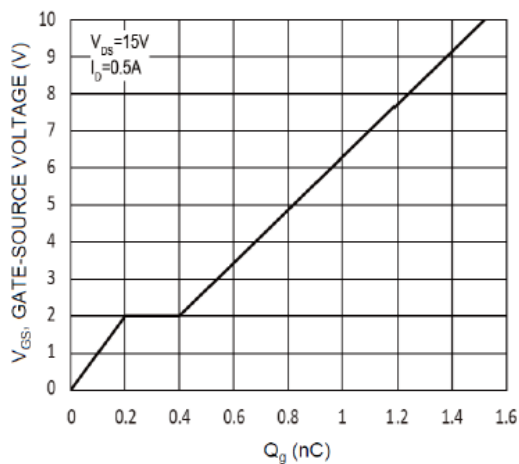
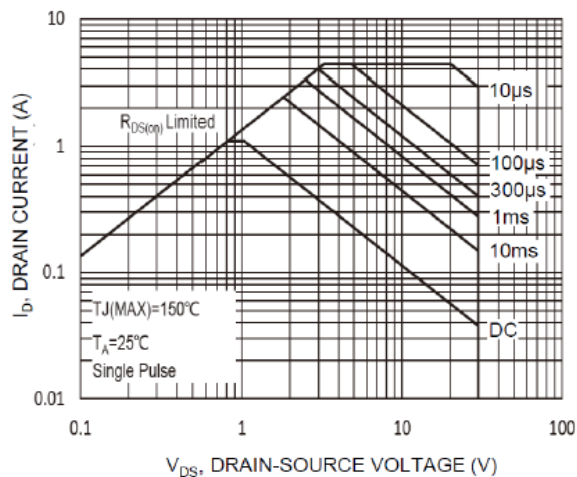
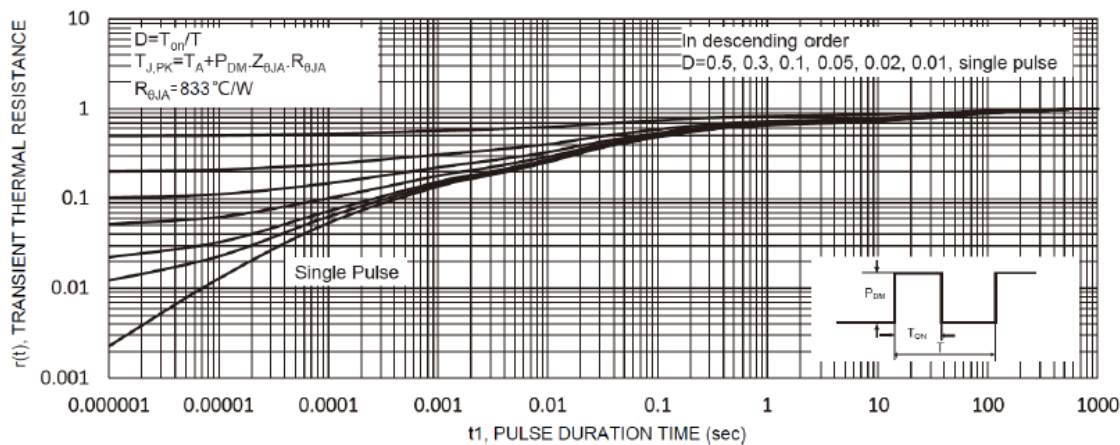
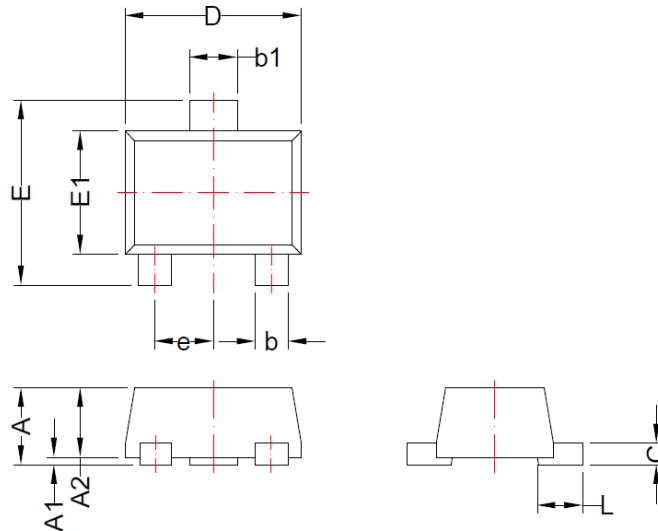


Fig. 6. On-Resistance Variation with  $T_J$

**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:**
**SOT-723**


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
A2	0.45	0.55	0.018	0.022
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.08	0.20	0.003	0.008
D	1.10	1.30	0.043	0.051
E	1.10	1.30	0.043	0.051
E1	0.70	0.90	0.028	0.035
e	0.4 BSC		0.016 BSC	
L	0.2	0.42	0.008	0.017

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