

20V N-Channel Enhancement Mode MOSFETs

Features

- 20V, 1.8A, $R_{DS(ON)}=280m\Omega@V_{GS}=4.5V$
- 20V, 1.5A, $R_{DS(ON)}=340m\Omega@V_{GS}=2.5V$
- 20V, 1.2A, $R_{DS(ON)}=580m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-363 package design

Product Description

LMN1912, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

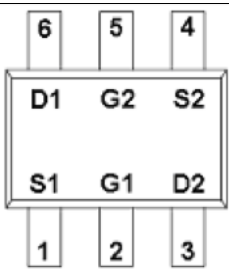
These devices are particularly suited for low voltage

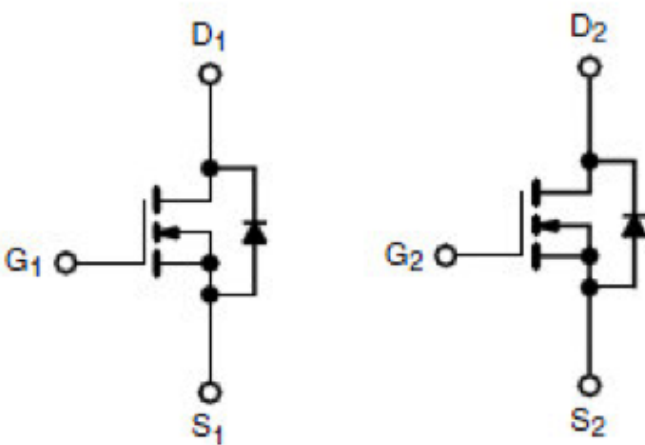
power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

- Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Configuration

LMN1912X6F (SOT-363)	
	
PIN	Description
1	Source1
2	Gate1
3	Drain2
4	Source2
5	Gate2
6	Drain1



Ordering Information

<u>LMN1912</u>	<u>X6</u>	<u>E</u>
LFC P/N	PKG code	Pb Free code

Marking Information

<u>r</u>	<u>YW</u>
Part Number	LFC code

Part Number	Package	Part Marking	Quantity
LMN1912X6F	SOT-363	rYW	3000pcs

Absolute Maximum Ratings

(T_C=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		20	V
V _{GS}	Gate-Source Voltage		±12	V
I _D	Continuous Drain Current (T _J =150°C)	T _A =25°C	1.8	A
		T _A =70°C	1.2	
I _{DM}	Pulsed Drain Current		6	A
I _S	Continuous Source Current (Diode Conduction)		1	A
P _D	Power Dissipation	T _A =25°C	0.3	W
		T _A =70°C	0.2	
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-50 to +150	°C

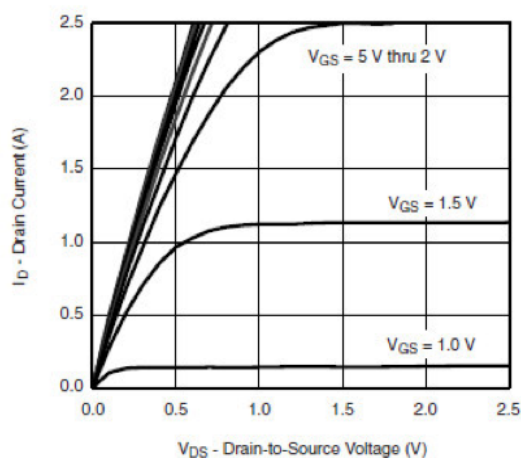
Electrical Characteristics
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20			V
V _{GS (th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.4		1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	uA
		V _{DS} =20V, V _{GS} =0V, T _A =85°C			5	
I _{D(ON)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	1.8			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =1.8A		240	280	m Ω
		V _{GS} =2.5V, I _D =1.5A		300	340	
		V _{GS} =1.8V, I _D =1.2A		500	580	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =1A		1		S
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V		0.65	1.2	V
Dynamic						
Q _g	Total Gate Charge ^{2,3}	V _{DS} =10V, V _{GS} =4.5V, I _D =1.2A		1.06	1.38	nC
Q _{gs}	Gate-Source Charge ^{2,3}			0.18		
Q _{gd}	Gate-Drain Charge ^{2,3}			0.32		
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz		70		pF
C _{oss}	Output Capacitance			20		
C _{rss}	Reverse Transfer Capacitance			8		
t _{d(on)}	Turn-On Time ²	V _{DD} =10V, I _D =1.2A, R _L =20Ω V _{GS} =4.5V, R _G =1Ω		18	26	ns
t _r				20	28	
t _{d(off)}	Turn-Off Time ²			70	110	
t _f				25	40	

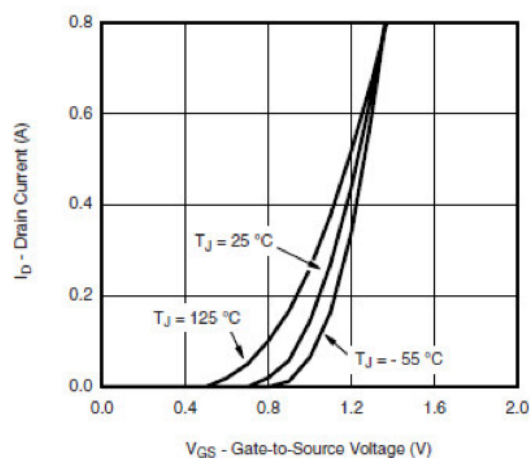
Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

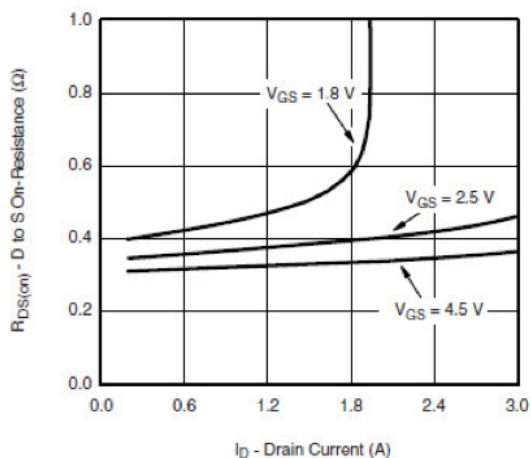
Typical Performance Characteristics



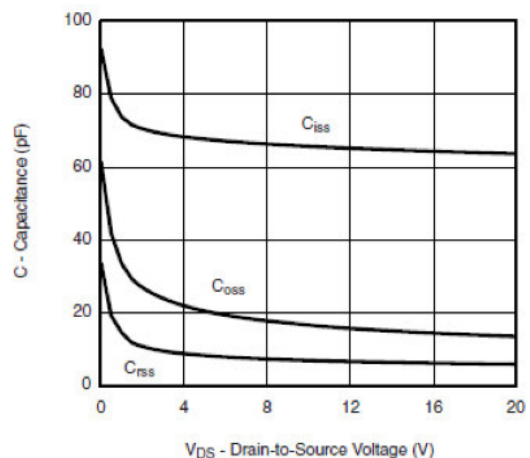
Output Characteristics



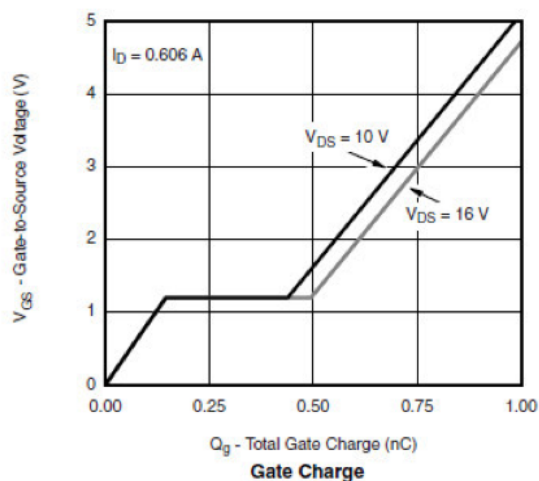
Transfer Characteristics



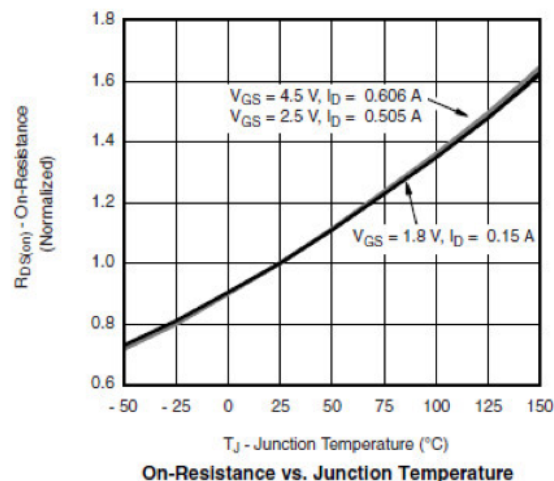
On-Resistance vs. Drain Current



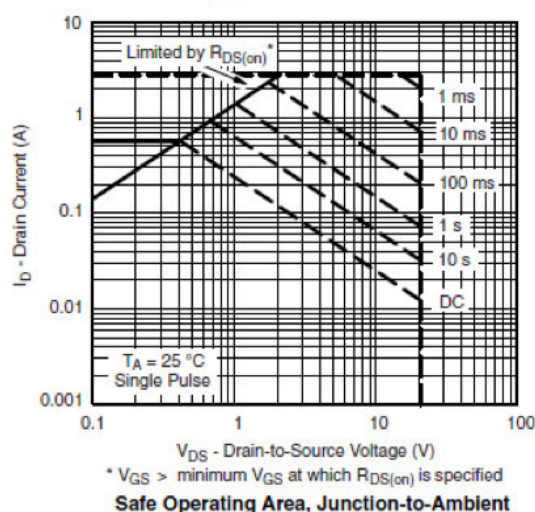
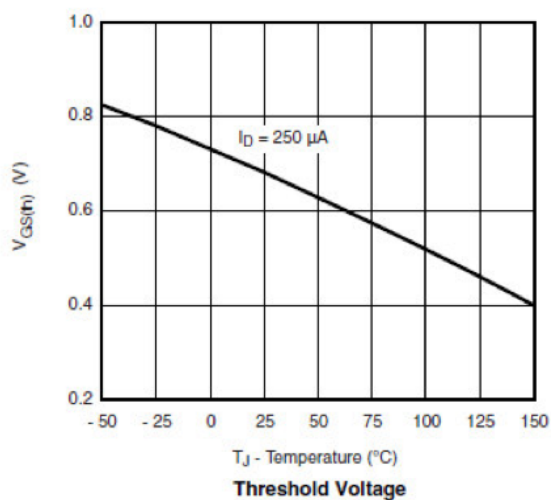
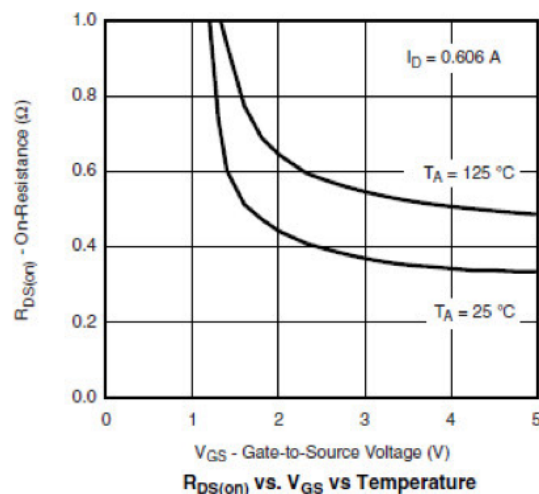
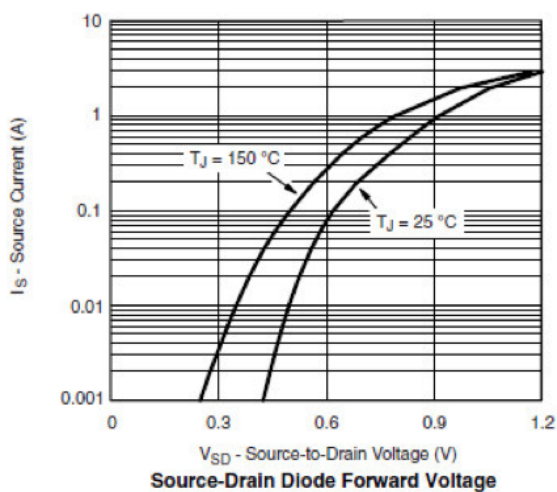
Capacitance



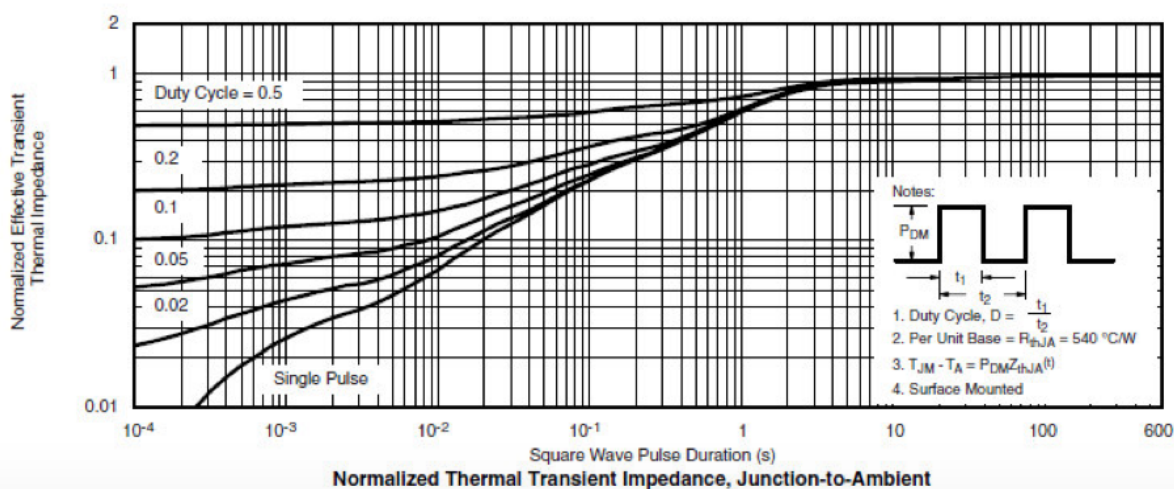
Gate Charge



On-Resistance vs. Junction Temperature

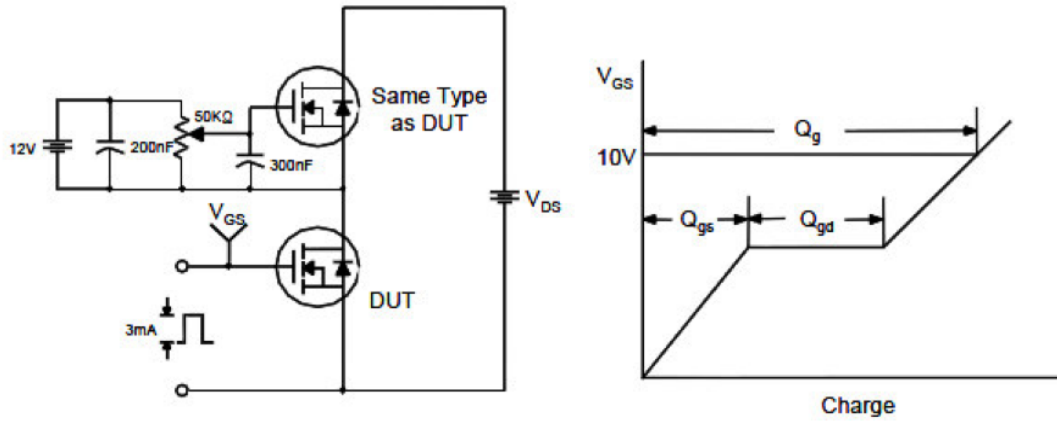
Typical Performance Characteristics (Cont.)


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified
Safe Operating Area, Junction-to-Ambient

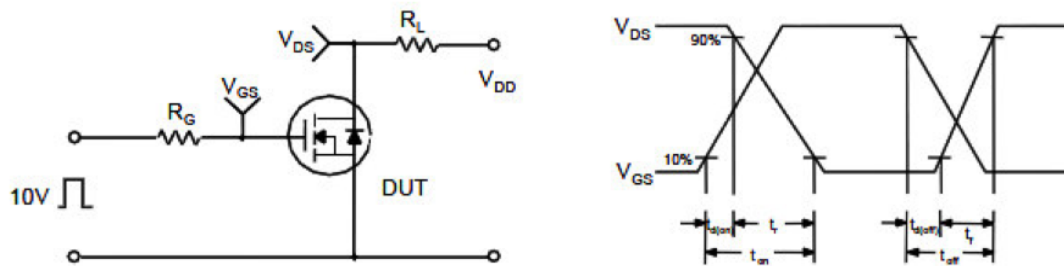


Typical Performance Characteristics (Cont.)

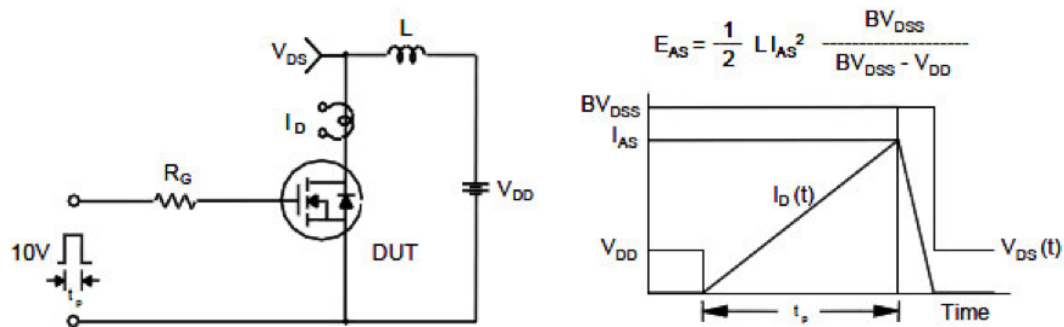
Gate Charge Test Circuit & Waveform

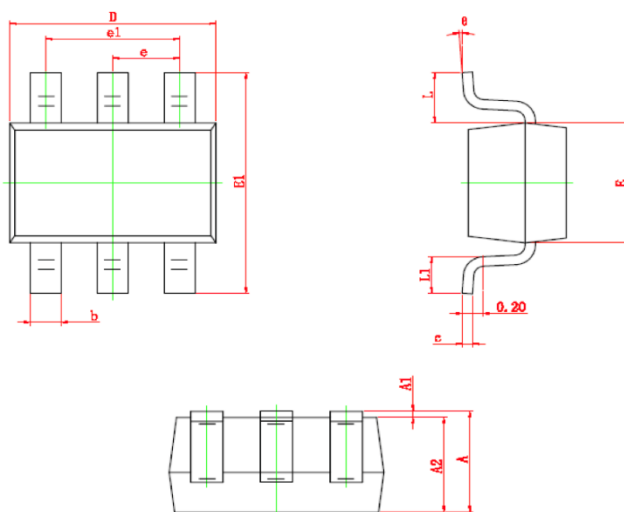


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension
SOT-363 PLASTIC PACKAGE


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.10	0.035	0.035
A1	0.00	0.10	0.000	0.000
A2	0.90	1.00	0.035	0.035
b	0.15	0.35	0.006	0.006
c	0.08	0.15	0.003	0.003
D	2.0	2.2	0.079	0.079
E	1.15	1.35	0.045	0.045
E1	2.15	2.45	0.085	0.085
e	0.650 TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.022REF	
L1	0.26	0.46	0.010	0.018
θ	0°	8°	0°	6°

SOT363 Dual PACKAGE INFORMATION

