

LMP3415ZF 20V P-Channel Enhancement MOSFET

Features

- $R_{DS(ON)} = 45m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} = 58m\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} = 85m\Omega @ V_{GS} = -1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

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.

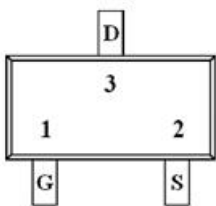
Product Description

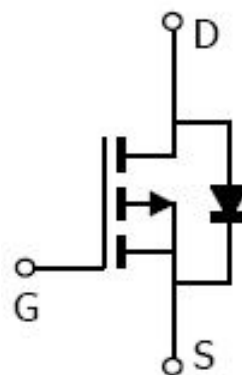
LMP3415ZF, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Pin Configuration

LMP3415ZF (SOT-23)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMP3415ZF	LMP3415	Z	F	SOT-23	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
15 XW	15	XW

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±12	V
I _D	Continuous Drain Current	T _A =25°C	-4.9	A
		T _A =70°C	-3.9	
I _{DM}	Pulsed Drain Current		-10	A
I _S	Continuous Body Diode Forward Current		-1.6	A
P _D	Total Power Dissipation	T _A =25°C	1.56	W
		T _A =70°C	1.0	
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		80	°C/W

Electrical Characteristics

(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
BV _{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		-0.9	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-16V, V _{GS} =0V			-1	uA
		V _{DS} =-16V, V _{GS} =0V, T _J =85°C			-10	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-4.9A		40	45	mΩ
		V _{GS} =-2.5V, I _D =-3.4A		50	58	
		V _{GS} =-1.8V, I _D =-2.2A		60	85	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-3.6A		10		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1.6A		-0.85	-1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		1050		pF
C _{oss}	Output Capacitance			165		
C _{rss}	Reverse Transfer Capacitance			135		
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-2.5V, I _D =-4.0A		10	18	nC
Q _{gs}	Gate-Source Charge			2.5		
Q _{gd}	Gate-Drain Charge			3.5		
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, I _D =-3.7A, V _{GS} =-4.5V, R _L =2.7Ω, R _G =1Ω		15	25	ns
T _r	Turn-On Rise Time			25	40	
t _{d(off)}	Turn-Off Delay Time			40	65	
T _f	Turn-Off Fall Time			15	25	

Typical Performance Characteristics

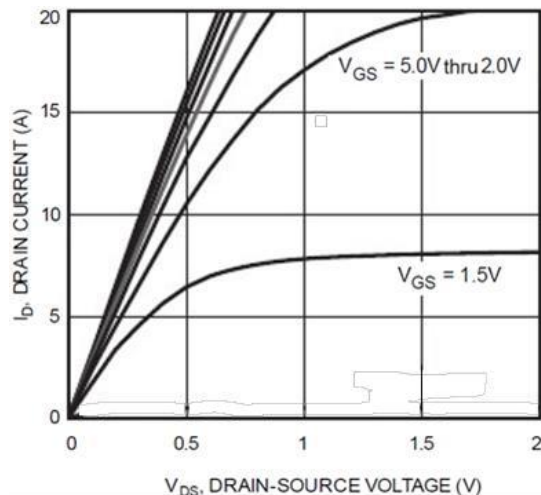


Fig.1 Typical Output Characteristics

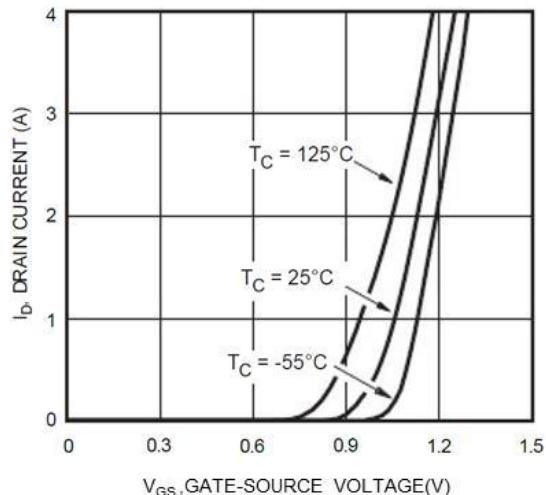


Fig.2 Typical Transfer Characteristics

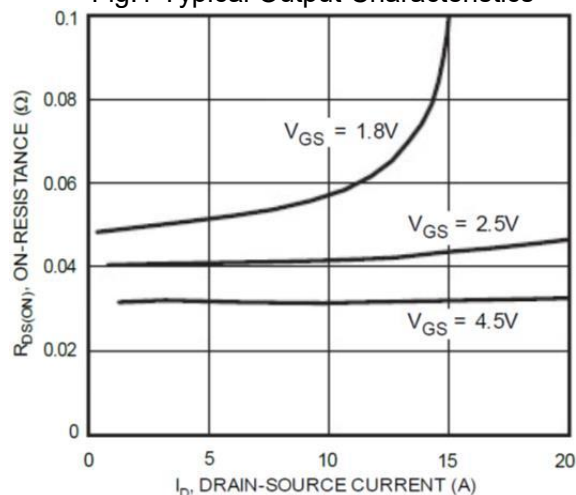


Fig.3 On-Resistance vs. Drain Current

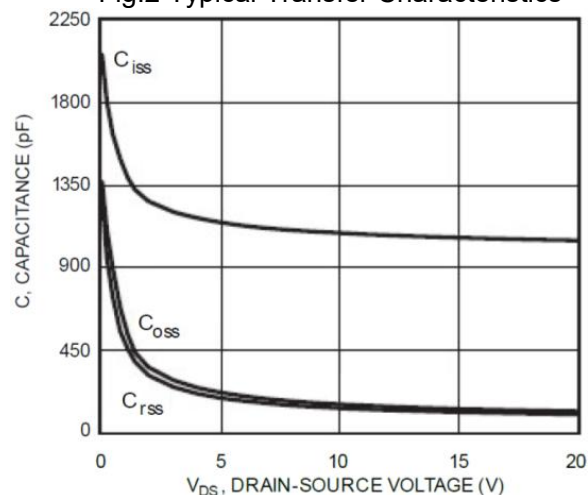


Fig.4 Capacitance vs. Drain-Source Voltage

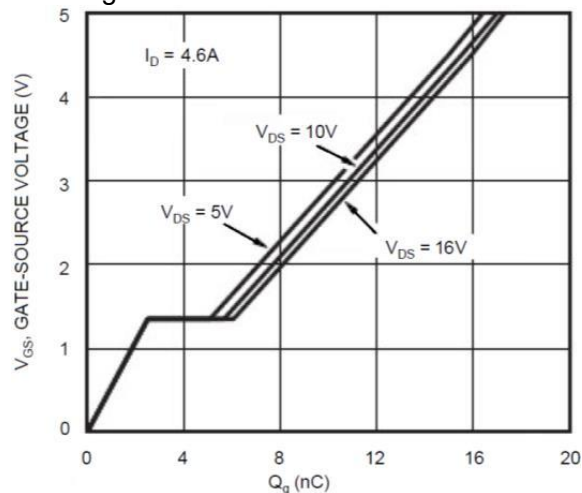


Fig.5 Gate Charge

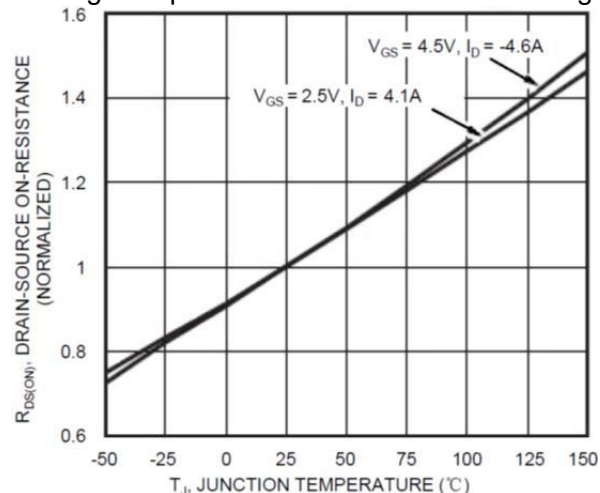
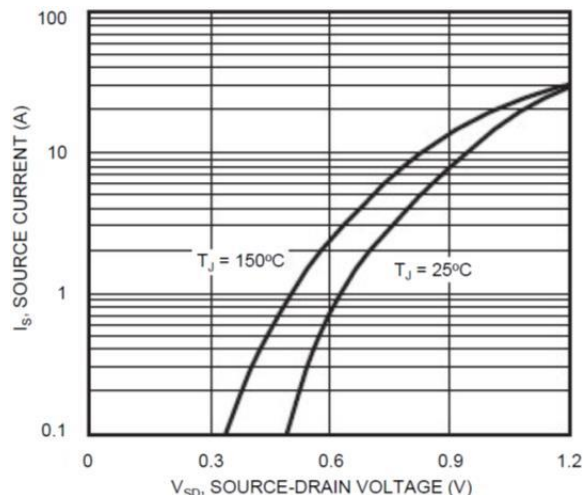
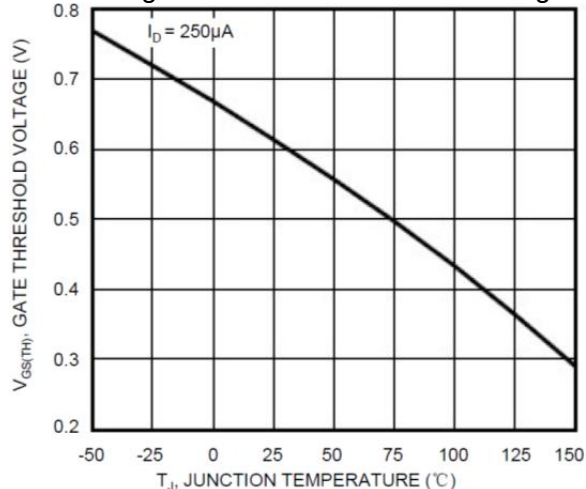
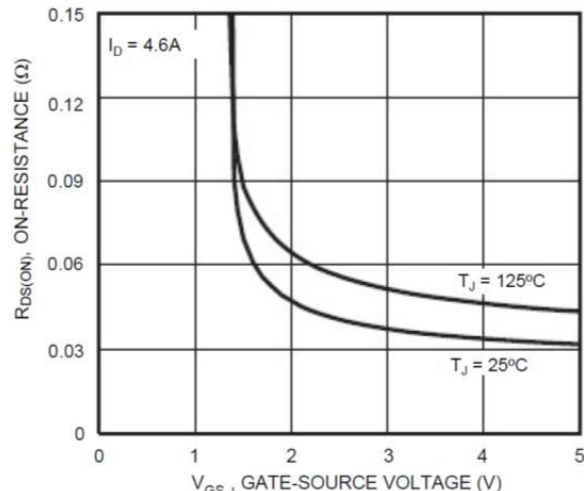
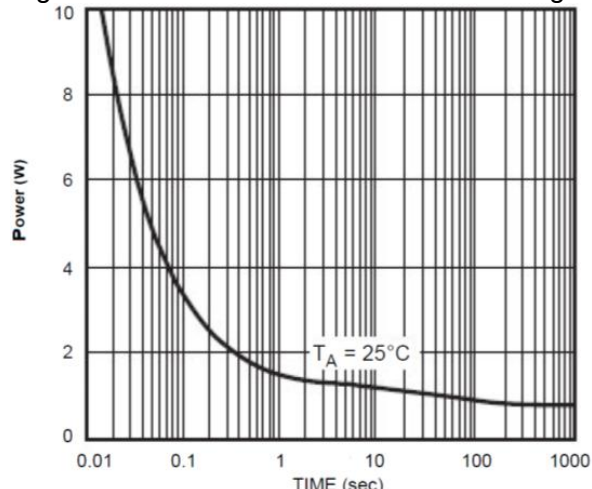
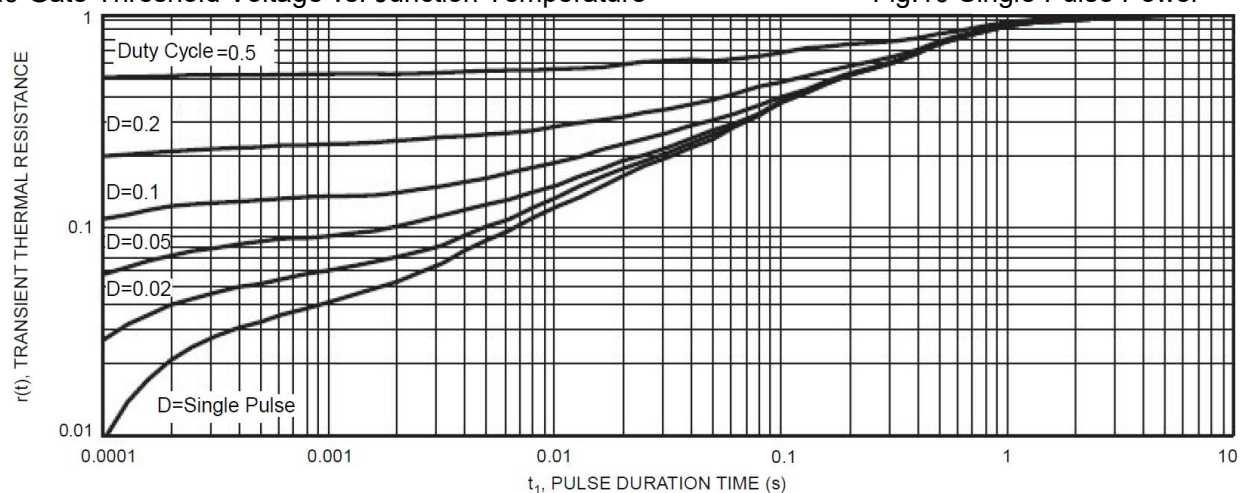
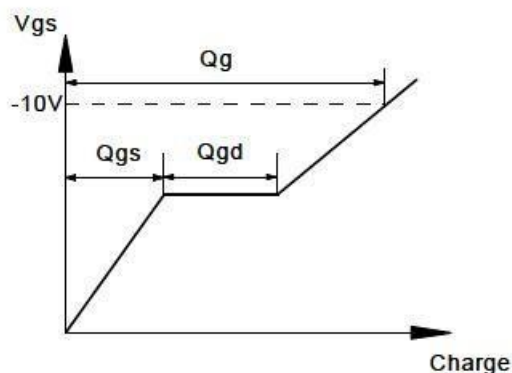
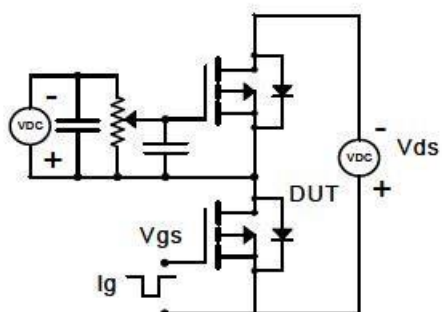


Fig.6 On-Resistance vs. Junction Temperature

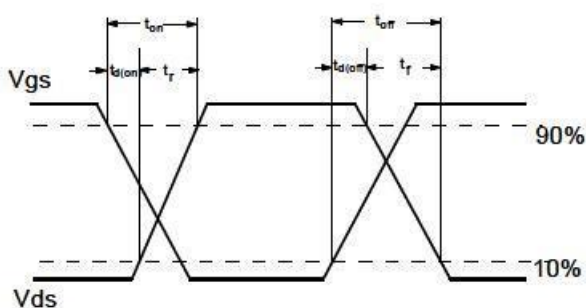
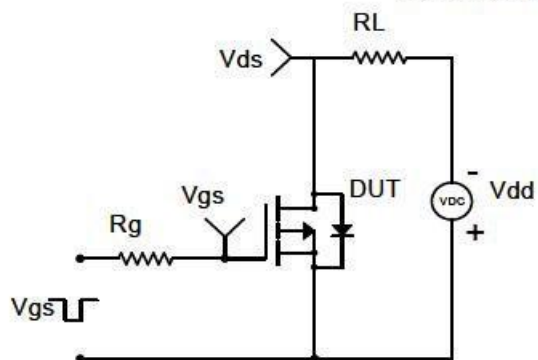
Typical Performance Characteristics (continue.)

Fig.7 Source-Drain Forward Voltage

Fig.9 Gate Threshold Voltage vs. Junction Temperature

Fig.8 On-Resistance vs. Gate-Source Voltage

Fig.10 Single Pulse Power

Fig.11 Normalized Thermal Transient Impedance

Typical Performance Characteristics (continue.)

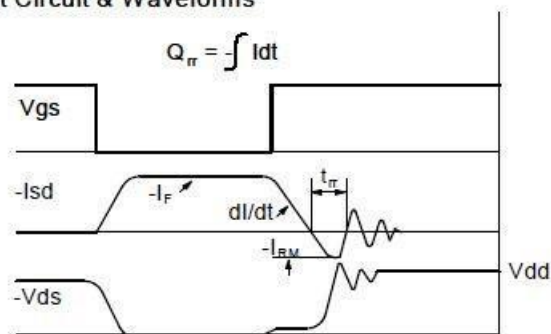
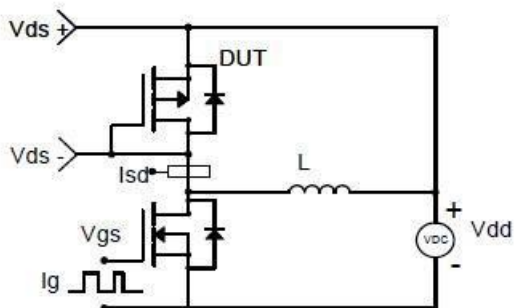
Gate Charge Test Circuit & Waveform

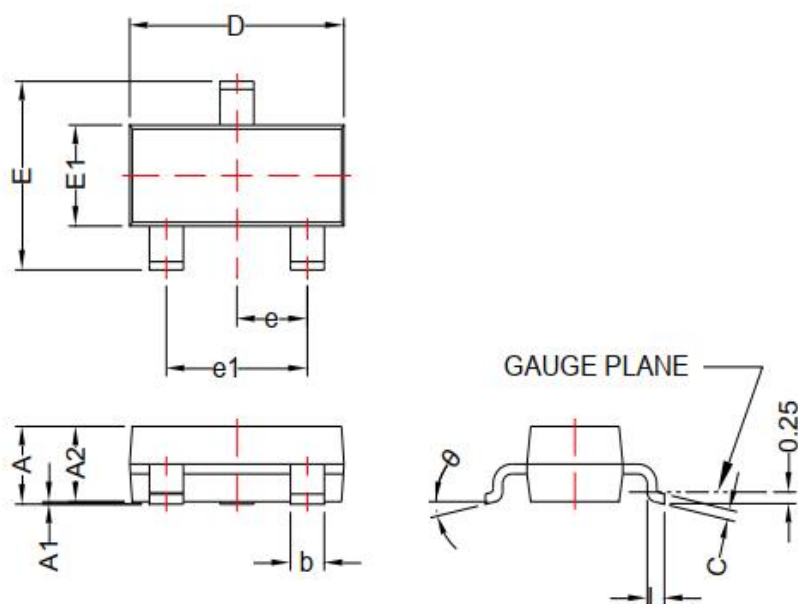


Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Dimension
SOT-23


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.750	1.170	0.030	0.046
A1	0.010	0.150	0.000	0.006
A2	0.700	1.020	0.028	0.040
b	0.300	0.500	0.012	0.020
c	0.080	0.200	0.003	0.008
D	2.800	3.040	0.110	0.120
E	2.100	2.640	0.083	0.104
E1	1.200	1.400	0.047	0.055
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°